- PMSDR -

Software Defined Radio

16/10/2009

User Guide

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1. Introduction - Assembly Overview
2. First Step Installation
3. Setup Guide to use the PMSDR with WinRad

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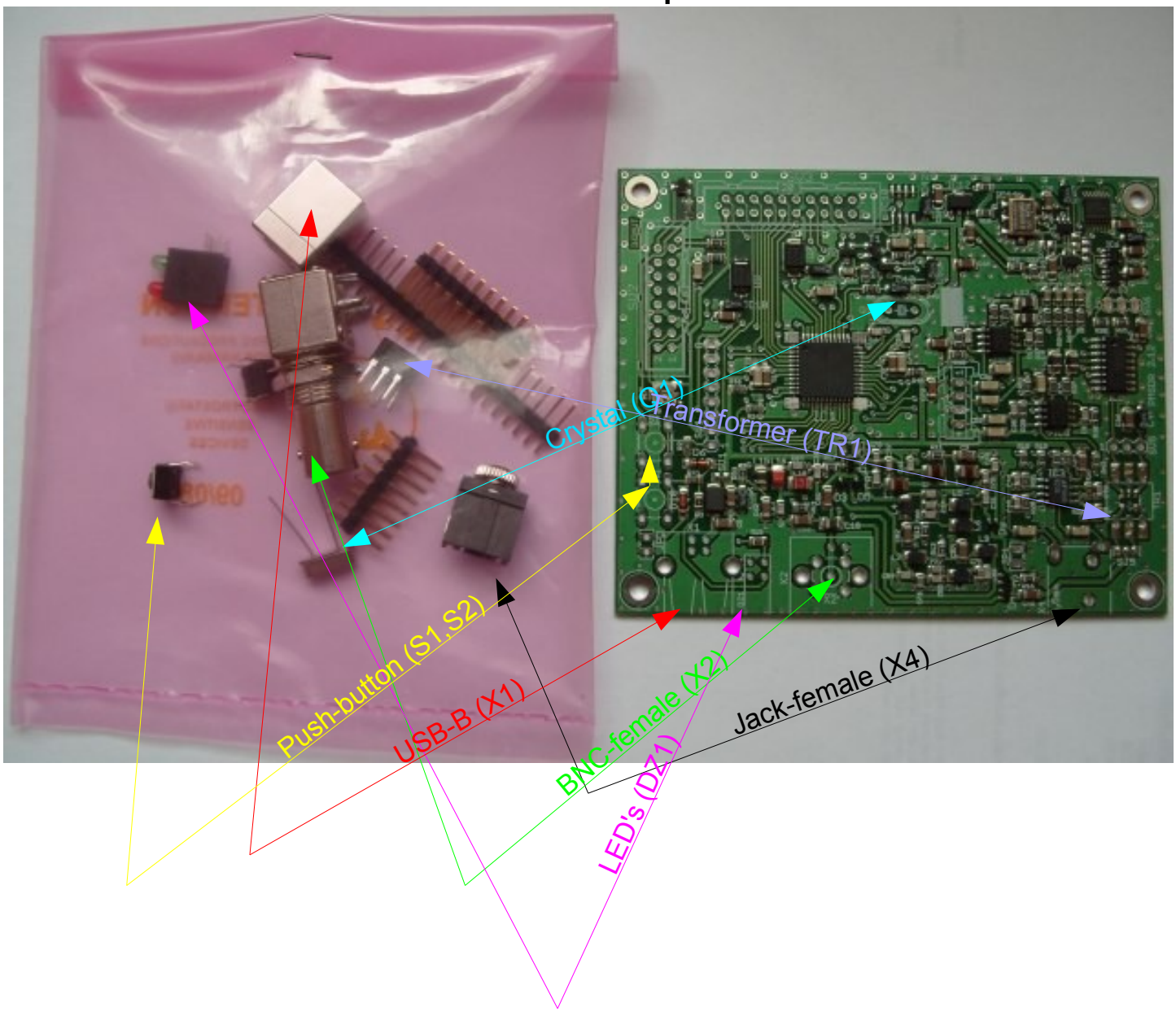
1. Assebmly overview

- PMSDR Kit parts -



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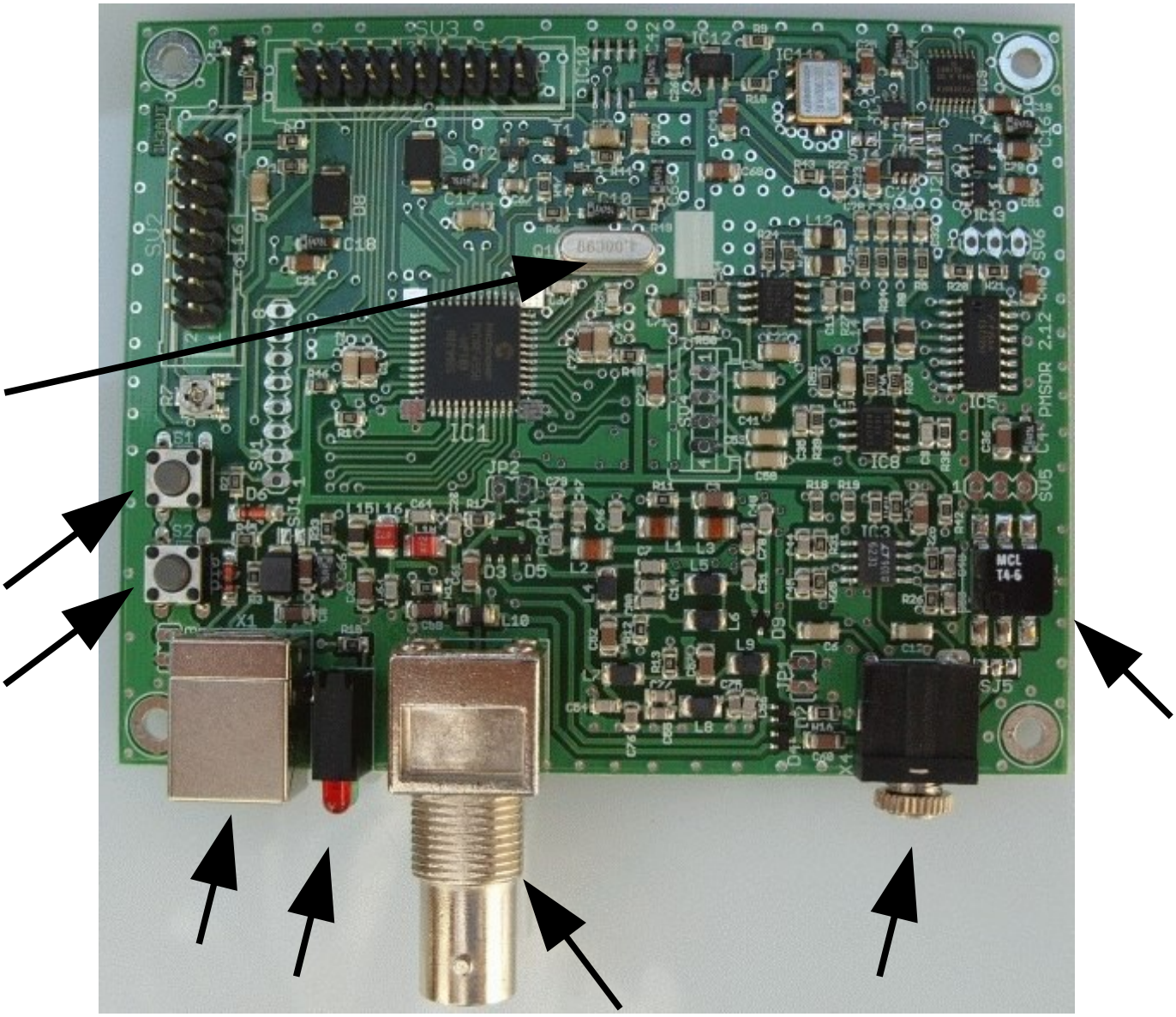
Assembled board overview 1



