

Pan@SDR

PANADAPTER



USER MANUAL

Rev. 1.1

Panoramic adapter Pan@SDR

Panoramic adapter Pan@SDR (panadapter) is designed for use as part of a radio receiving path of a transceiver/receiver jointly with a personal computer (PC) and SDR software. Pan@SDR allows you to visually see the RF spectrum in a band up to 200 kHz as well as to receive and decode different modulation types (depending on a software type). This panadapter may be used without a transceiver as SDR-receiver with fixed oscillator (similarly to SoftRock RX), for example, to listen to amateur and broadcasting stations, to decode and record telegraph stations with CW skimmer, to control signal quality, to calibrate frequency. It may be used as well as a selective millivoltmeter.

User selects the compatible model of a transceiver or fixed frequencies received by the panadapter with the help of band selector switches on the panadapter's board.

Features:

- * Built-in USB sound card
- * IQ output on external sound card
- * Stereo built-in sound card output to connect headphones or audio power amplifier
- * Works with more than 70 transceiver models, incl. homemade ones
- * 44.1, 48, 88.2*, 96* khz frequency span as well as up to 192 kHz with an external sound card
- * TCXO 0,5ppm high-stable local oscillator
- * Compact size - WxLxH 60x60x13 mm
- * External lo
- w-noise amplifier
- * Allows to choose TRX model with switches without resorting to soldering and reprogramming
- * Ease of connection
- * May be installed whether inside a transceiver or as an external device in its own case

Pan@SDR support the following transceivers:

Alinco DX-77T, DX-SR8

Elecraft K2, K3

Icom IC-703, 706, 718, 725, 735, 736, 745, 746, 746PRO, 751, 756, 761, 765, 775, 780, 781, 7200, 7400, 7410, 7600, 7700, 7800, 820, 821, 910, 9100, 970

JRC JST-245

Kenwood TS-50, 120, 130, 140, 180, 430, 440, 450, 480, 570, 590**, 670, 680, 690, 830, 850, 870, 930, 940, 950, 990, 2000**

Ten-Tec Orion I, II, Omni VII, Eagle 599

Yaesu FT-100, 450, 736, 757, 817, 840, 847, 857, 897, 900, 920, 950, 990, 1000D-MP, 2000, DX5000

P-160П**, P-399A, Brigantina, homemade TRX with IF 8.865, 9.0 and 10.7 mHz

* -- undocumented features

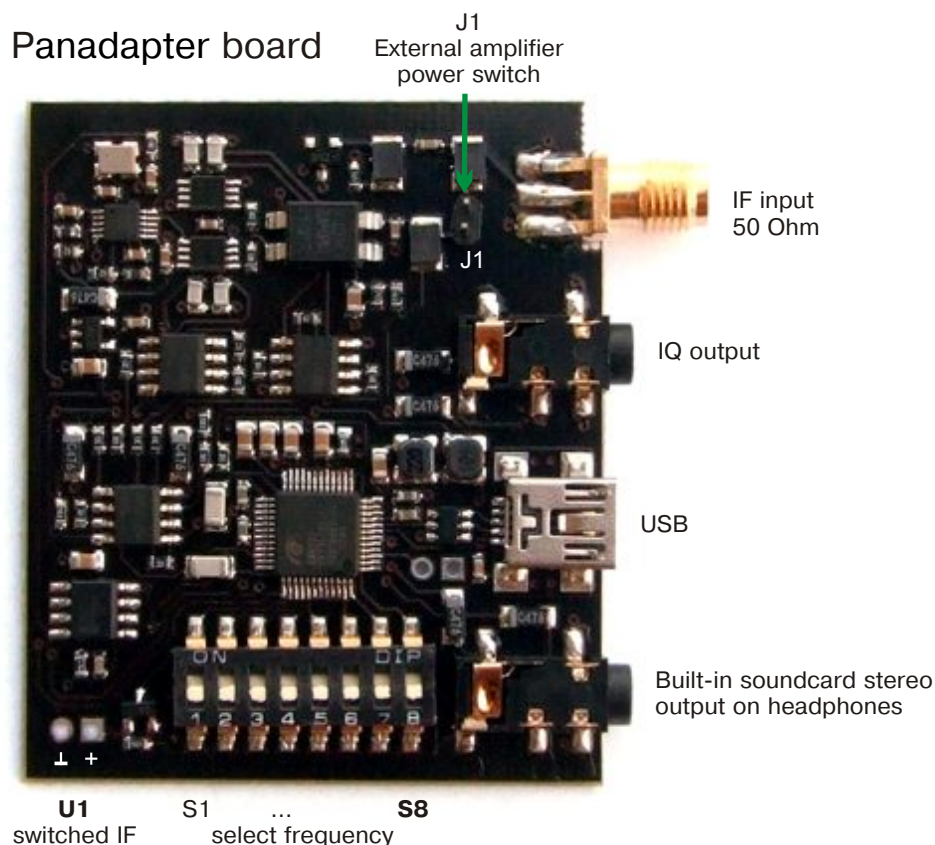
** -- there is an input to control frequency selection IF1/IF2 for transceivers with switched IF

