

# TitanSDR Receiver

Installation Manual  
v.2.0e



Enablia S.r.l. (Italy) 2014

Before using the receiver, read carefully this Manual.

**Correct Disposal of This Product  
(Waste Electrical & Electronic Equipment)**



The symbol of the crossed out wheelie bin indicates that in the European Union this product, and all items marked with this symbol, can not be disposed of as unsorted waste but must be disposed of separately at the end of their useful life.

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# 1. Overview

## Package contents

The package contains the following items:

- TitanSDR receiver
- 6V linear AC/DC power adapter
- USB cable
- Installation CD-ROM
- USB Dongle
- Installation Manual

## Receiver panels

The front panel has an indicator green led: the led turns on when the receiver is switched on (Figure 1).



**Figure 1**

The rear panel (Figure 2) includes :

1. USB 2.0 port
2. Power input socket
3. On/off switch
4. SMA IF input (IF-IN)
5. BNC antenna input (ANT. IN)



**Figure 2**

The bottom panel includes the cooling fan opening (Figure 3).



**Figure 3**

## AC/DC Adapter

For best performance and safety, please use only the provided 6V linear AC/DC power adapter (Figure 4).



**Figure 4**

When the adapter is turned on by the on/off switch, the front red led turns on.

## 2. System Requirements

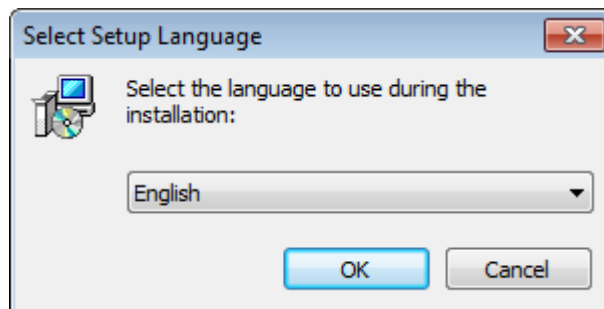
Before installing the receiver, ensure that your system meets the following requirements.

- CPU Dual Core 2.5 GHz or equivalent (for TitanSDR)  
Intel Core i5 or equivalent (for TitanSDR-Pro)
- 2GB RAM
- 150 MB of free hard disk space for software installation (extra space is required for recording of wideband and narrowband channels)
- Network Interface Card
- 1 spare USB2.0 Hi-Speed port
- Sound card
- 1024 x 768 minimum resolution video card and monitor
- Windows Operating System (Seven, XP, Vista)

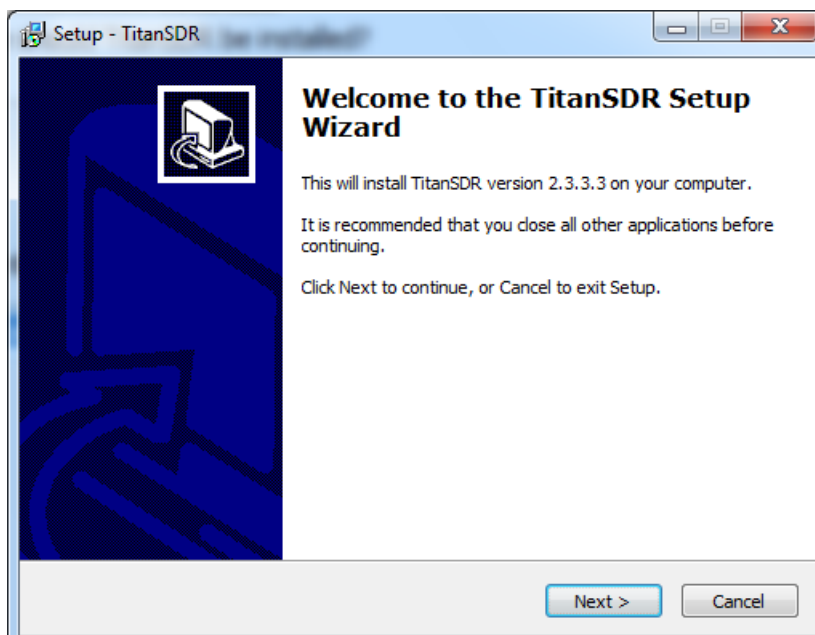
### 3. Installation on Windows 7

Please follow the steps below leaving the receiver disconnected from the PC, unless otherwise specified (i.e. connect it only when requested). The following installation procedure applies to all versions of TitanSDR.

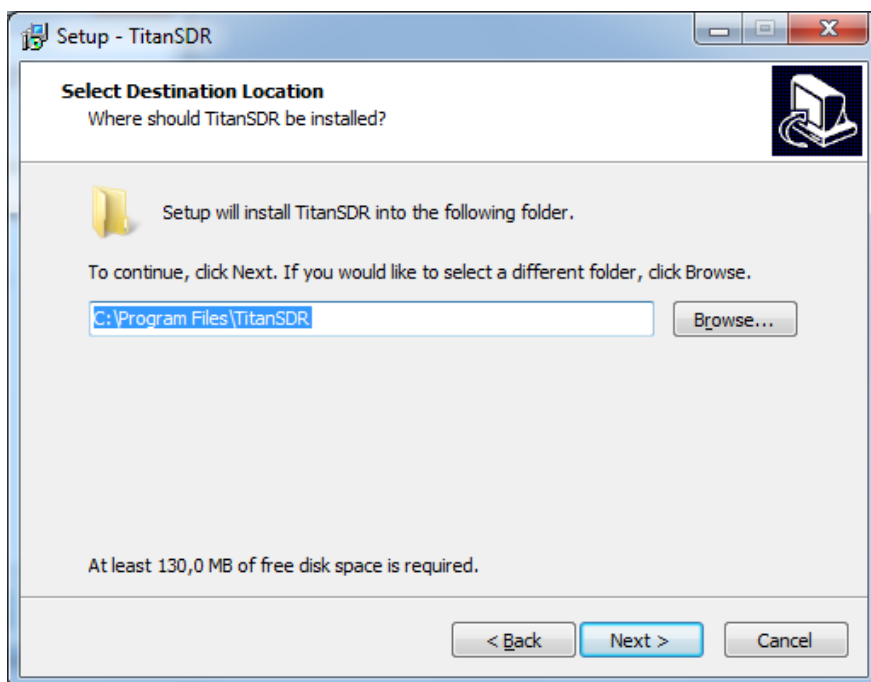
1. Insert the installation CD-ROM in your drive and double-click on X:\TitanSDR\_x.y.z\_Setup.exe (where “X” is the letter representing your CD-ROM drive and “x.y.z” is the setup version).
2. Select the Setup Language and click “OK”.



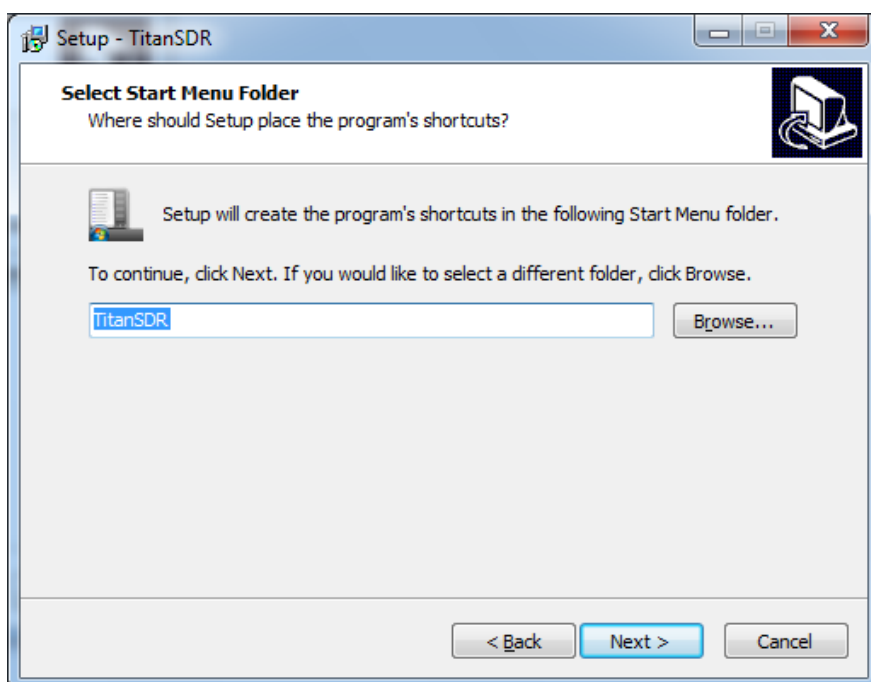
3. Click “Next” to continue



4. Confirm the proposed installation folder (for example, C:\Program Files\TitanSDR if “C:” is your main drive) by clicking “Next”.