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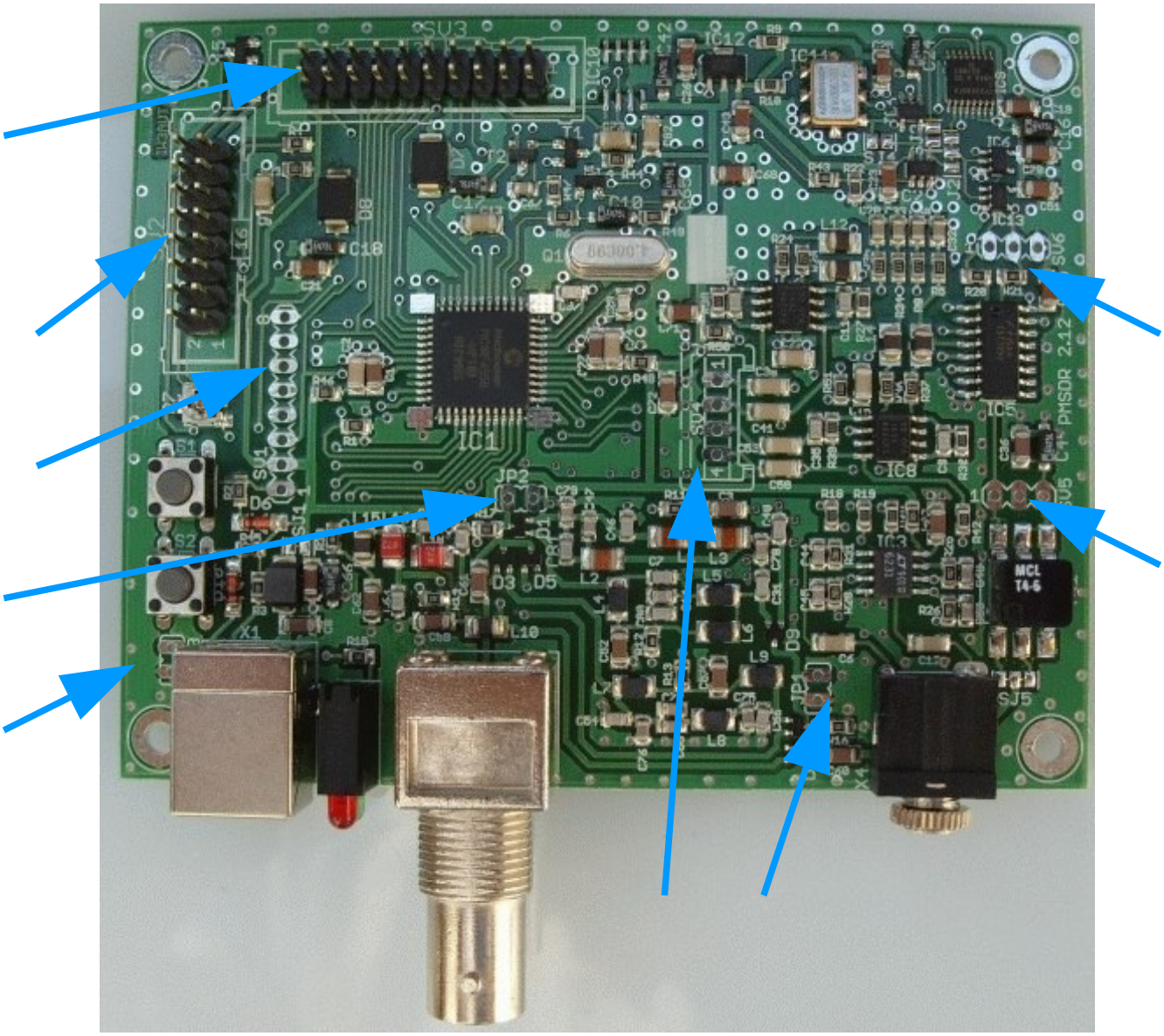
Assembled board overview, options pin header