Connection to a transceiver

Attention! Connection of a panadapter to a transceiver requires relevant level of competence in working with associated equipment. Pan@SDR manufacturer bears no responsibility for damages caused to equipment resulting from the actions that users may make. Please, in case of lack of experience, consult qualified persons to connect panadapter.

An external amplifier input of the panadapter should be connected to the first mixer output before the first IF filter. This connection should be made with separate wires of a minimum length (NMT 3 cm). An external amplifier is not used for work with transceivers with IF output connector. In that case connect IF output to panadapter with coaxial cable and remove J1 jumper (power supply to external amplifier).

Use only high-quality USB cables to connect panadapter to PC or laptop.



External amplifier



Turning the S8 switch to the “ON” position increases the frequency by 7000 Hz relative to the values indicated in the tables.

In order to change switches position, remove 2 screws at the end cover on the side of the connectors and gently pull the board out of body holding the RF connector.

Table 1, frequency selection with S1-S7 switches for various RX/TRX models.

Models RX/TRX	IF, Hz	S1	S2	S3	S4	S5	S6	S7
Alinco DX-77T, DX-SR8	71750000	OFF	ON	ON	OFF	ON	ON	OFF
EKD-300	70205000	OFF	ON	ON	OFF	ON	OFF	ON
Elecraft K2	4915000	OFF	ON	ON	OFF	ON	OFF	OFF
Elecraft K3	8215000	OFF	ON	OFF	OFF	ON	ON	ON
Icom IC-703, 718, 745, 756, 7200, 7410, 7700, 9100	64455000	OFF	ON	OFF	OFF	ON	ON	OFF
Icom IC-706, 746, 765, 775	69011500	OFF	ON	OFF	OFF	ON	OFF	ON
Icom IC-725, 735, 751, 761	70451500	OFF	ON	OFF	OFF	ON	OFF	OFF
Icom IC-780, 781	46511500	OFF	OFF	ON	OFF	ON	ON	ON
JRC JST-245	70455000	OFF	OFF	ON	OFF	ON	ON	OFF
Kenwood TS-120, 130, 180, 670, 830	8830000	OFF	OFF	ON	OFF	ON	OFF	ON
Kenwood TS-140, 680	40056000	OFF	OFF	ON	OFF	ON	OFF	OFF
Kenwood TS-2000 SUB RX	58525000	OFF	OFF	OFF	OFF	ON	ON	ON
Kenwood TS-2000 VHF/UHF	41895000	OFF	OFF	OFF	OFF	ON	ON	OFF
Kenwood TS-430	48055000	OFF	OFF	OFF	OFF	ON	OFF	ON
Kenwood TS-440, 940	45050000	OFF	OFF	OFF	OFF	ON	OFF	OFF
Kenwood TS-450, 570, 690, 850, 870, 950	73050000	ON	ON	ON	OFF	OFF	ON	ON