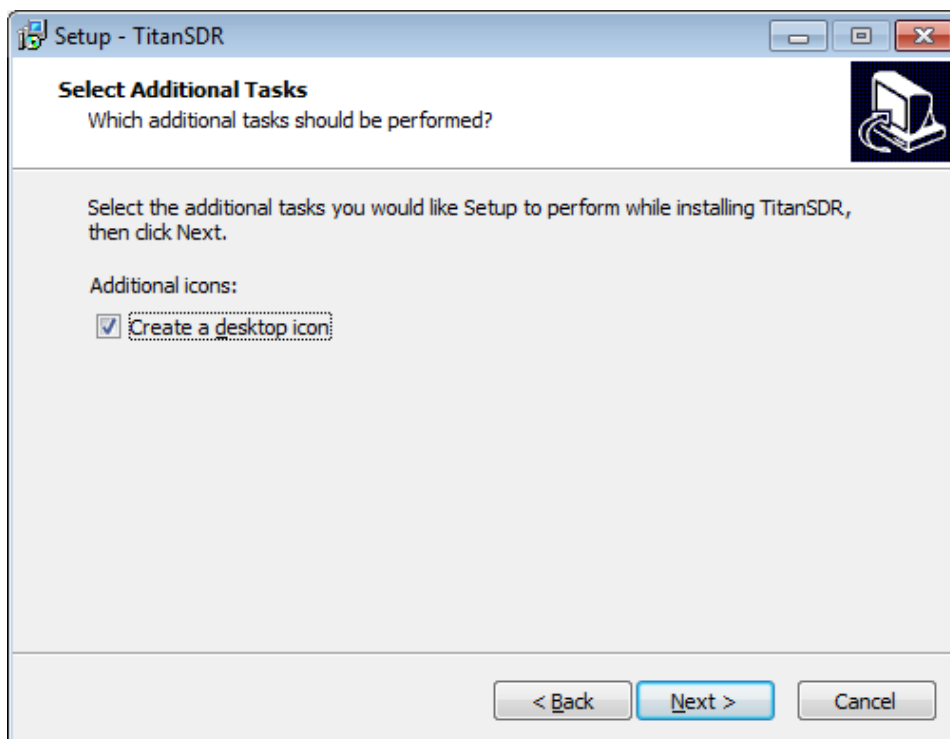


5. Confirm the default shortcuts folder name by clicking “Next”.

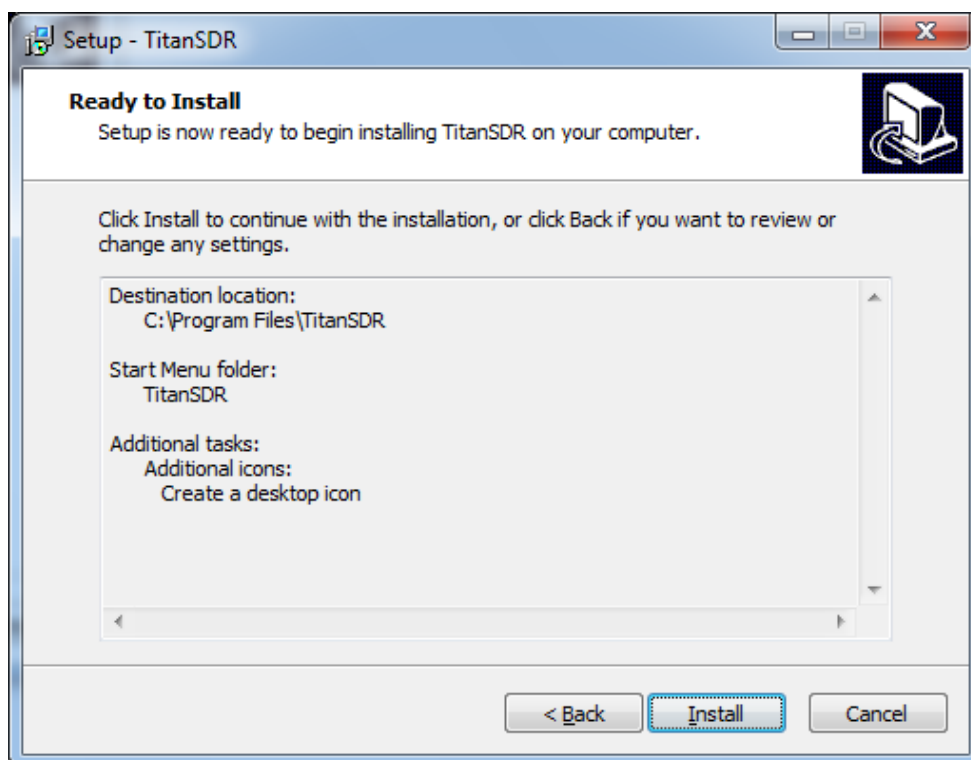




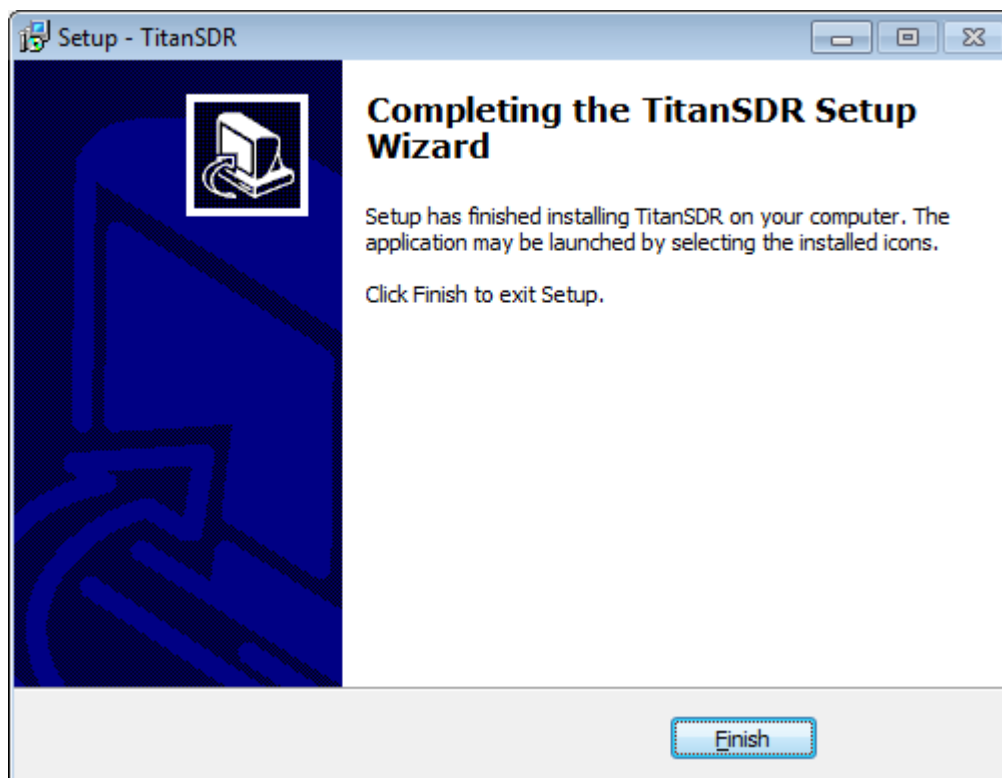
6. Check “Create a desktop icon” and click “Next”.



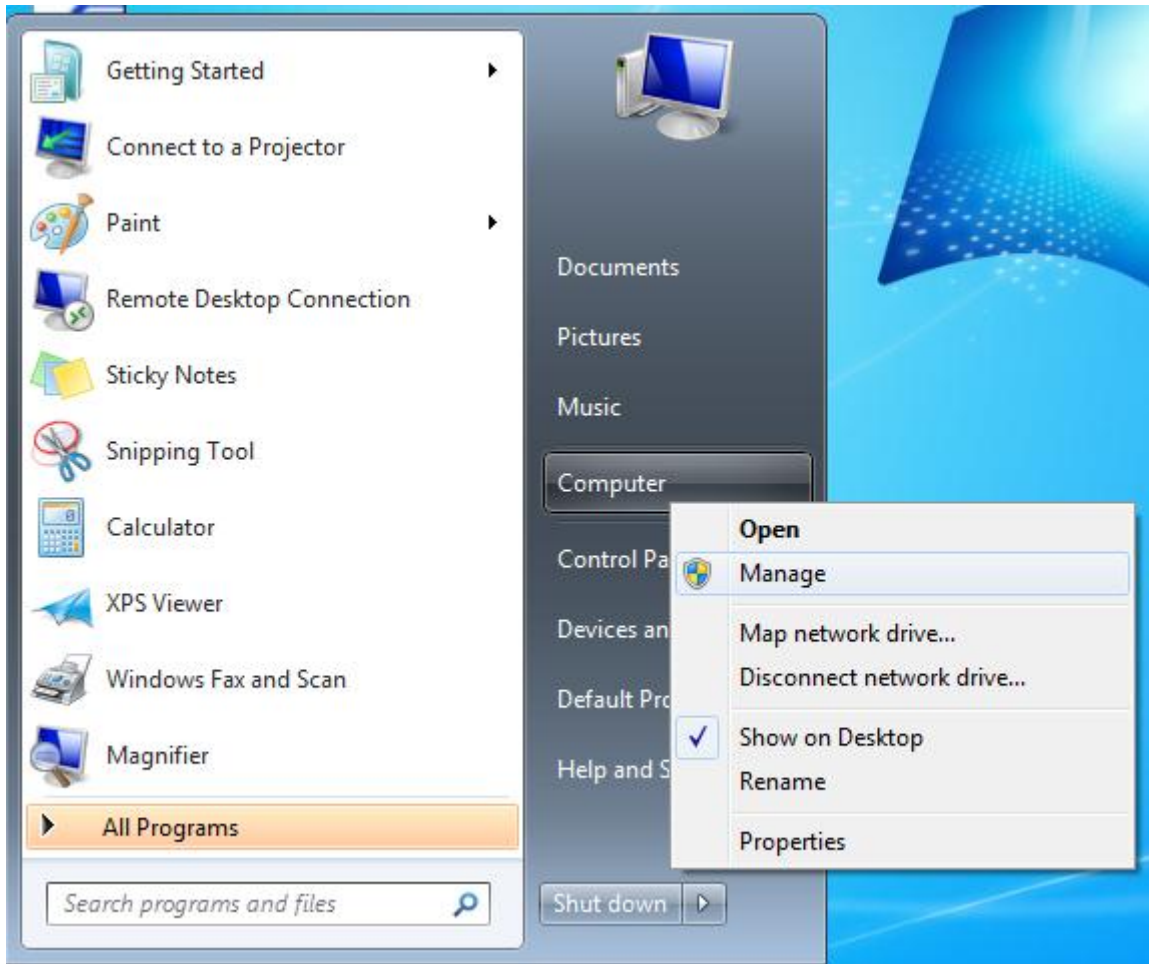
7. Click “Install” and wait for setup to complete.