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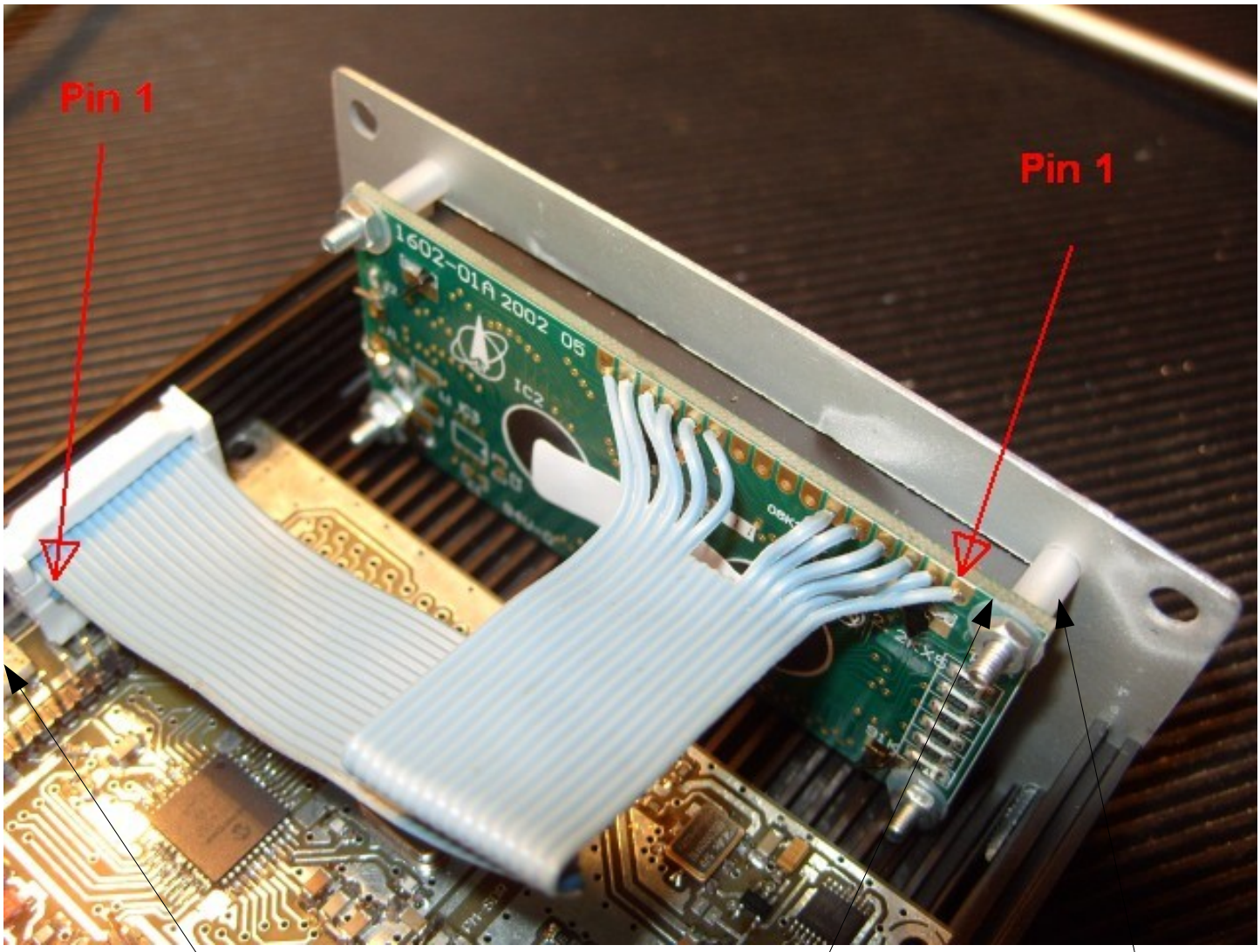
LCD option assembly overview



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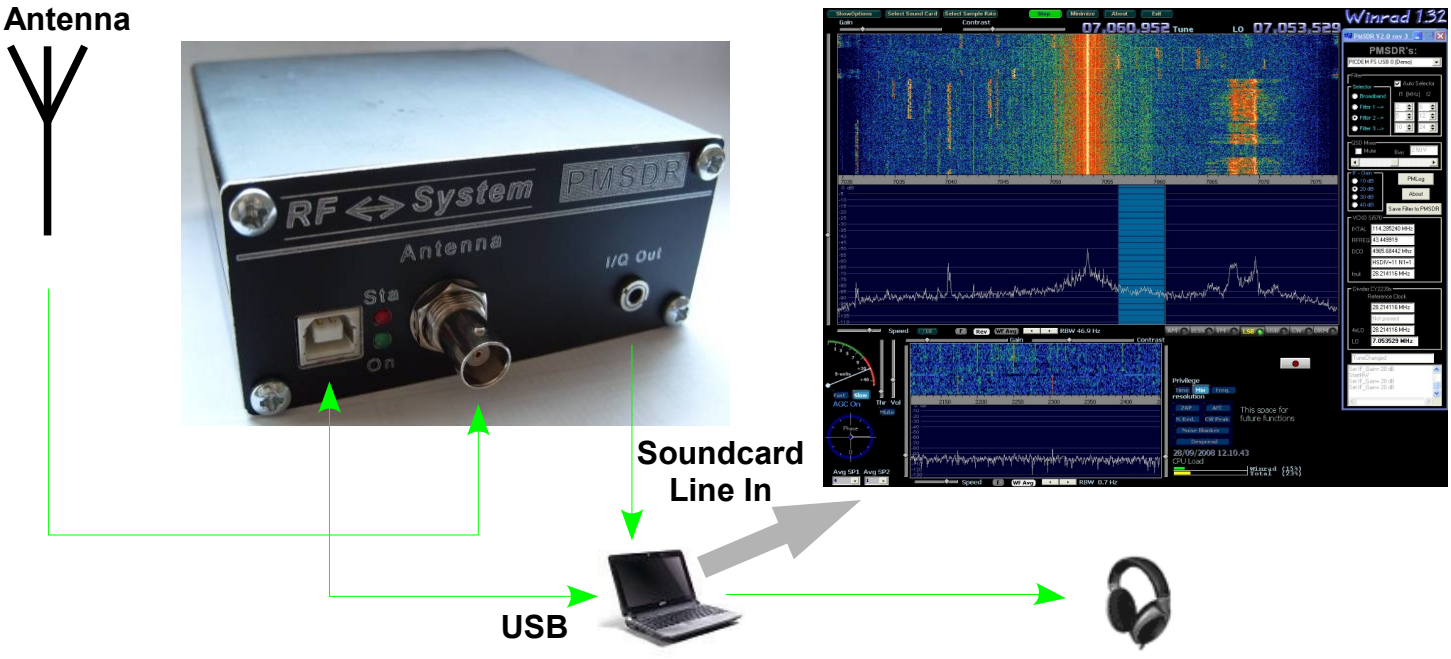
Minimal PC/System required features:

AMD Athlon / Pentium4 1.4 Ghz
256 Mbyte RAM
USB1.0 or USB2.0
Soundcard with Stereo Line-Input
Video resolution: 1024x768
OS: Windows XP or VISTA



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Brief overview of installation:

Installation requires a USB (Type A to Type B) cable and a stereo audio cable with 3.5 mm plugs on both ends.