Kenwood TS-480	73095000	ON	ON	ON	OFF	OFF	ON	OFF
Kenwood TS-50	73045000	ON	ON	ON	OFF	OFF	OFF	ON
Kenwood TS-930	44930000	ON	ON	ON	OFF	OFF	OFF	OFF
Kenwood TS-990	8248000	ON	ON	OFF	OFF	OFF	ON	ON
Ten-Tec Eagle 599	9001500	ON	ON	OFF	OFF	OFF	ON	OFF
Ten-Tec Omni VII	70004000	ON	ON	OFF	OFF	OFF	OFF	ON
Ten-Tec Orion I, II	9000000	ON	ON	OFF	OFF	OFF	OFF	OFF
Yaesu FT-100, 920	68985000	ON	OFF	ON	OFF	OFF	ON	ON
Yaesu FT-1000D	73620000	ON	OFF	ON	OFF	OFF	ON	OFF
Yaesu FT-1000MP, FT-890, 900	70455000	ON	OFF	ON	OFF	OFF	OFF	ON
Yaesu FT-450	67899000	ON	OFF	ON	OFF	OFF	OFF	OFF
Yaesu FT-757GX	47060000	ON	OFF	OFF	OFF	OFF	ON	ON
Yaesu FT-817, 857, 897	68330000	ON	OFF	OFF	OFF	OFF	ON	OFF
Yaesu FT-840	47055000	ON	OFF	OFF	OFF	OFF	OFF	ON
Yaesu FT-847	45705000	ON	OFF	OFF	OFF	OFF	OFF	OFF
Yaesu FT-950, 2000	69450000	OFF	ON	ON	OFF	OFF	ON	ON
Yaesu FT-990, FT-1000MP SUB RX	47210000	OFF	ON	ON	OFF	OFF	ON	OFF
Yaesu FT-DX1200	40455000	OFF	ON	ON	OFF	OFF	OFF	ON
Yaesu FT-DX5000	9000000	OFF	ON	ON	OFF	OFF	OFF	OFF
Бригантина	65128000	OFF	ON	OFF	OFF	OFF	ON	ON
P-399A	34785000	OFF	ON	OFF	OFF	OFF	ON	OFF
Homemade 10,7	10700000	OFF	ON	OFF	OFF	OFF	OFF	ON
Homemade PAL	8865000	OFF	ON	OFF	OFF	OFF	OFF	OFF

RX/TX with switchable IF

0V U1								
P-160П IF1-1	37800000	OFF	OFF	ON	OFF	OFF	ON	ON
Yaesu FT-736 50,144MHz	13690000	OFF	OFF	ON	OFF	OFF	ON	OFF
Icom IC-820, 821, 910, 9100, 970 MAIN 144	10850000	OFF	OFF	ON	OFF	OFF	OFF	ON
Icom IC-820, 821, 910, 970 SUB 144	10950000	OFF	OFF	ON	OFF	OFF	OFF	OFF
Kenwood TS-590 IF1-1	11374000	OFF	OFF	OFF	OFF	OFF	ON	ON
Kenwood TS-590 IF1-2	73095000	OFF	OFF	OFF	OFF	OFF	ON	OFF
Kenwood TS-2000 IF1-1	69085000	OFF	OFF	OFF	OFF	OFF	OFF	ON
Kenwood TS-2000 IF1-2	75925000	OFF	OFF	OFF	OFF	OFF	OFF	OFF
+3...+12V U1								
P-160П IF1-2	42800000	OFF	OFF	ON	OFF	OFF	ON	ON
Yaesu FT-736 430MHz	47430000	OFF	OFF	ON	OFF	OFF	ON	OFF
Icom IC-820, 821, 910, 9100, 970 MAIN 430	71250000	OFF	OFF	ON	OFF	OFF	OFF	ON
Icom IC-820, 821, 910, 970 SUB 430	71350000	OFF	OFF	ON	OFF	OFF	OFF	OFF
Kenwood TS-590 IF1-2	73095000	OFF	OFF	OFF	OFF	OFF	ON	ON
Kenwood TS-590 IF1-1	11374000	OFF	OFF	OFF	OFF	OFF	ON	OFF
Kenwood TS-2000 IF1-2	75925000	OFF	OFF	OFF	OFF	OFF	OFF	ON
Kenwood TS-2000 IF1-1	69085000	OFF	OFF	OFF	OFF	OFF	OFF	OFF