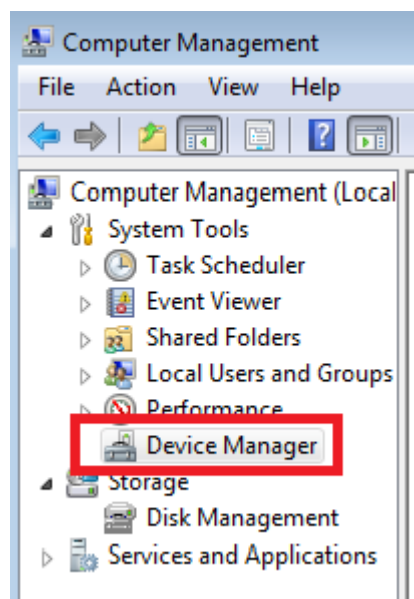
8. In the last setup window, click “Finish”.



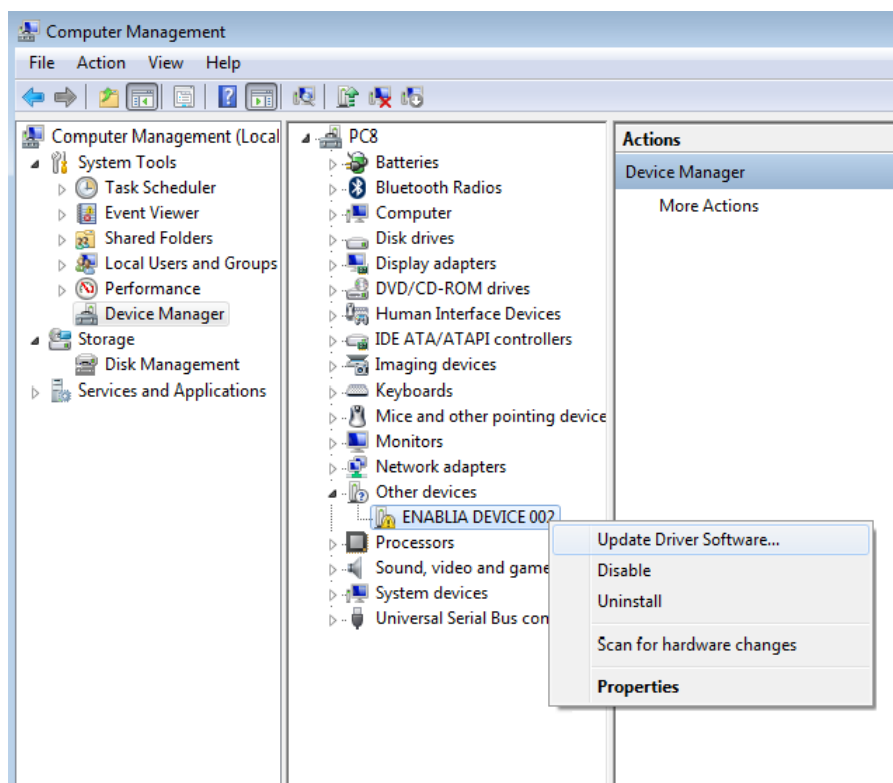
9. Copy the provided license file “license.bin” to the folder C:\ProgramFiles\TitanSDR\License, assuming that “C:\ProgramFiles\TitanSDR” is the installation folder). Please refer to Chapter 6 for further details on license file.
10. Plug the supplied AC/DC power adapter into a wall outlet and to the receiver power socket. Then turn on the adapter by the red switch: the adapter red power led will turn on (please refer to Chapter 5 for further details on receiver connections).
11. **Check that the receiver is switched off** (power switch on ‘0’) and connect it to the PC USB port by the provided USB cable.
12. Turn on the receiver by putting the power switch on ‘1’: the green led on the front panel will turn on.
13. Click the Start Button, right-click on “Computer” and click “Manage”.



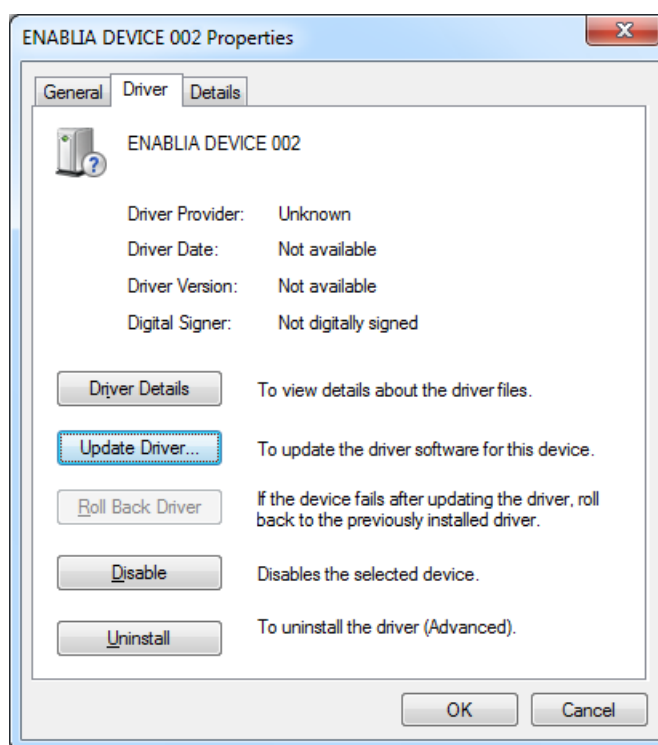
14. When the “Computer Management” window opens, click on “Device Manager” (located on the left side, under System Tools, towards the bottom of the list).



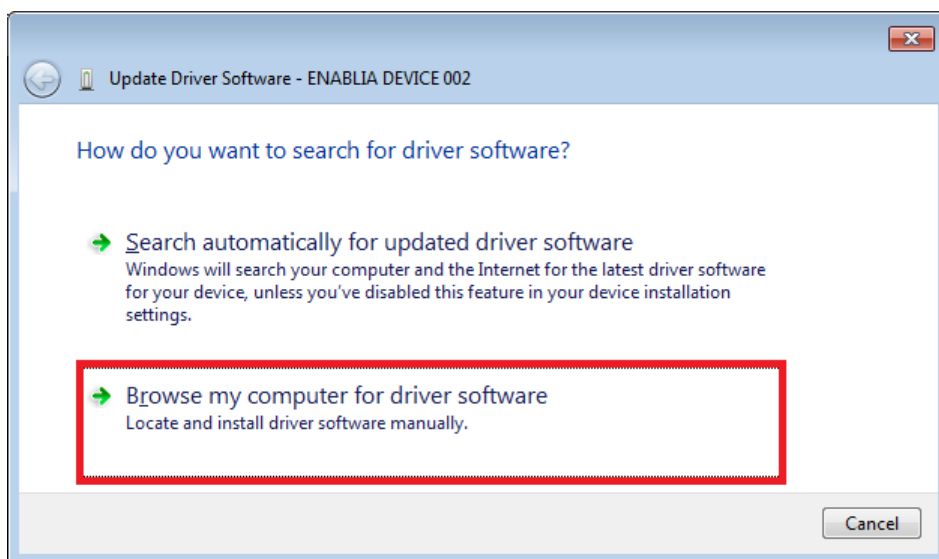
15. Expand the “Other Devices” list, right-click on “ENABLIA DEVICE 002” and click “Properties”



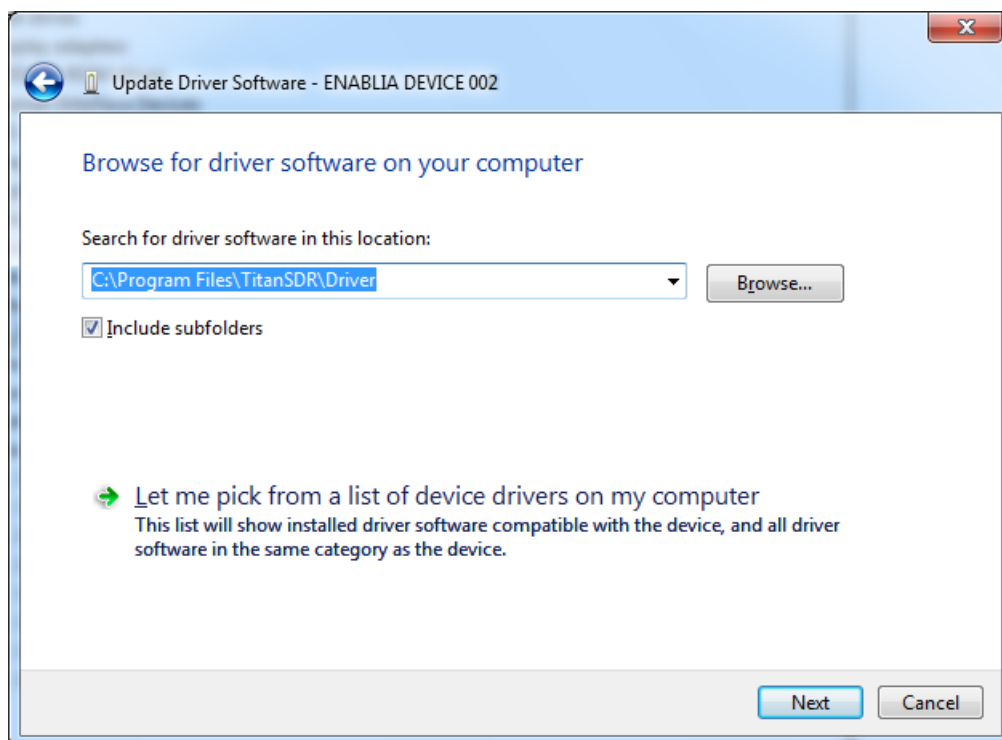
16. In “Properties” window, click the “Driver” tab and then click “Update Driver”