Step 1: Installation of driver software. This is initiated by connecting the PMSDR to a USB port on the computer, and should be automatic or nearly so (see Slides 7 and 8). Check for proper installation in Device Manager under „Custom USB Devices“ for „Microchip Custom USB Device,“ which should be operating properly (see Slide 11).

Step 2: Installation of viewing SDR-software (see Slide 12, which addresses specifically WinRad Ver. 1.32). Versions of WinRad are available on Google (q.v.). Normally, Windows will install WinRad to the directory

„ C:\Program Files\WinRad.“

and you may wish to install a *shortcut* to the software on the desktop. Please note that additional software must be added ***to this installation directory***.

Step 3: Addition of dll and other files to the installation directory. You can find the latest version here: http://www.iw3aut.altervista.org/downloads.htm

Step 4: Launching of the viewing software (see Slides 12-20) and selection of the PMSDR.

Step 5: Choice of sampling rate (determines bandwidth), frequency, mode, and other details is made from the drop-down menus in the viewing software or using the menus on the dll (see Slides 13, 21 - 23).

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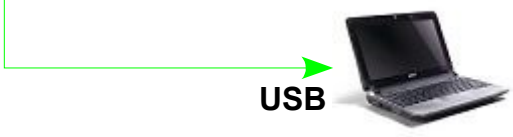
2. First Step Installation

- Connect the PMSDR to the PC with a USB cable

After you have connected the PMSDR and your PC with a USB-Cable, the green LED will be „ON“ to show that the PMSDR is powered.



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2. First Step Installation

- Detect the USB Device

After you have connected the PMSDR to your PC with the USB-Cable, Windows will play the classic „ding dong“ sound (USB device detected).

USB

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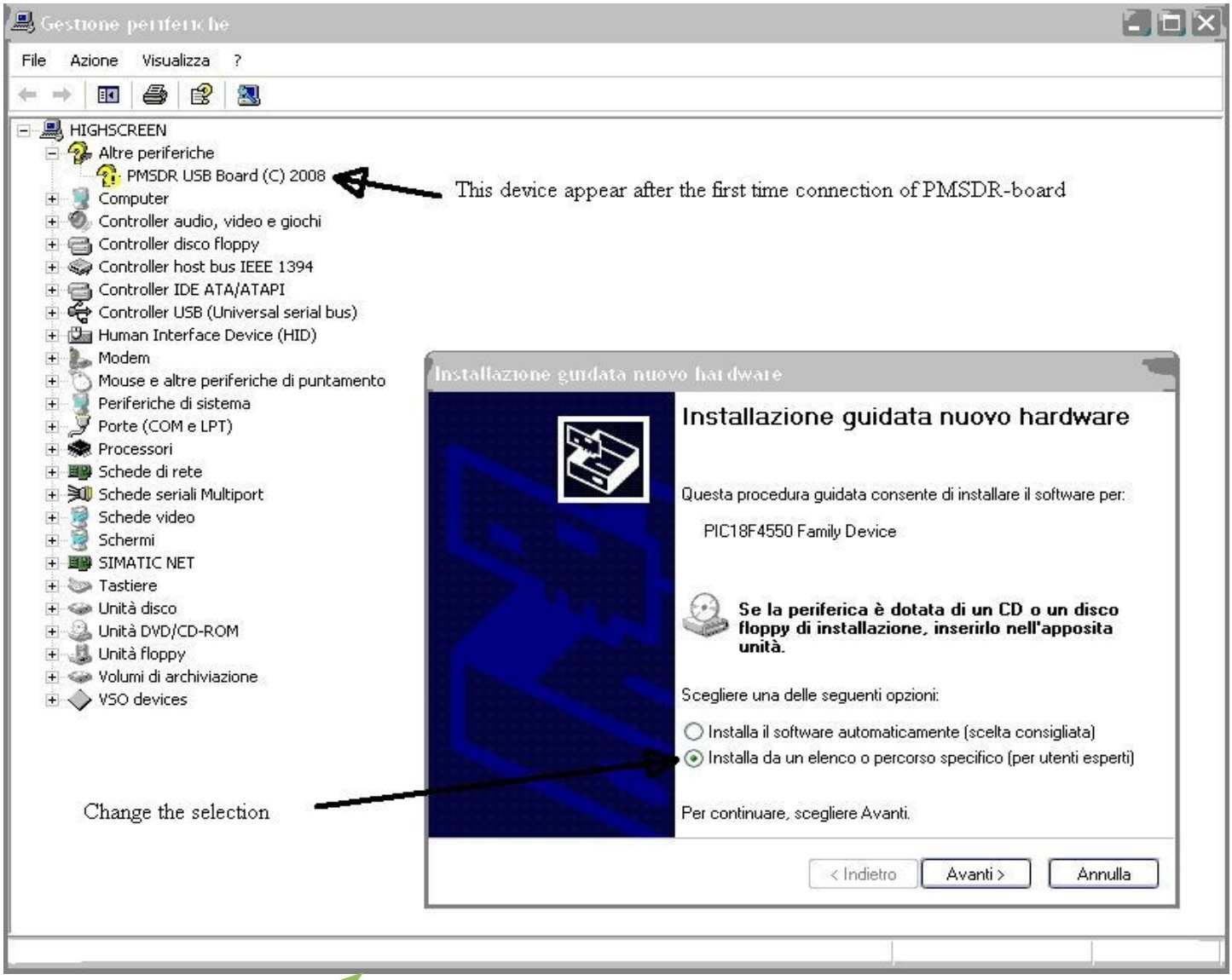
2. First Step Installation

- New hardware was detected; install the Microchip-USB Driver
- Get the USB-Drivers here:
http://www.iw3aut.altervista.org/files/MCHPUSB_Driver.zip
- Copy the content of this Zip-Archive to your local drive (C:)