You may also use Pan@SDR as a self-contained SDR receiver to the fixed frequency that allows to receive stations in a 80 kHz band width (+/- 40 kHz from the central frequency). In that case it is necessary to connect a band-pass filter between the antenna and the RF input of the panadapter (50 Ohm). This filter attenuates frequency starting with a triple frequency and above by 50 dB or more. Central frequencies setting in Pan@SDR is carried out with S1-S7 switches. Received frequencies on broad and amateur SW bands depending on S1-S7 switches position are provided in tables 2-3.

Table 2, broadband frequency selection.

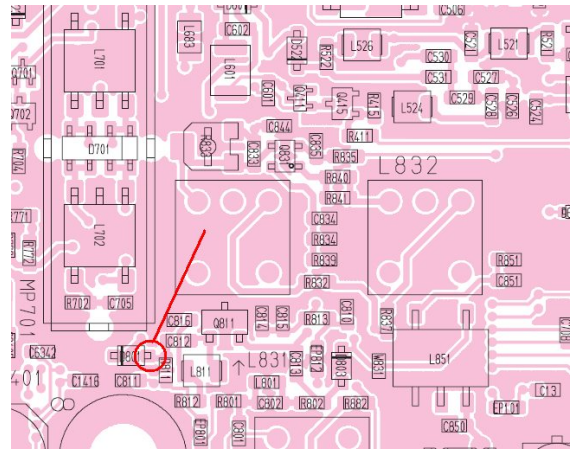
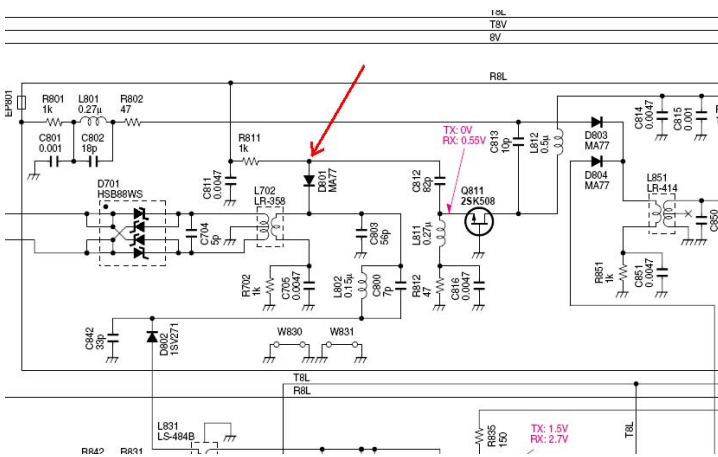
Band, m	Center frequency, Hz	S1	S2	S3	S4	S5	S6	S7
49	5990000	OFF	OFF	ON	ON	OFF	ON	ON
	6070000	OFF	OFF	ON	ON	OFF	ON	OFF
	6150000	OFF	OFF	ON	ON	OFF	OFF	ON
41	7240000	OFF	OFF	ON	ON	OFF	OFF	OFF
	7320000	OFF	OFF	OFF	ON	OFF	ON	ON
	7400000	OFF	OFF	OFF	ON	OFF	ON	OFF
31	9540000	OFF	OFF	OFF	ON	OFF	OFF	ON
	9620000	OFF	OFF	OFF	ON	OFF	OFF	OFF
	9700000	ON	ON	ON	OFF	ON	ON	ON
	9780000	ON	ON	ON	OFF	ON	ON	OFF
25	9860000	ON	ON	ON	OFF	ON	OFF	ON
	11640000	ON	ON	ON	OFF	ON	OFF	OFF
	11720000	ON	ON	OFF	OFF	ON	ON	ON
	11800000	ON	ON	OFF	OFF	ON	ON	OFF
	11880000	ON	ON	OFF	OFF	ON	OFF	ON
19	11960000	ON	ON	OFF	OFF	ON	OFF	OFF
	15140000	ON	OFF	ON	OFF	ON	ON	ON
	15220000	ON	OFF	ON	OFF	ON	ON	OFF
	15300000	ON	OFF	ON	OFF	ON	OFF	ON
16	15380000	ON	OFF	ON	OFF	ON	OFF	OFF
	17590000	ON	OFF	OFF	OFF	ON	ON	ON
	17670000	ON	OFF	OFF	OFF	ON	ON	OFF
	17750000	ON	OFF	OFF	OFF	ON	OFF	ON
11, CB	17830000	ON	OFF	OFF	OFF	ON	OFF	OFF
	27130000	OFF	ON	ON	OFF	ON	ON	ON