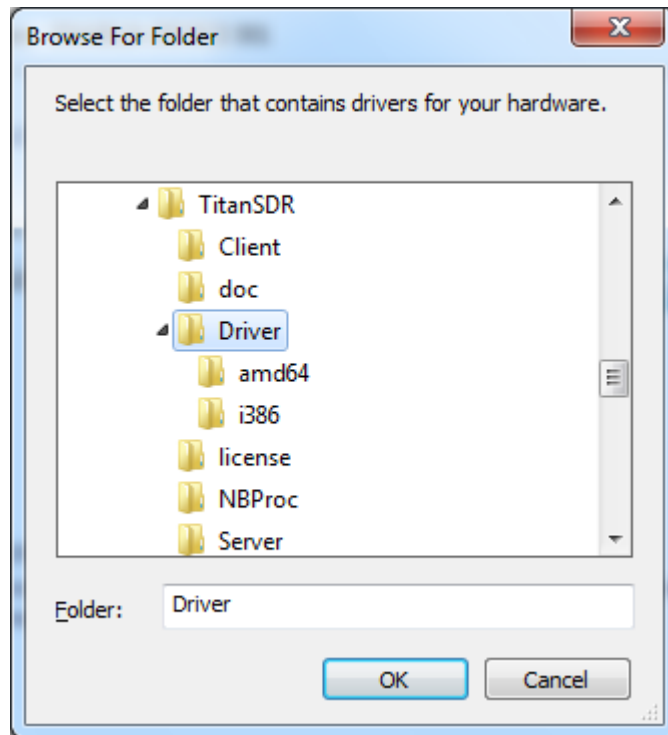


17. In the “Update Driver Software Window”, click “Browse my computer for driver software”

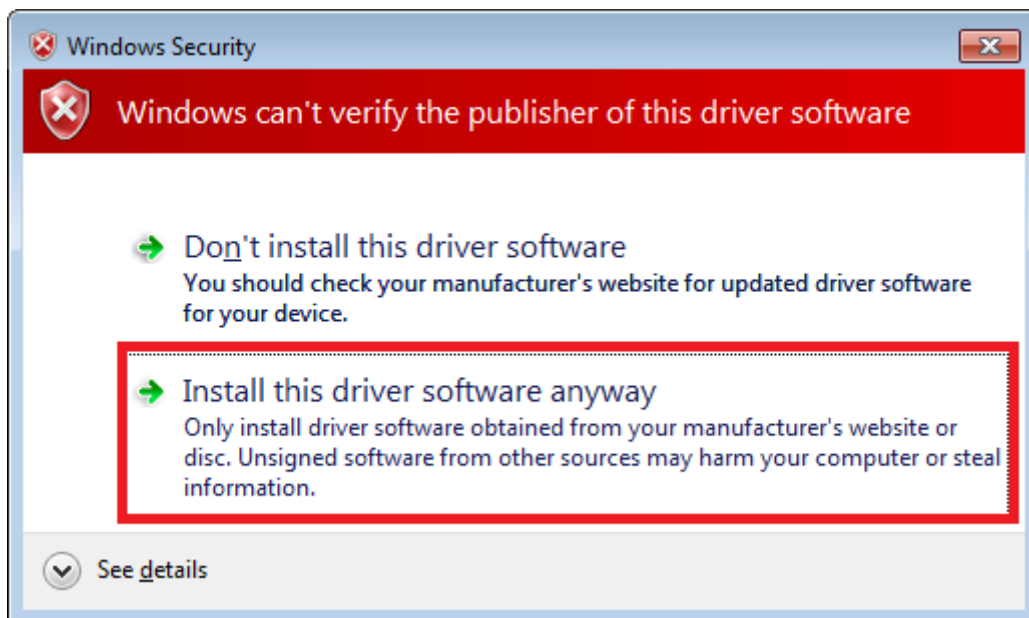


18. Click “Browse” and navigate to the folder containing the TitanSDR driver (C:\ProgramFiles\TitanSDR\Driver, assuming that “C:\ProgramFiles\TitanSDR” is the installation folder). Then click “Next”.

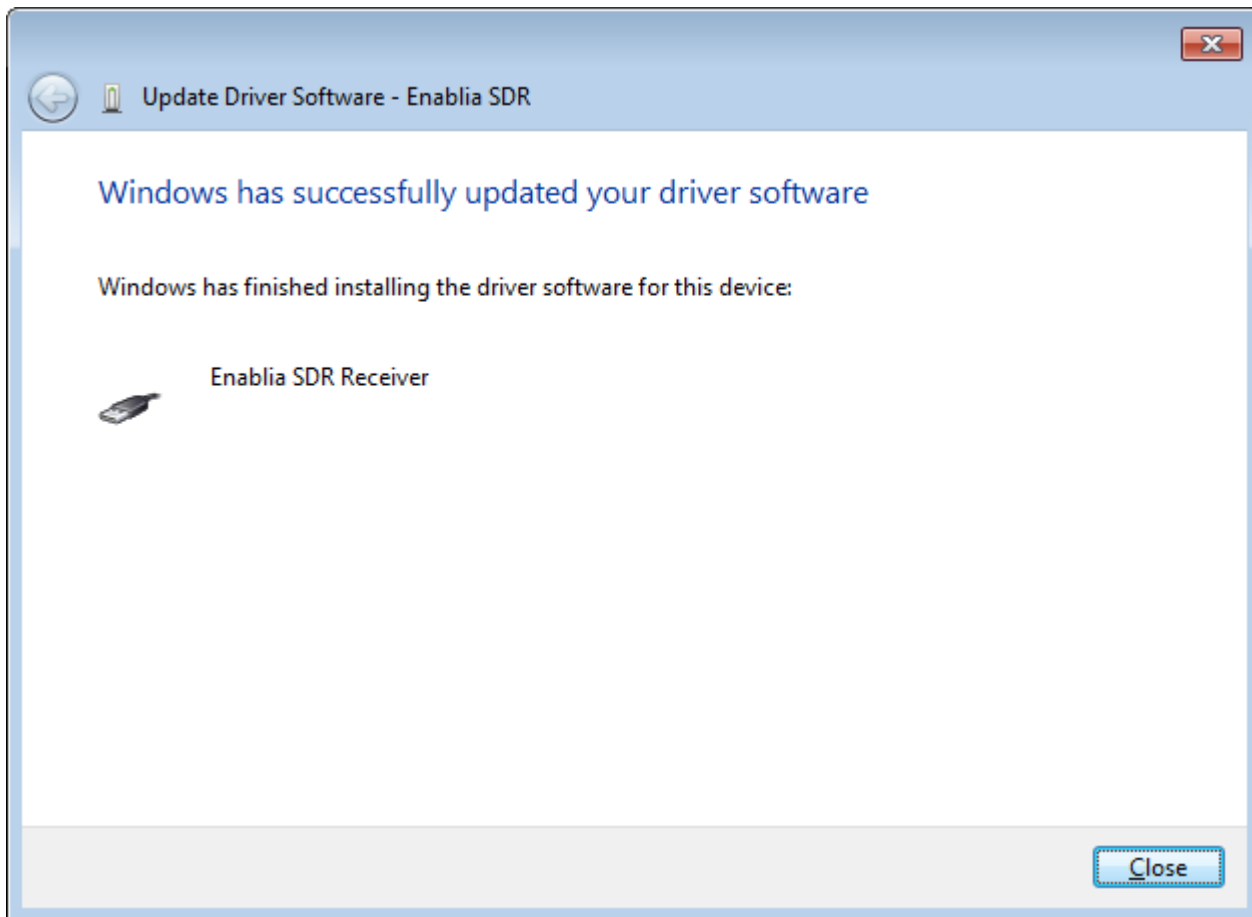




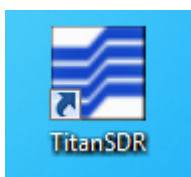
19. In “Windows Security” window , click “Install this driver software anyway”



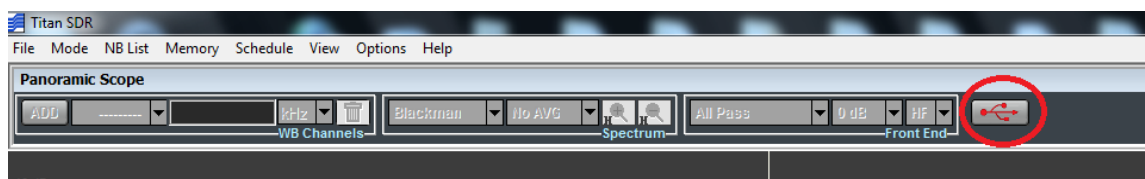
20. Allow the installation process to complete and click “Close”.