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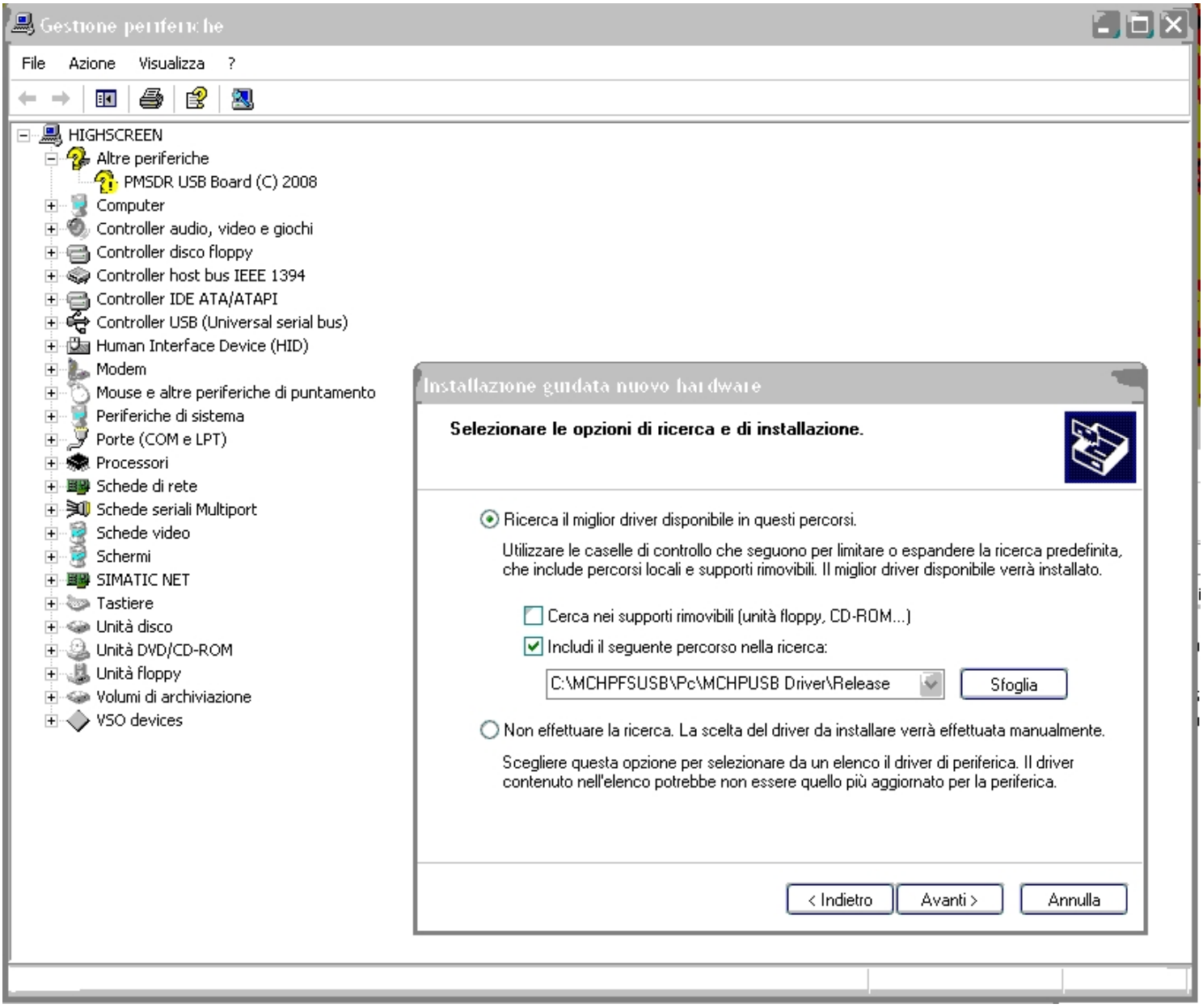
2. First Step Installation

- Choose the path where drivers are installed in previous step:



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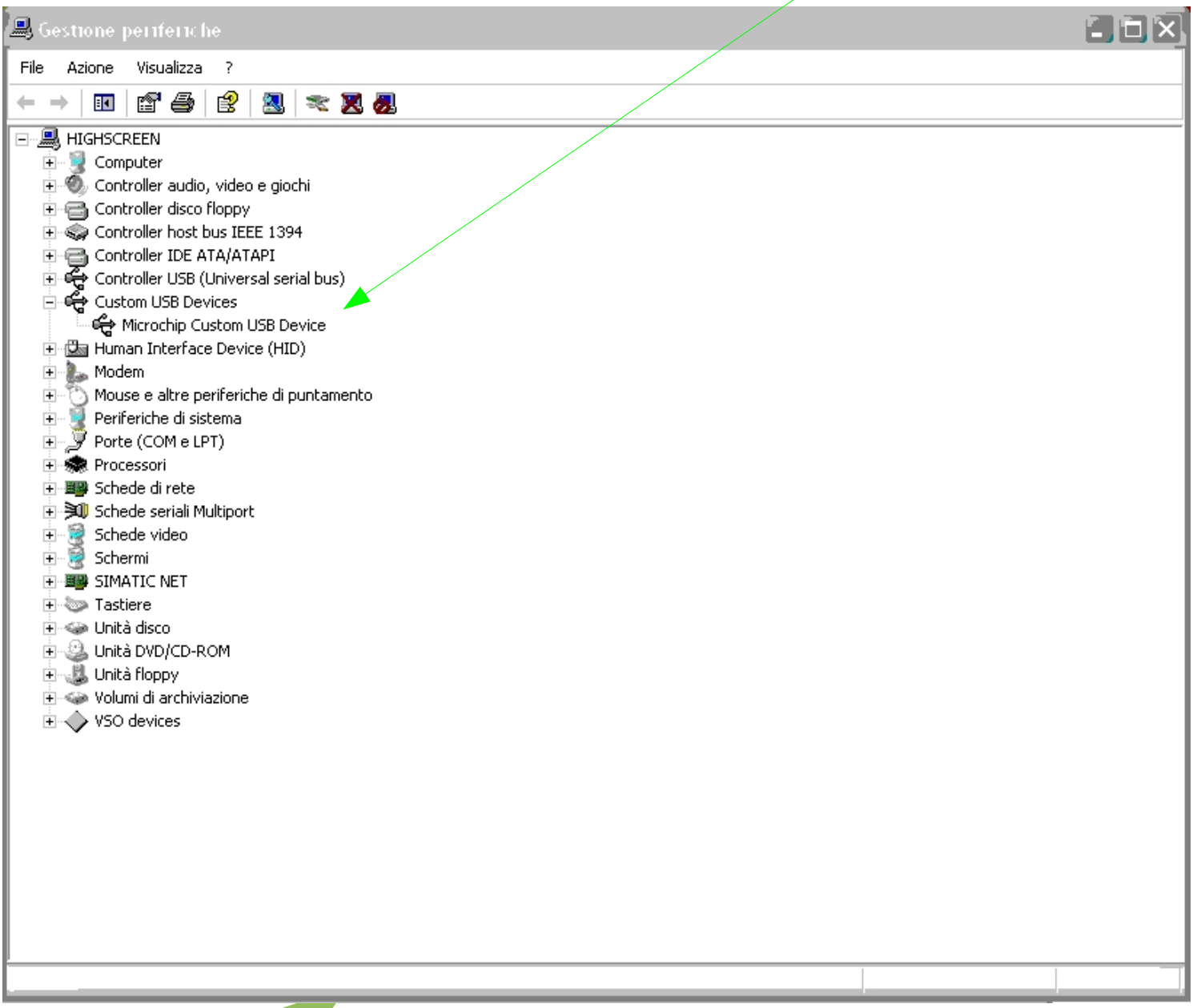
2. First Step Installation