Table 3, amateur band frequency selection..

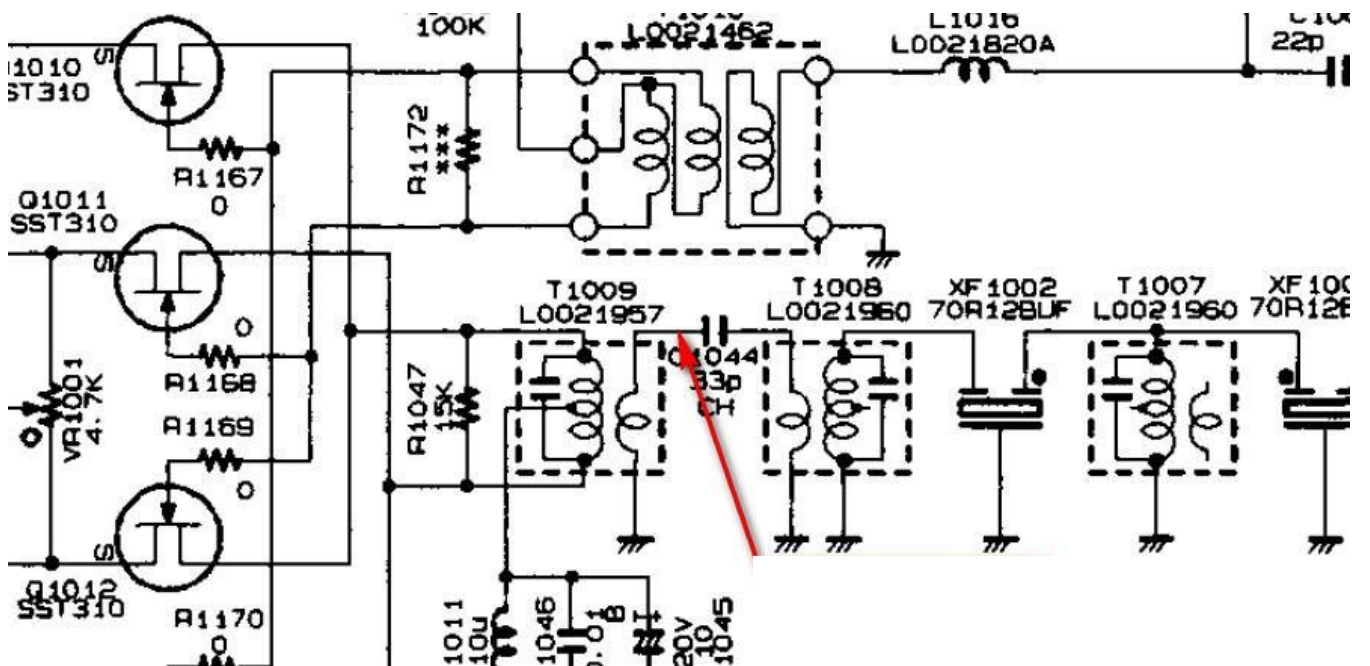
Band, m	Center frequency, Hz	S1	S2	S3	S4	S5	S6	S7
55	5360000	ON	ON	ON	ON	ON	ON	ON
40	7020000	ON	ON	ON	ON	ON	ON	OFF
	7040000	ON	ON	ON	ON	ON	OFF	ON
	7060000	ON	ON	ON	ON	ON	OFF	OFF
	7100000	ON	ON	OFF	ON	ON	ON	ON
	7140000	ON	ON	OFF	ON	ON	ON	OFF
	7180000	ON	ON	OFF	ON	ON	OFF	ON
30	10120000	ON	ON	OFF	ON	ON	OFF	OFF
20	14020000	ON	OFF	ON	ON	ON	ON	ON
	14040000	ON	OFF	ON	ON	ON	ON	OFF
	14060000	ON	OFF	ON	ON	ON	OFF	ON
	14100000	ON	OFF	ON	ON	ON	OFF	OFF
	14140000	ON	OFF	OFF	ON	ON	ON	ON
	14180000	ON	OFF	OFF	ON	ON	ON	OFF
	14220000	ON	OFF	OFF	ON	ON	OFF	ON
	14260000	ON	OFF	OFF	ON	ON	OFF	OFF
	14300000	OFF	ON	ON	ON	ON	ON	ON
14330000	OFF	ON	ON	ON	ON	ON	OFF	
17	18020000	OFF	ON	ON	ON	ON	OFF	ON
	18040000	OFF	ON	ON	ON	ON	OFF	OFF
15	21020000	OFF	ON	OFF	ON	ON	ON	ON
	21040000	OFF	ON	OFF	ON	ON	ON	OFF
	21060000	OFF	ON	OFF	ON	ON	OFF	ON
	21100000	OFF	ON	OFF	ON	ON	OFF	OFF
	21140000	OFF	OFF	ON	ON	ON	ON	ON
	21180000	OFF	OFF	ON	ON	ON	ON	OFF