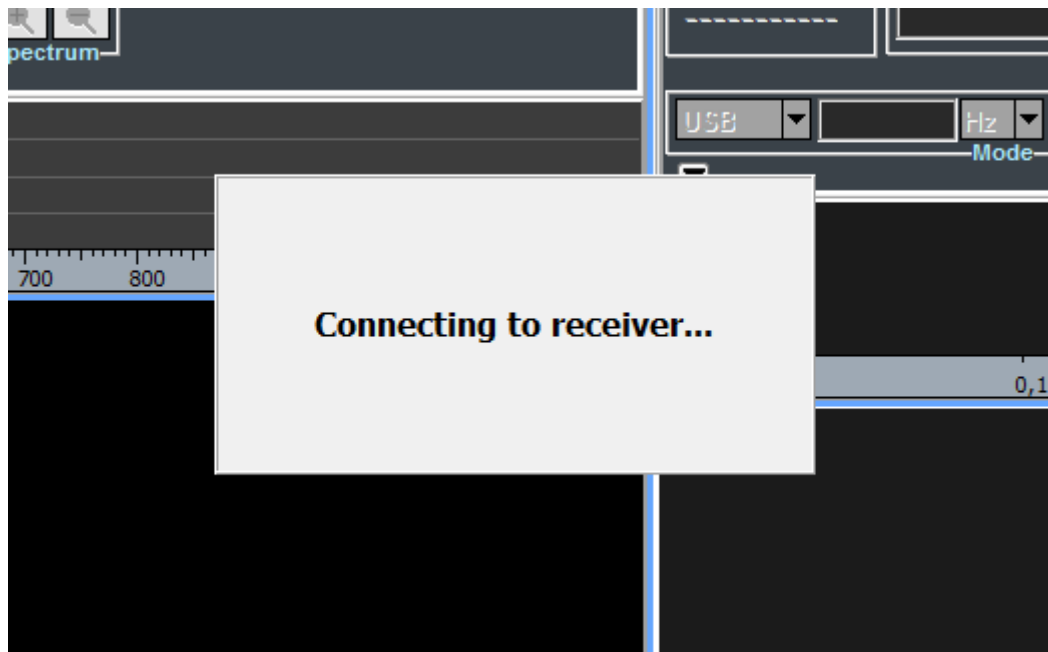
21. Run the TitanSDR software by double clicking the icon on your desktop and wait for application to open. Configure software firewall (if present) to allow TitanSDR processes communicating through the loopback address (see Chapter 5 for further details).



22. On TitanSDR application, click the "UsbConnection" button (the rightmost button of the Panoramic Scope toolbar)



23. The message “Connecting to receiver” is displayed : wait for connection to complete.



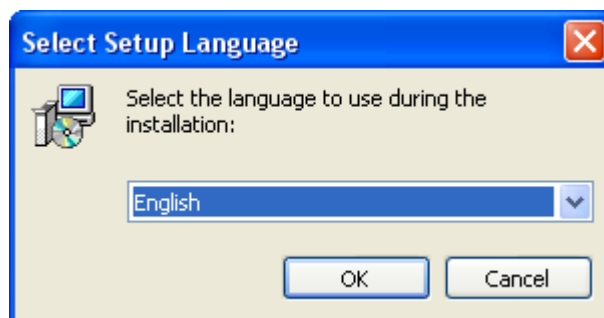
24. When receiver connection succeeds, spectrum is displayed in the Panoramic Scope.



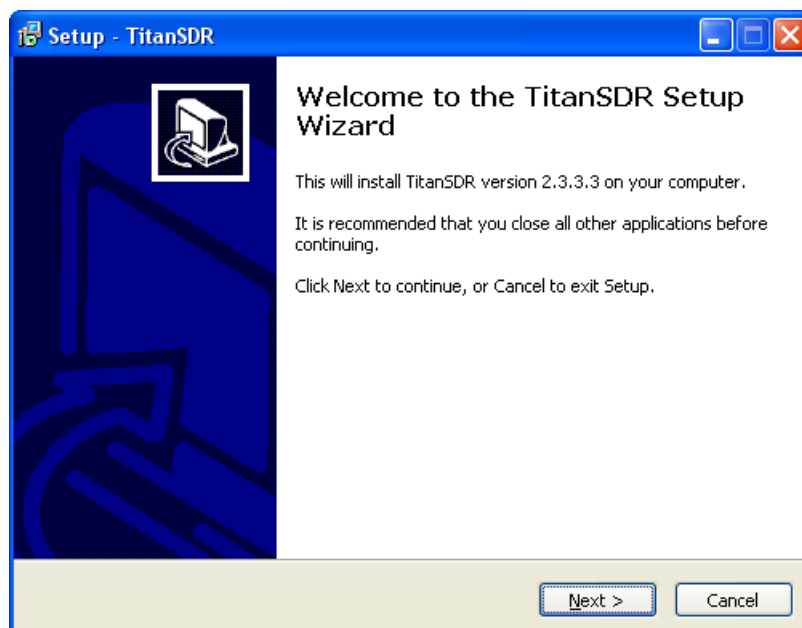
## 4. Installation on Windows XP

Please follow the steps below leaving the receiver disconnected from the PC, unless otherwise specified (i.e. connect it only when requested). The following installation procedure applies to all versions of TitanSDR.

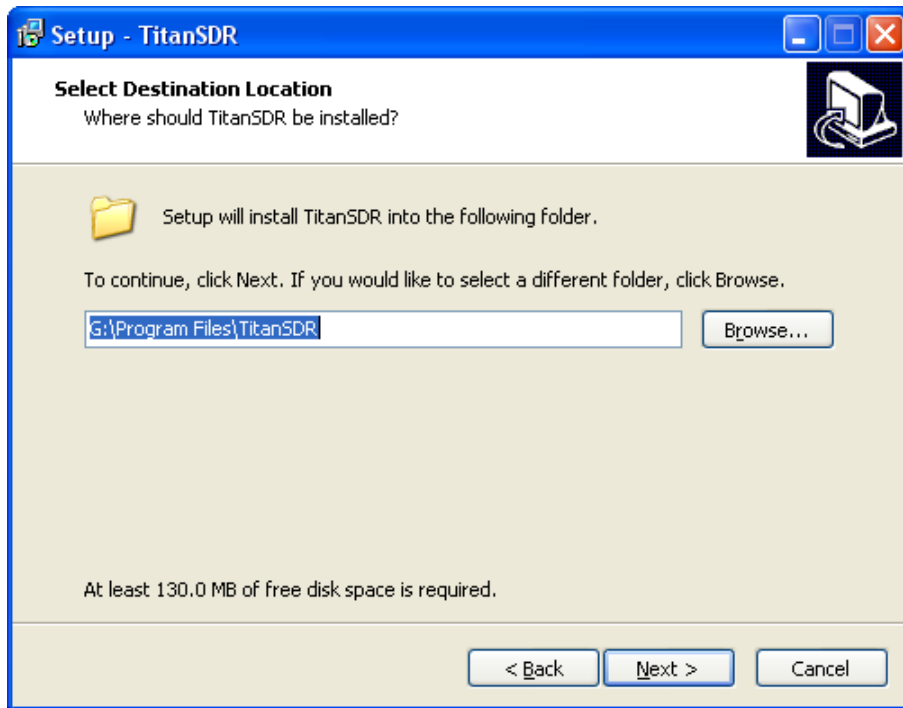
1. Insert the installation CD-ROM in your drive and double-click on X:\TitanSDR\_x.y.z\_Setup.exe (where “X” is the letter representing your CD-ROM drive and “x.y.z” is the setup version).
2. Select the Setup Language and click “OK”.



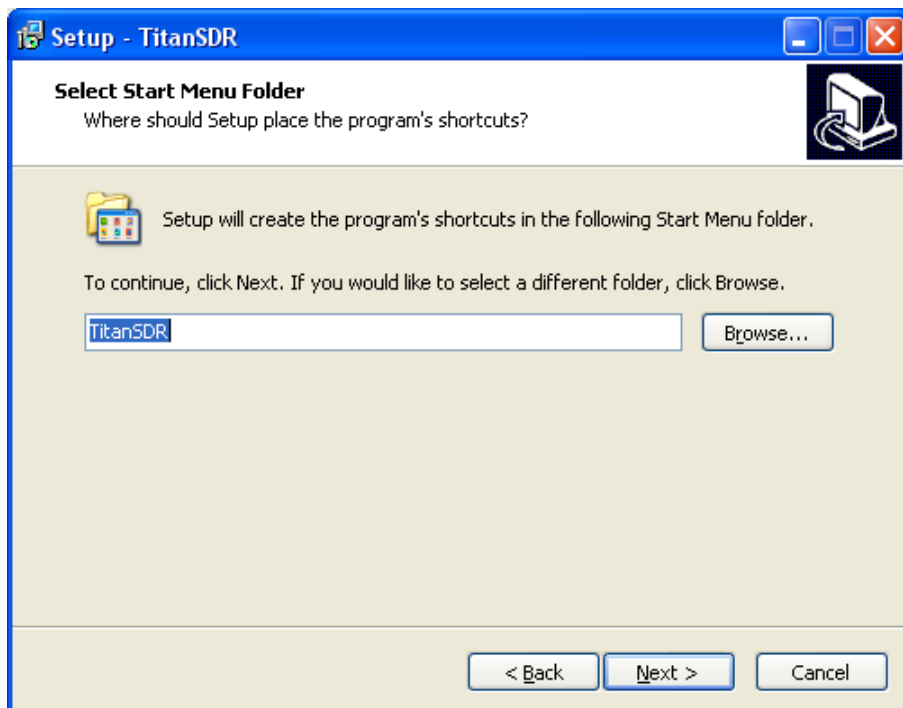
3. Click “Next” to continue



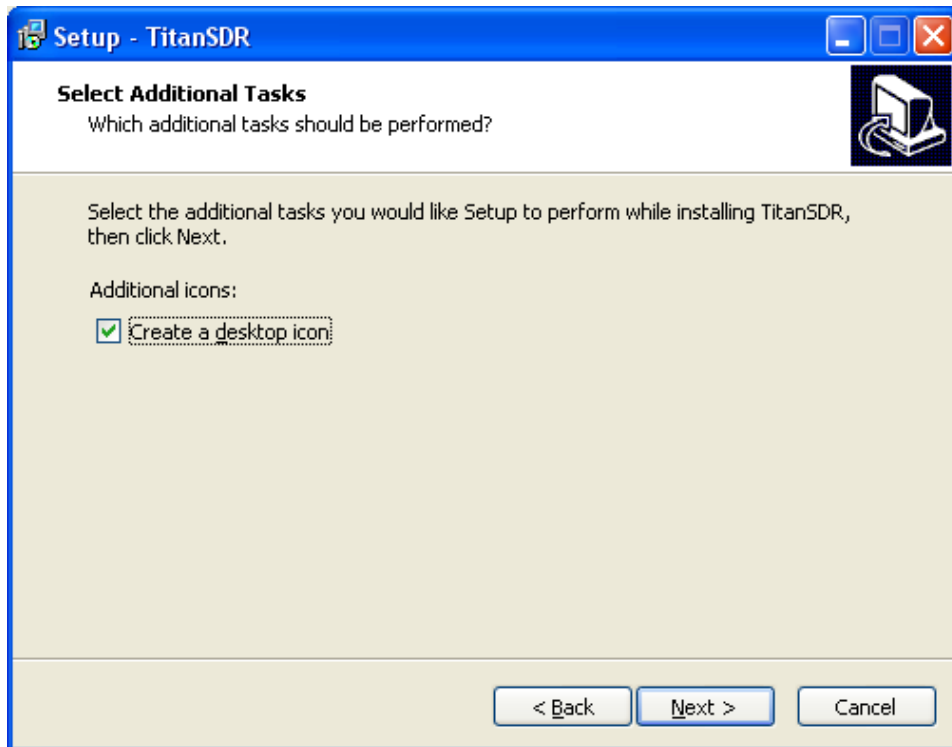
4. Confirm the proposed installation folder (for example, C:\ProgramFiles\TitanSDR if “C:” is your main drive) by clicking “Next”.