- If the driver installed correctly, you will see a „Microchip Custom USB Device“ in Device Manager, and the PMSDR will be ready to use:



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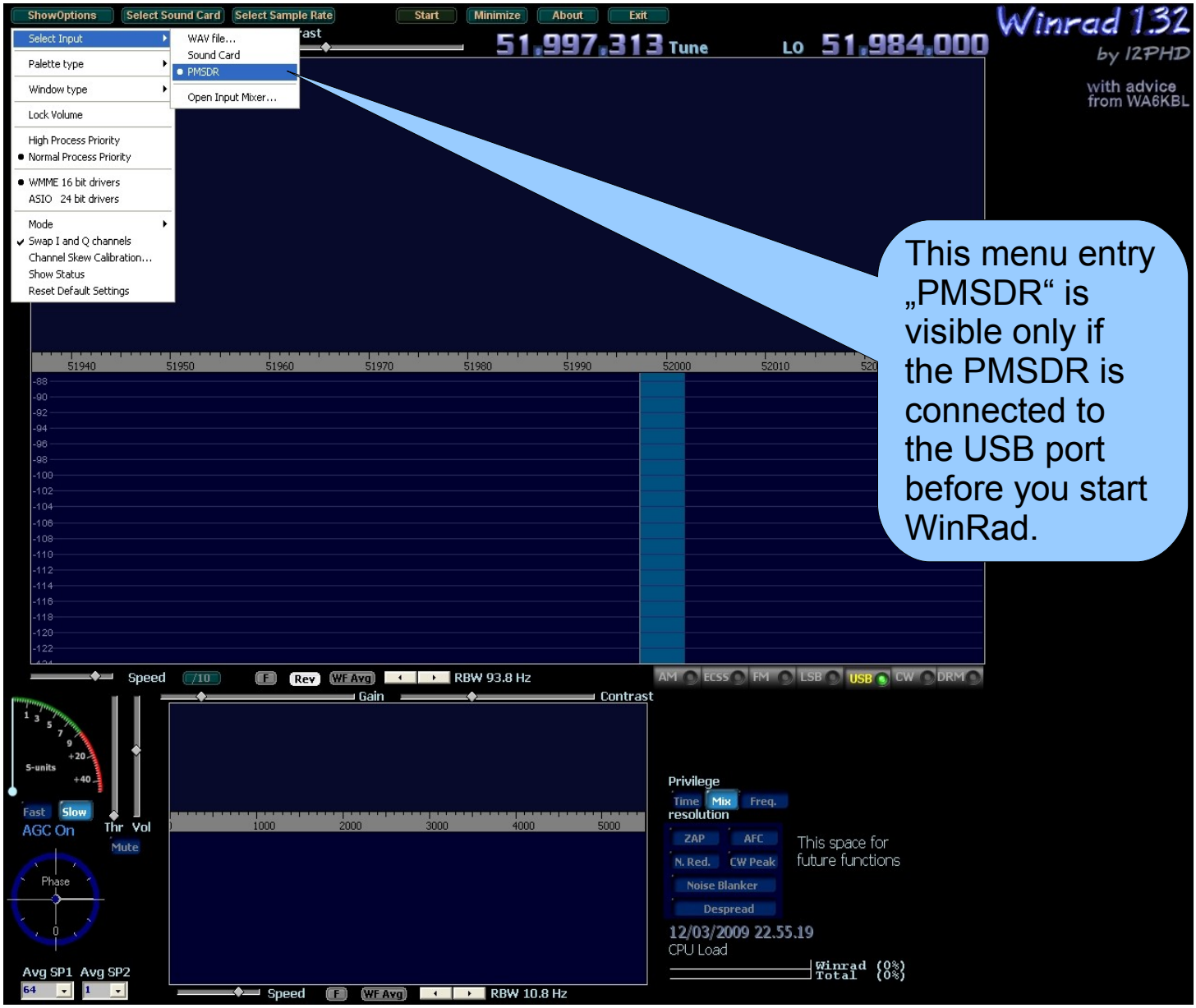
Setup Guide for WinRad & PMSDR