	21220000	OFF	OFF	ON	ON	ON	OFF	ON
	21260000	OFF	OFF	ON	ON	ON	OFF	OFF
	21300000	OFF	OFF	OFF	ON	ON	ON	ON
	21340000	OFF	OFF	OFF	ON	ON	ON	OFF
	21380000	OFF	OFF	OFF	ON	ON	OFF	ON
21420000	OFF	OFF	OFF	ON	ON	OFF	OFF	
12	24910000	ON	ON	ON	ON	OFF	ON	ON
	24940000	ON	ON	ON	ON	OFF	ON	OFF
	24970000	ON	ON	ON	ON	OFF	OFF	ON
10	28020000	ON	ON	ON	ON	OFF	OFF	OFF
	28040000	ON	ON	OFF	ON	OFF	ON	ON
	28080000	ON	ON	OFF	ON	OFF	ON	OFF
	28120000	ON	ON	OFF	ON	OFF	OFF	ON
	28160000	ON	ON	OFF	ON	OFF	OFF	OFF
	28200000	ON	OFF	ON	ON	OFF	ON	ON
	28250000	ON	OFF	ON	ON	OFF	ON	OFF
	28300000	ON	OFF	ON	ON	OFF	OFF	ON
	28350000	ON	OFF	ON	ON	OFF	OFF	OFF
	28400000	ON	OFF	OFF	ON	OFF	ON	ON
	28450000	ON	OFF	OFF	ON	OFF	ON	OFF
28500000	ON	OFF	OFF	ON	OFF	OFF	ON	
6	50030000	ON	OFF	OFF	ON	OFF	OFF	OFF
	50060000	OFF	ON	ON	ON	OFF	ON	ON
	50100000	OFF	ON	ON	ON	OFF	ON	OFF
	50120000	OFF	ON	ON	ON	OFF	OFF	ON
	50140000	OFF	ON	ON	ON	OFF	OFF	OFF
	50160000	OFF	ON	OFF	ON	OFF	ON	ON
	50200000	OFF	ON	OFF	ON	OFF	ON	OFF
	50230000	OFF	ON	OFF	ON	OFF	OFF	ON
50260000	OFF	ON	OFF	ON	OFF	OFF	OFF	