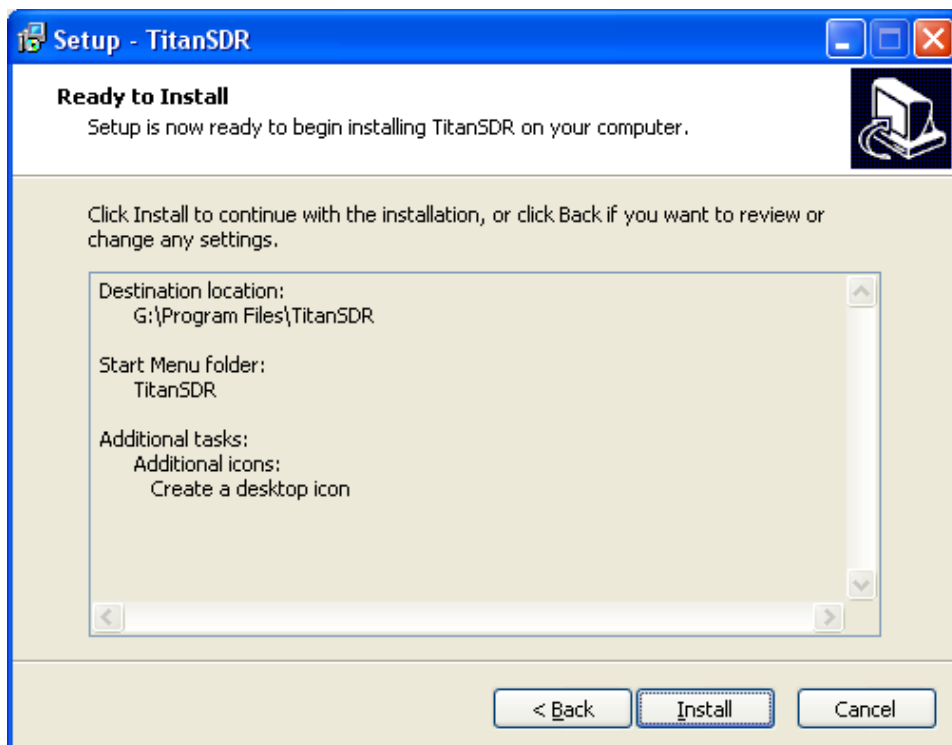
5. Confirm the default shortcuts folder by clicking “Next”.



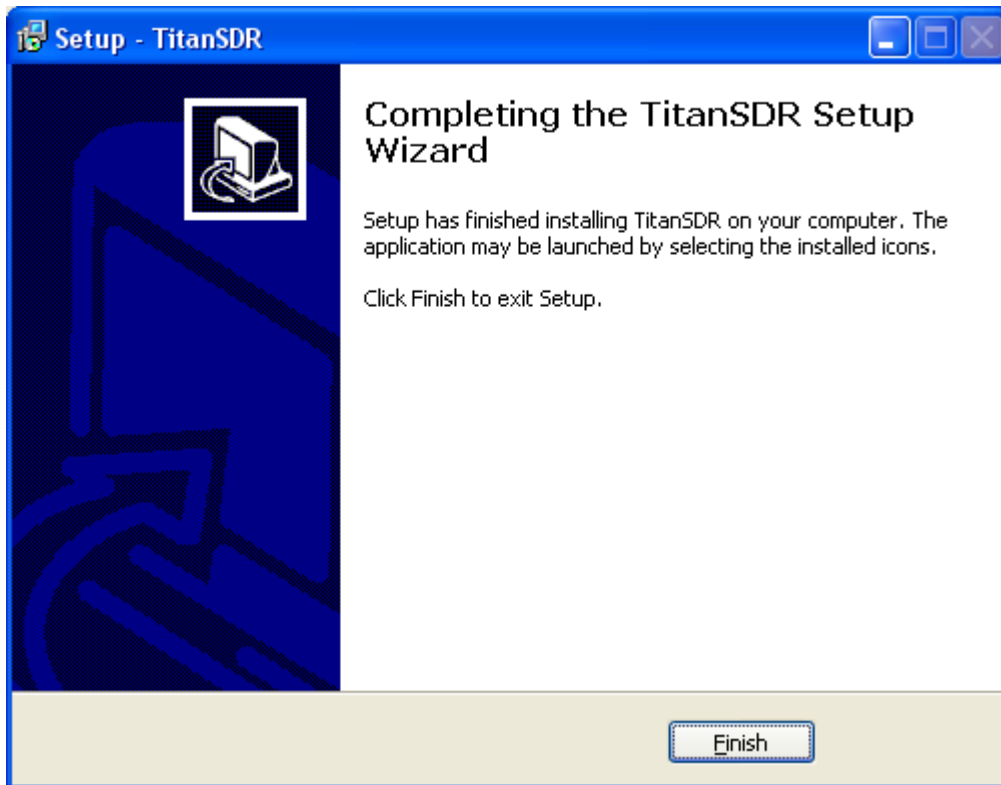
6. Check “Create a desktop icon” and click “Next”.



7. Click “Install” and wait for setup to complete.

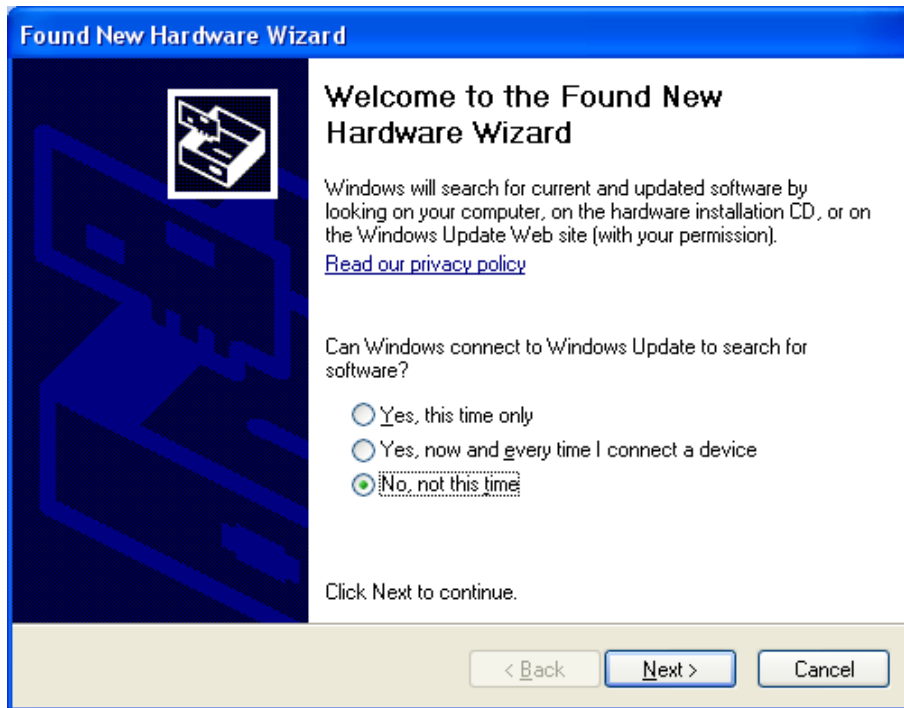


8. In the last setup window, click “Finish”.

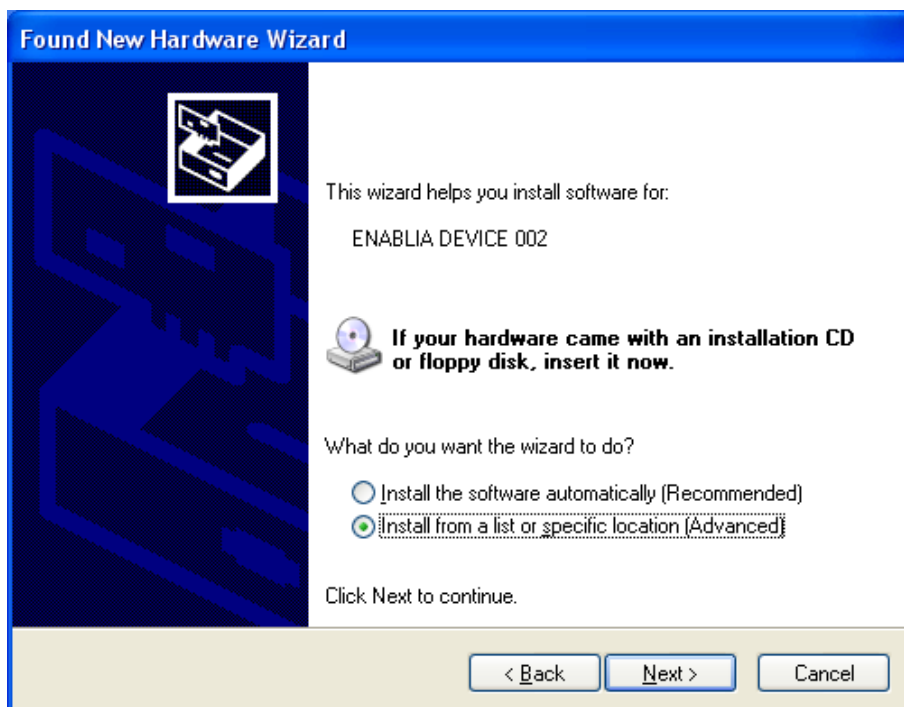


9. Copy the provided license file “license.bin” to the folder C:\ProgramFiles\TitanSDR\License (assuming that “C:\ProgramFiles\TitanSDR” is the TitanSDR installation folder). Please refer to Chapter 6 for further details on license file.
10. Plug the supplied AC/DC power adapter into a wall outlet and to the receiver power socket. Then turn on the adapter by the red switch: the adapter red power led will turn on (please refer to Chapter 5 for further details on receiver connections).
11. **Check that the receiver is switched off** (power switch on ‘0’) and connect it to the PC USB port by the provided USB cable.
12. Turn on the receiver by putting the power switch on ‘1’: the green led on the front panel will turn on.