1. Start WinRad and select the Input Device „PMSDR“:



Setup Guide for WinRad & PMSDR

2. The Control panel for the „PMSDR“ will now appear:

Setup Guide for WinRad & PMSDR

3. Select the appropriate Sound Card input to which the PMSDR is connected:

Setup Guide for WinRad & PMSDR

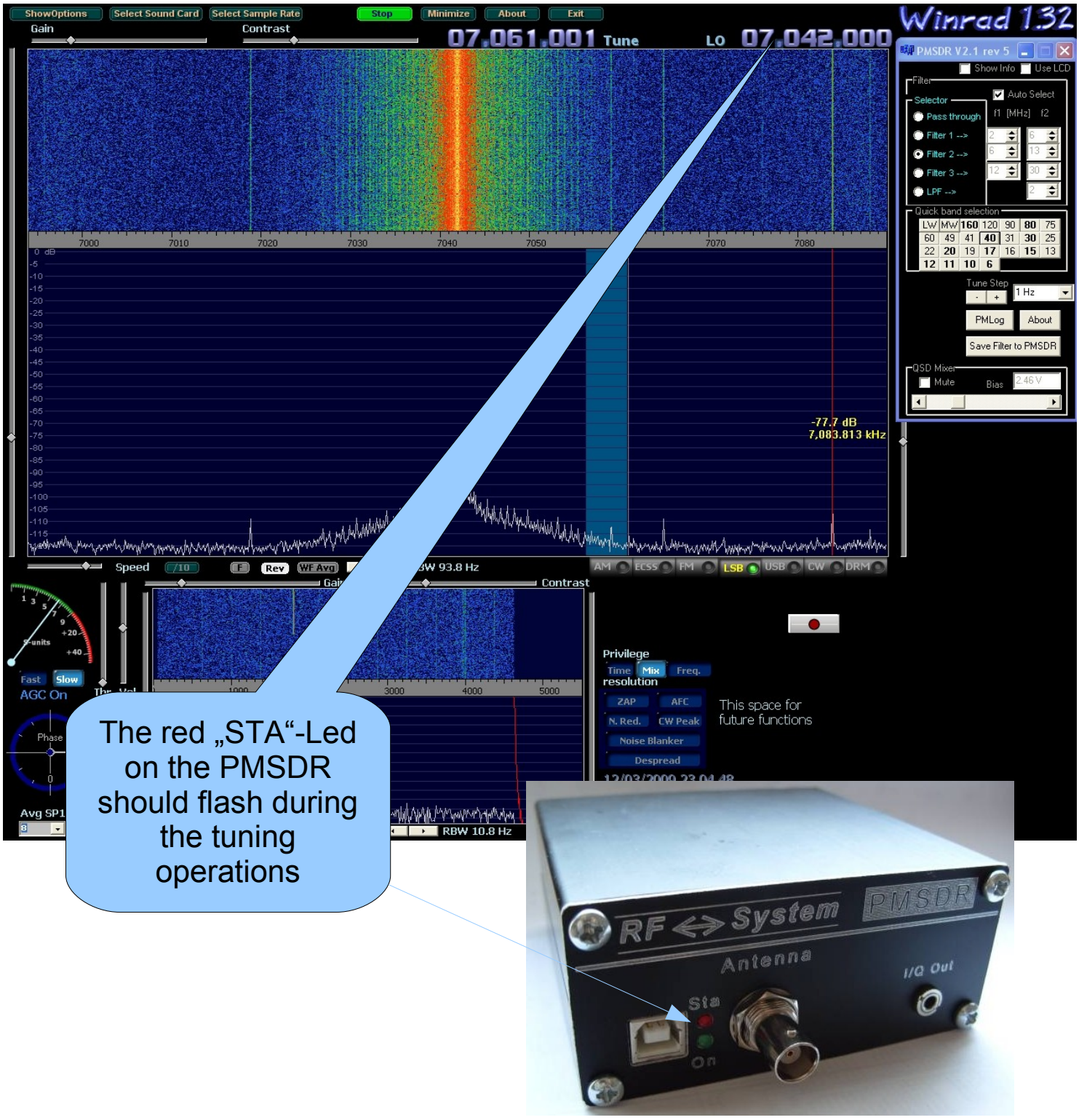
4. Select the sample rate for your Sound Card:

Setup Guide for WinRad & PMSDR

5. Select the input mode for your Sound Card:

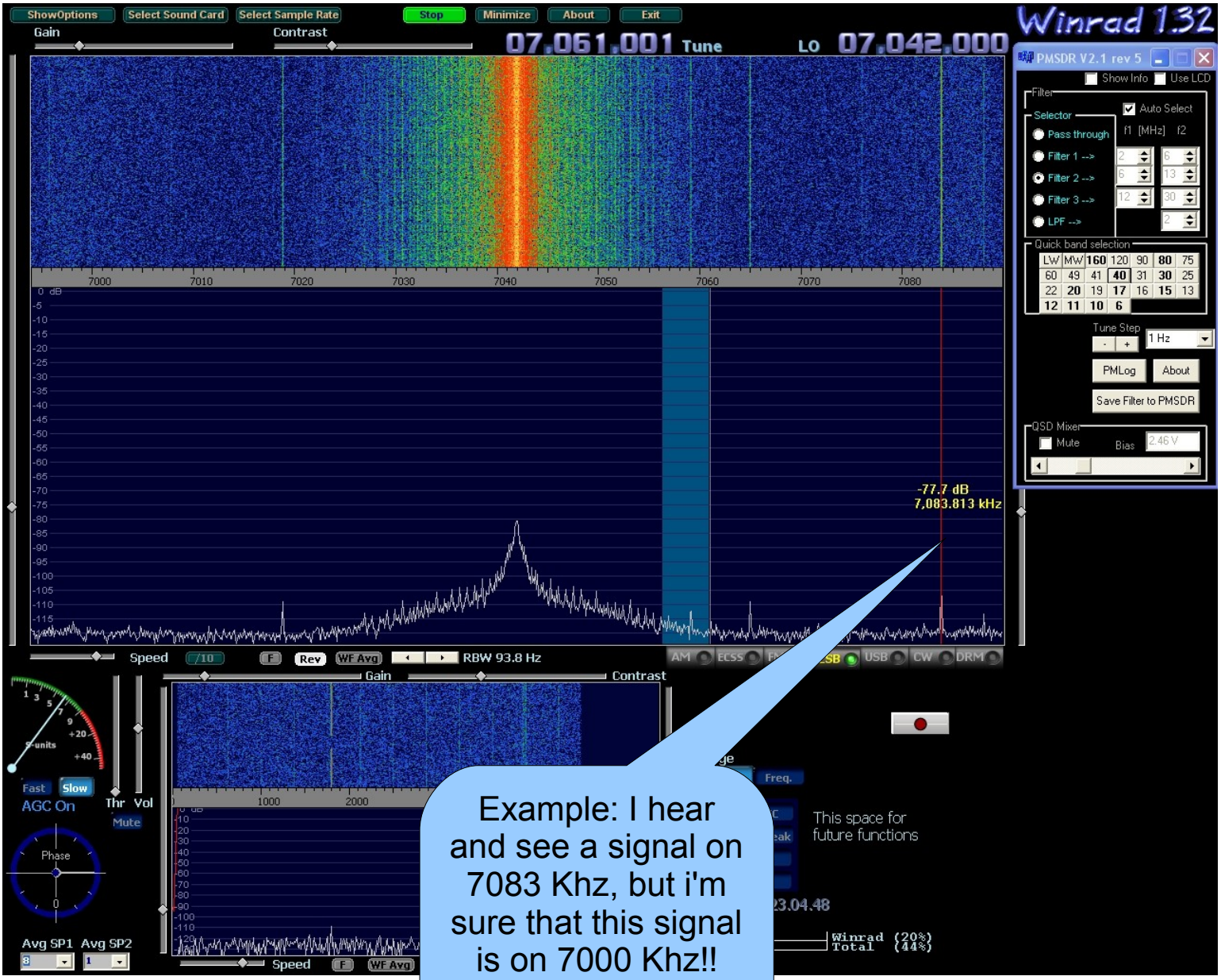
Setup Guide for WinRad & PMSDR

6. Check to see that the displayed frequency is correct:



Setup Guide for WinRad & PMSDR

6. Check to see that the displayed frequency on the spectrum is correct:



Example: I hear and see a signal on 7083 Khz, but i'm sure that this signal is on 7000 Khz!! Therefore, i need to „swap“ the spectrum around the center.