Transceiver Connection Examples

IC-703



FT-1000MP



TS-2000, SW-band

The RF input of the panadapter is connected to the CN6 process connector, see Fig. 1 and 2.

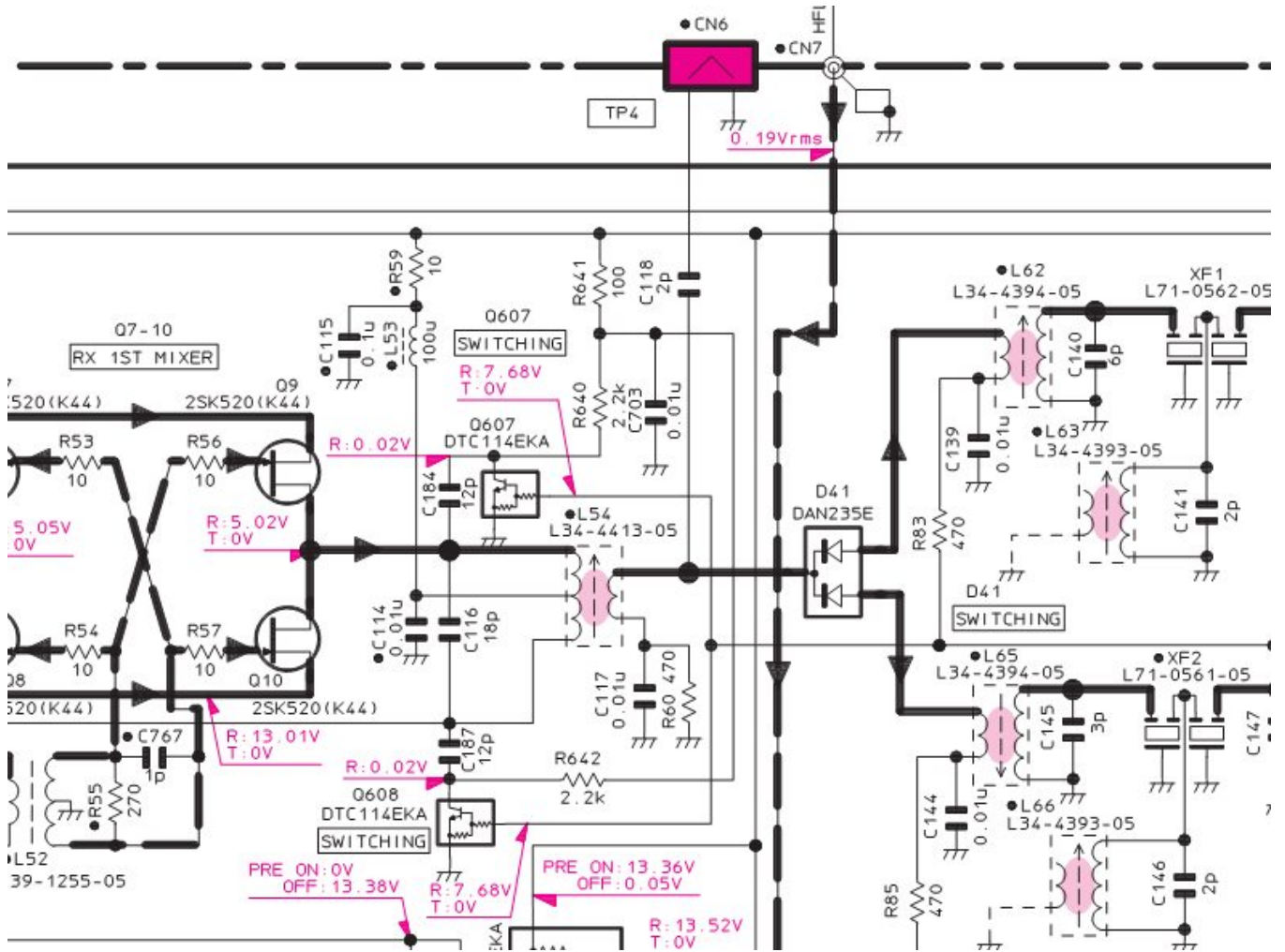