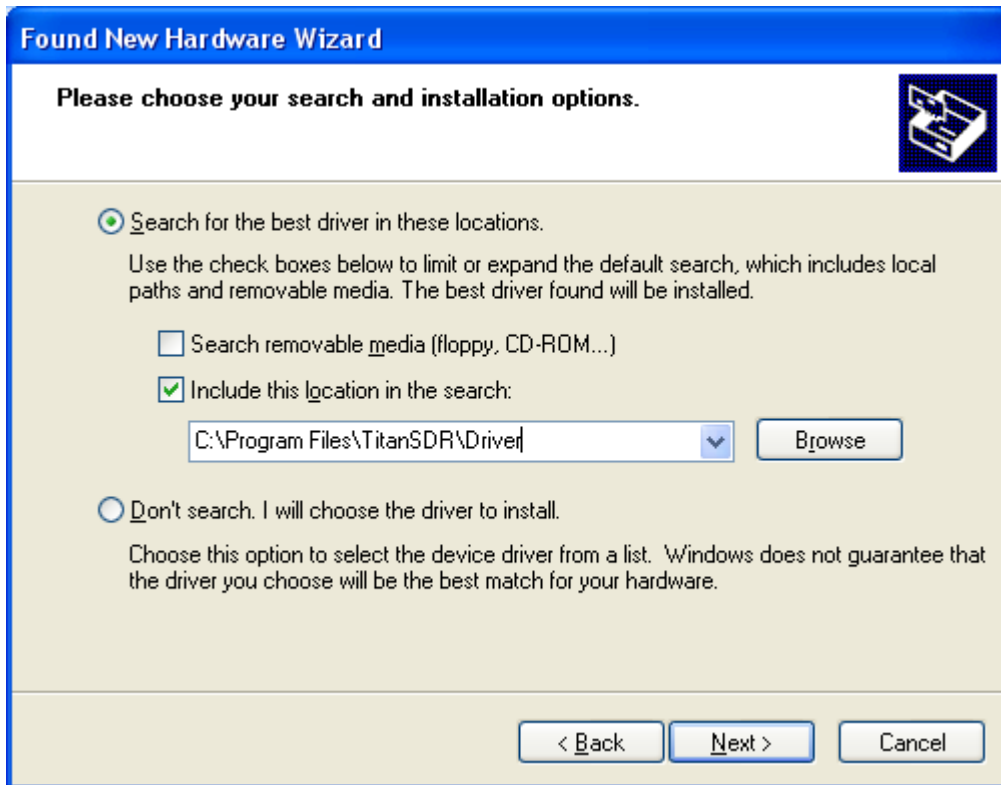
13. In the “Found New Hardware Wizard” select “No, not this time” (to prevent the connection to Windows Update) and click “Next”



14. Select “Install from a list or specific location (Advanced)” and click “Next”



15. In the next dialog, tick the option “Search for the best driver in these location” and “Include this location in the search”. Click “Browse” and navigate to the folder containing the TitanSDR driver (C:\ProgramFiles\TitanSDR\Driver, assuming that “C:\ProgramFiles\TitanSDR” is the TitanSDR installation folder) and then click “Next”.



16. Click “Continue Anyway” to bypass Windows Logo testing.

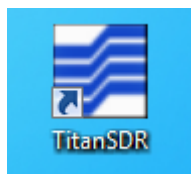


17. Allow the installation process to complete and click “Finish”

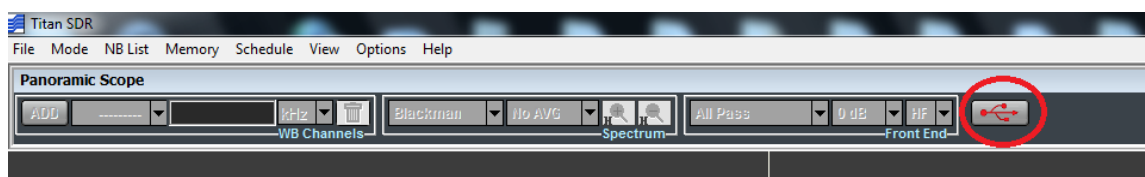


18. Run the TitanSDR software by double clicking the icon on your desktop and wait for the application to open. Configure software firewall (if present) to allow TitanSDR

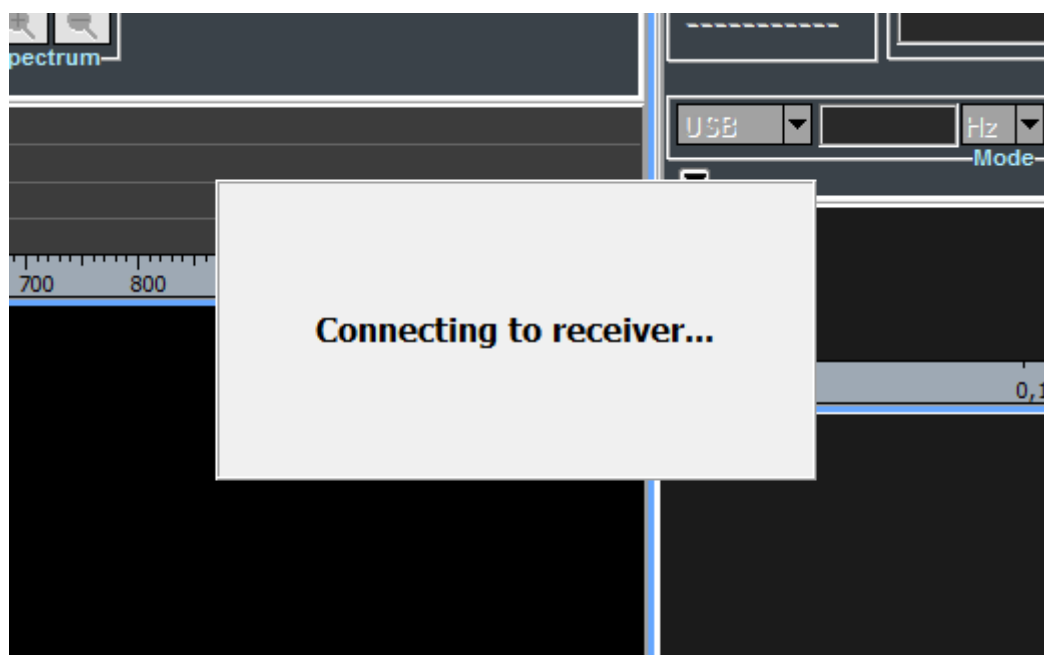
processes communicating through the loopback address (see Chapter 5 for further details).



19. On TitanSDR application, click the "UsbConnection" button (the rightmost button of the Panoramic Scope toolbar).



20. The message "Connecting to receiver" is displayed: wait for connection to complete.



21. When receiver connection succeeds, spectrum is displayed in the Panoramic Scope.



## 5. Notes on receiver connection and use

### Antenna

Connect a short-wave antenna to the receiver BNC connector (Figure 2, connector 5).

Use the SMA connector as IF input (Figure 2, connector 4) to bypass RF attenuators, preselectors and the anti-aliasing filter of the receiver chain.

If an amplified antenna is used, please make sure not to exceed the receiver clipping level indicated in Technical Specifications (see Chapter 8).

### Cooling fan

To reduce the possibilities of overheating, use the receiver only on a hard, flat surface. Do not allow any object to block the airflow through the cooling fan opening (Figure 3).

### Firewall

TitanSDR application consists of four different running processes, communicating with each other over the loopback network interface:

- TitanSDR\_MMI.exe
- TitanSDR\_Server.exe
- TitanSDR\_Client.exe
- TitanSDR\_NBProc.exe

User has to configure software firewalls (if present) to allow TCP-UDP communications among the TitanSDR processes through the IP address 127.0.0.1.

If a “Remember my answer” option is present in the firewall dialog, please select it in order to skip future requests of the same type.

## USB Interface

Connect the TitanSDR receiver to a 480 Mbit/sec Hi-Speed USB 2.0 port of the host PC using the provided USB cable or, as an alternative, a shielded USB cable (maximum length of 1 meter) with the Hi-Speed USB certification label (Figure 5).



**Figure 5**

In order to get the best performance from the USB link, don't connect USB devices to the PC other than TitanSDR receiver (except for mouse and keyboard).

In order to maximize USB performances, TitanSDR application automatically set the "High performance" power plan in Windows Power Options.

Wi-fi or Bluetooth connections can limit throughput over the USB interface, especially in Notebooks: disable wireless and Bluetooth cards in Windows "Device Manager".