Setup Guide for WinRad & PMSDR

7. Swap the spectrum:

Setup Guide for WinRad & PMSDR

8. The spectrum now displays the correct frequency:

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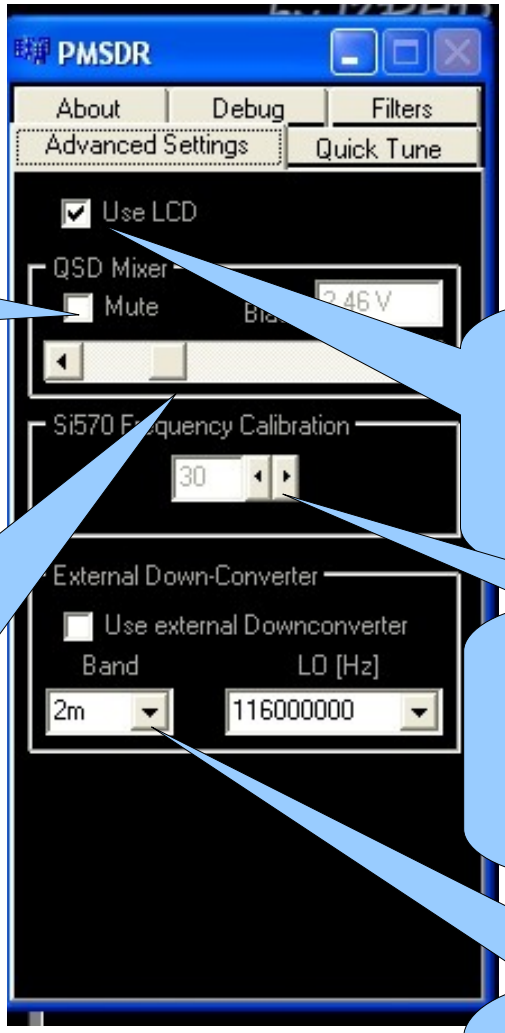
9. Details about the control panel for the „PMSDR“:



„Mute“: Disable the QSD-Mixer

„Use LCD“: Check to display in real-time the tuned frequency on the LCD-Display

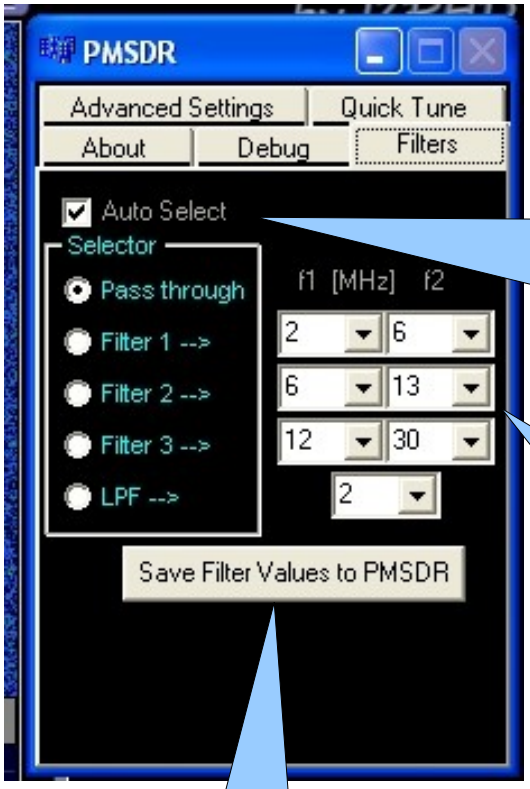
„Bias“-Slider: Change the the QSD-Bias voltage. This is only useful to optimize the noise figure above 30 Mhz. This control can be used also as a simple attenuator

„Frequency Calibration“: To calibrate the Si570 reference oscillator

„External Downconverter“: To use if you use with the PMSDR an external downconverter

Setup Guide for WinRad & PMSDR

10. Details about the Control panel for the „PMSDR“:



„Auto Selector“: Check to automatically select the input preselection filter

„F1 - F2“: These boxes are to enter the filter data (ONLY if you modify the on-board filters!)

„Save Filter to PMSDR“: Save the modified filter data to the PMSDR. The filter data will be retrieved from the PMSDR.

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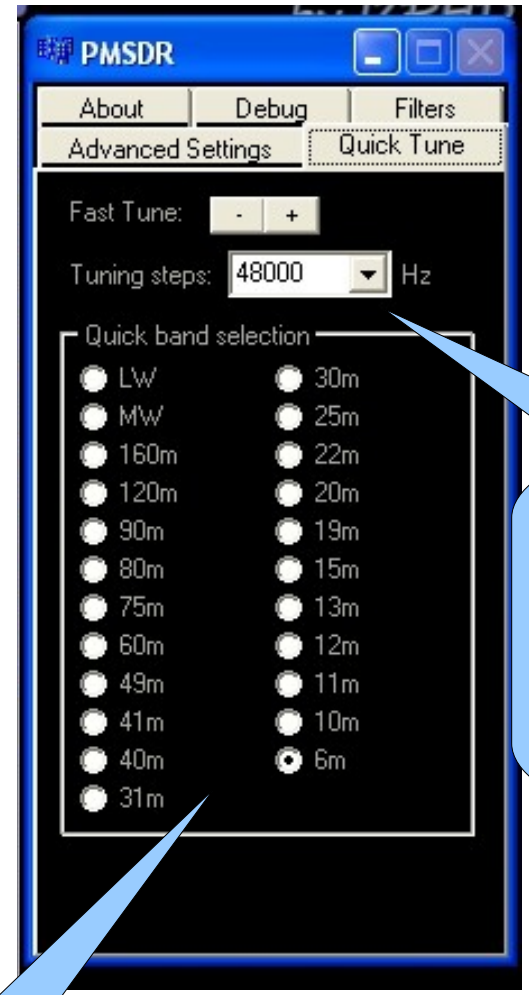
11. Details about the Control panel for the „PMSDR“:



„Tune Step“: Tune with predefined tuning steps, selectable in the drop-down box „Tuning steps“

„Quick band selection“: You can quickly select your prefered band (entries are defined in extio_pmsdr.ini)