Fig. 1. Fragment of the TS-2000 circuit

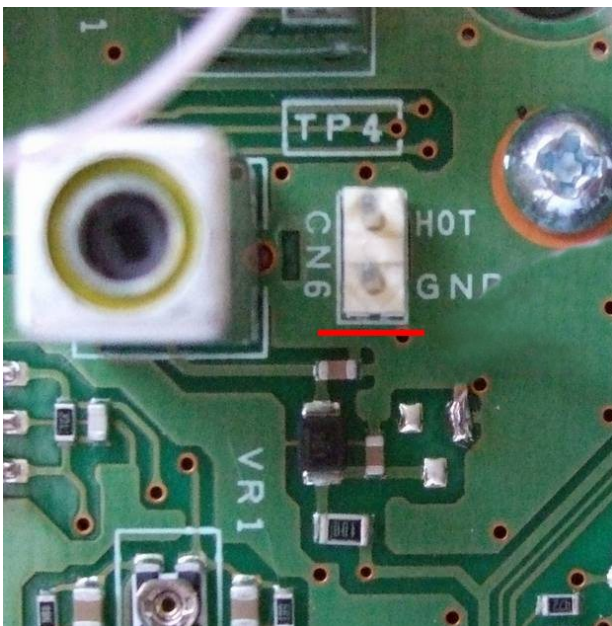


Fig. 2. CN6 connector

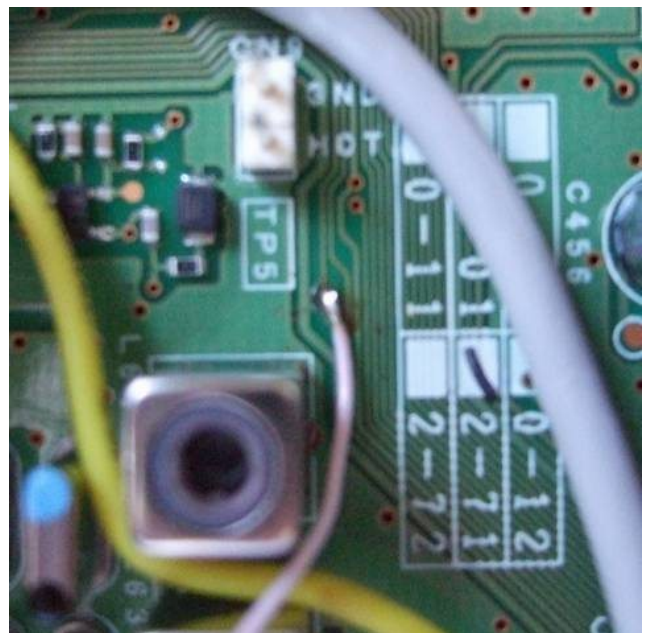


Fig. 3. The signal IF A / IF B to the input U1 of the panadapter