Notebook embedded webcams are often connected to the USB controller, demanding much of USB bandwidth and, for this reason, potentially affecting the TitanSDR performance. Therefore, if a webcam is present, please switch it off when the receiver is running.

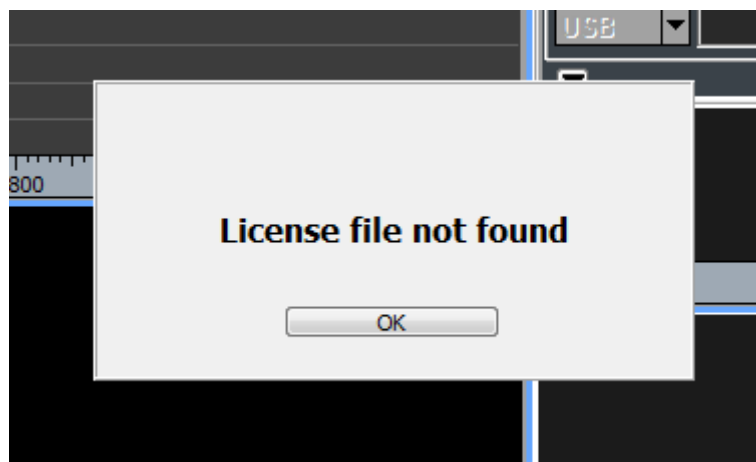
Keep all the system devices drivers updated and always check drivers compatibility with the installed Operating System.

## 6. License

### License File

A software license file (“license.bin”) is associated with the receiver and is sent by E-mail after package delivery or included in the folder “License” of the installation CD. Please copy license.bin file to the folder C:\PrograFiles\TitanSDR\License (assuming that “C:\PrograFiles\TitanSDR” is the TitanSDR installation folder). That license file is required to have TitanSDR application working with the receiver.

If, after clicking the UsbConnection button (the rightmost button of the Panoramic Scope toolbar), the message “License file not found” pops up (Figure 6), please verify that license.bin file is in the above indicated folder.



**Figure 6**

If the receiver is switched-on and connected to the PC and a valid license file is in the right folder, both “Receiver Mode” and “Player Mode” are allowed.

### USB Dongle

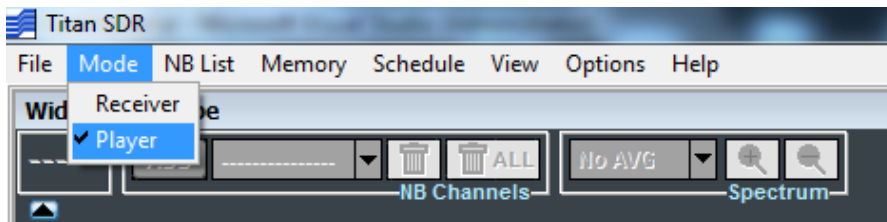
An USB Dongle is provided with the receiver (Figure 7). By connecting the Dongle to an USB port, it is possible to use

TitanSDR software in “Player Mode”, to replay previously recorded files, without connecting a receiver to the PC.



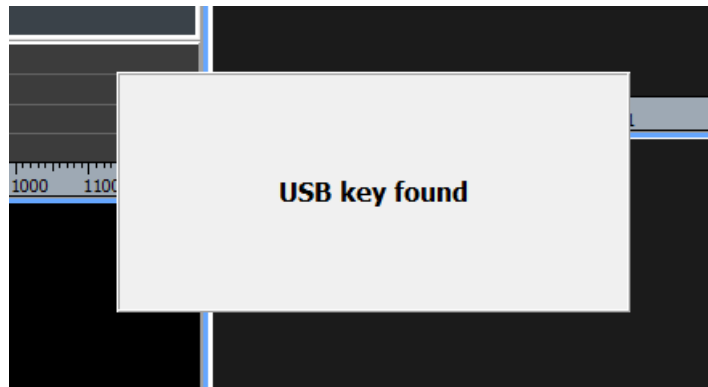
**Figure 7**

Connect the USB Dongle to an USB port, run TitanSDR software and select **Mode>Player** (Figure 8).



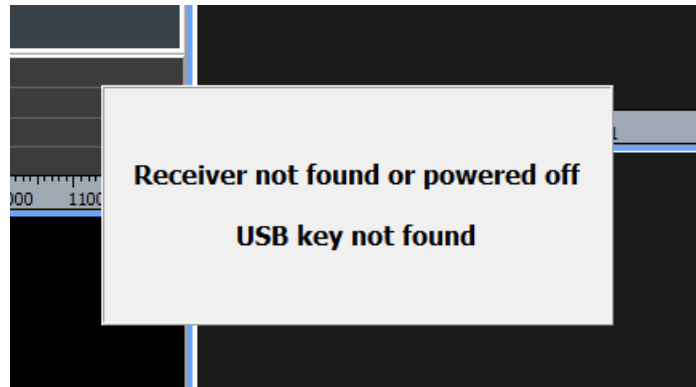
**Figure 8**

If the USB Dongle is correctly detected, the message “USB key found” will be displayed (Figure 9).



**Figure 9**

If TitanSDR software detects neither the receiver nor the USB Dongle, the message in Figure 10 will be displayed.



**Figure 10**

*Microsoft Windows detects the USB Dongle as an USB Flash Drive ("TitanSDRKey)": do not rename or format the Drive. Do not cancel or alter the license file in the Dongle. In order to allow the user updating the license file for future upgrades, the dongle contains a writable storage memory: please don't put any file on the USB Dongle.*

## 7. CE Conformity

Enablia S.r.l. declares that the TitanSDR receiver is in compliance with following European Community Directives:

- Electromagnetic Compatibility Directive (2004/108/EC)
  - EN55022
  - EN55024
  - EN61000-3-2
  - EN61000-3-3
- Low Voltage Directive (2006/95/EC)
  - EN 60950

Documentation and test reports are available upon request.

## 8. Technical Specifications

<b>Frequency Range</b>	9 kHz – 32 MHz	<b>Sensitivity</b>	-116 dBm (0.34 $\mu$ V) SSB at S+N/N=10dB, 15MHz, 2.4 kHz BW
<b>Noise Figure</b>	<b>9 KHz - 1.5 MHz:</b> NF = 15.25dB <b>1.5 MHz – 32 MHz:</b> NF = 14.2dB	<b>Tuning Accuracy</b>	+/- 0.5 ppm
<b>Preselectors (16)</b>	<b>Low Pass:</b> 0-1.54 MHz <b>Band Pass (1.44-32 MHz):</b> 1.44-2.07, 1.88-2.7, 2.4-3.46, 2.96-4.26, 3.56-5.12, 4.22-6.08, 4.88-7.03, 5.53-7.96, 6.46-9.31, 7.81-11.24, 9.74-14.03, 12.53-18.05, 16.55-23.17, 21.67-28.17, 26.67-32	<b>Recording</b>	One Wideband Channel (proprietary file format) All Narrowband Channels (.wav files) <b>Scheduler function:</b> recording at programmable time intervals (also day-time periodic tasks with selectable days of week)
<b>Attenuation</b>	0dB, 10dB, 20dB, 30dB	<b>Demodulated audio to SW decoders</b>	By <b>VAC</b> (Virtual Audio Cable) By <b>LAN</b> to <i>Krypto500</i> and to <i>Hoka Electronic</i> software decoders (TitanSDR-Pro only)
<b>Clipping</b>	-8dBm (@ 0dB Attenuation)	<b>Support for SW developers</b>	LAN Ethernet control of TitanSDR software application through ad hoc TCP commands set (Pro version only)
<b>Wideband Channels</b>	<b>Maximum Number of Channels:</b> 4 <b>Bandwidths (kHz):</b> 312.5, 625, 937.5, 1250, 1562.5, 1875, 2187.5 <b>Maximum Total Bandwidth (kHz):</b> 2187.5, 1875, 1562.5 and 1250 for 1, 2, 3 and 4 Wideband Channels, respectively	<b>Memories</b>	Saving allowed for NB channel frequency, bandwidth, mode, entry time, entry date, callsign, ITU code, station and user description
<b>Narrowband Channels</b>	8 (TitanSDR) or 40 (TitanSDR-Pro), independently tunable within Wideband Channels	<b>A/D Conversion</b>	16 bit, 80 Msps
<b>Spectrum Scopes Refresh Rate</b>	19 Hz	<b>Image Rejection</b>	90 dB typ.
<b>Panoramic Scope</b>	0 Hz ÷ 32 or 40 MHz, 305 Hz RBW	<b>IIP3</b>	>37 dBm
<b>Wideband Scope</b>	312.5 ÷ 2187.5 kHz, min RBW 19.07 Hz (Spectrum & Waterfall with customizable palette)	<b>SFDR</b>	>108 dB
<b>Narrowband Scope</b>	<b>RF:</b> 39.06 kHz, min RBW 19.07 Hz (Spectrum & Waterfall with customizable palette) <b>Audio:</b> 5512.5 ÷ 22050 Hz, RBW 5.4 ÷ 21.5 Hz (Spectrum & Waterfall with customizable palette)	<b>Alias Rejection</b>	115 dB
<b>Modes</b>	SSB, AM, NBFM, CW, eSSB, FSK, DRM ( <i>Dream</i> or <i>DRM Software Radio</i> supported)	<b>Antenna Input</b>	50 Ohm BNC
<b>Selectivity</b>	100 dB (Stop Band Attenuation)	<b>IF input</b>	50 Ohm SMA - Bandwidth: 0.1 ÷ 32MHz
		<b>PC Operative System</b>	Windows 7/Vista/XP
		<b>PC Interface</b>	USB 2.0
		<b>Operating Temperature</b>	0° - 40° (°Celsius)
		<b>Supply Voltage</b>	6VDC +/-1V
		<b>Supply Current</b>	2.5Amp
		<b>Dimensions</b>	243mm x 52mm x 145mm (WxHxL)



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