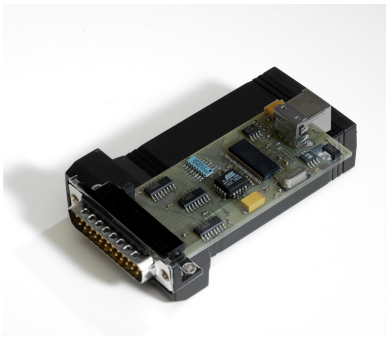
DM1010
Option TSR

LVDS To USB 2.0
Adapter with
Transport Stream Reader Software



USER MANUAL
Version 2.8.46e

Z Technology, Inc.
14950 NW Greenbrier Parkway
Beaverton, OR 97006 USA
Tel: 503-614-9800 Fax: 503-614-9898

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Table of Contents

Section 1: Specifications

Option TSR Specifications

Parameter	Specification
LVDS to USB 2.0 Adapter	
Hardware interface format	LVDS
Data Stream Format	ATSC, DVB
Power	< 500 MA at 5 VDC from USB 2.0 Port
Bit transfer rate	19.38 Mbps typical, 50 MbpsMaximum
LVDS Connector	25 pin D sub Male
USB Connector	Type B Receptacle
USB Communication Standard	USB 2.0
Computer	Customer supplied PC
Requirements	Windows XP SP2 Home or Professional 2.5 GHz P4 processor 256 MB RAM USB 2.0 1024 x 768 display
Software	
Media	TSReader Pro™ application supplied on CD
PID List pane	Displays decode PAT, PMT, PID hierarchy
PID Content pane	Displays textual content of selected PID
Active PID pane	Displays PID bitrate and % use of total bandwidth
General Information pane	Displays Source, Network type, runtime
MPEG-2 Statistics pane	Displays Sector counts and CRC error counts for PAT, PMT, CAT, ETT, PSIP, EIT. Continuity Error count, TEI Error count. Mux bitrate, and last second bitrate.
Video Decode pane	Displays thumbnails of video

Parameter	Specification
View Menu	User selectable: Closed Caption Text Bandwidth usage charts EPG Grid Stream Monitoring (ETR 290) Video Mosaic
Physical characteristics	
Size and Weight	2.25” wide, 3.75” deep, 0.75” high, 3 ozs
Note: all specifications reflect typical values.	

Section 2: Option TSR Product Overview

Overview

Option TSR is an add-on to the DM1010 ATSC-compliant 8VSB demodulator.

Option TSR consist of a hardware dongle and a software program. The hardware dongle (LVDS to USB 2.0 adapter) converts the LVDS transport stream output of the DM1010 into a USB format readable by a USB connected PC. Transport Stream Reader Professional software (TSReader Pro) installed on the PC decodes the transport stream data in real time.

TSReader Pro is from COOL.STF. Z Technology has an OEM agreement to distribute TSReader Pro.

TSReader Pro allows the user to view the PID hierarchy starting with the Program Allocation Table (PAT), the content description of each PID, the PID bit rate and percentage of total bandwidth usage, MPEG-2 Statistics, and thumbnails of each video program stream. Additionally the user may view pie charts of PID bandwidth usage, Closed Caption text of a particular PID, Electronic Programming Guide grid, ETR-290 Stream Monitoring, and a user place-able window containing a mosaic of video thumbnails.

Features

Key performance features of the DM1010 Option TSR.

- Convert LVDS output of DM1010 to USB format to feed connected PC.
- View PID hierachy.
- View PID descriptor content.
- View PID bandwidth.
- View PID bandwidth usage as a percentage of total transport stream bandwidth.
- View MPEG-2 statistics such as CRC error count of PAT, PMT, CAT, ETT, PSIP, EIT, Continuity Error Count, TEI Error Count, Mux bit rate, and last second bit rate.
- View thumbnails of program stream video.
- View Electronic Programming Guide (EPG) grid.
- ETR-290 Stream monitoring.
- View user sizable and place-able mosaic of all program stream video thumbnails.
- Accessible via toolbar button in WinDMpro Application.

NOTE: TSReader Pro software has many more features than are described in this user manual. The intent of this user manual is to instruct the user on how to install TSReader Pro for use with the DM1010. A minimum number of features will be described to get the user basic operation knowledge of the TSReader Pro software with the DM1010 demodulator. For more detailed information on TSReader Pro please see the documents that are installed with TSReader Pro in the

C:\Program Files\COOLSTF\TSReaderPro folder.

The user is invited to extend their use of TSReader Pro to its full extent by referring to the installed documentation.

Section 3: Software Installation & Operation

Introduction

The DM1010 Option TSR requires a Windows® based PC to operate. Before attaching the LVDS to USB adapter to your WindowXP PC install the TSReader software. Once the software is installed a driver for the LVDS to USB adapter will be available. Follow the instructions below.

Install the TSReader software

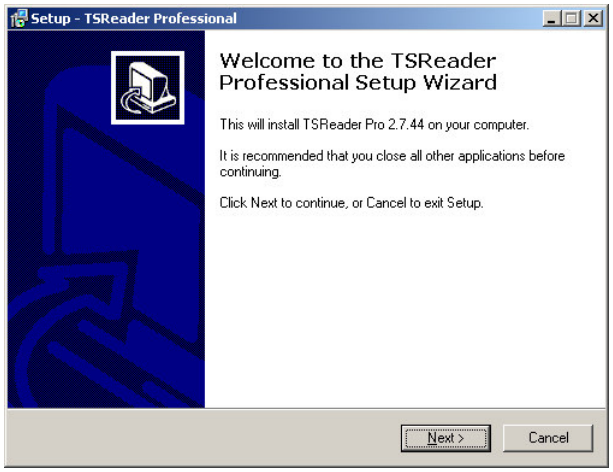
This description assumes you have already installed WinDM Pro™ Software and it's companion screen capture SnagIt software supplied with the DM1010. This procedure will describe first how to install TSReader Pro software, then install the DTVWorks-SPI driver necessary for the LVDS to USB adapter.

Note: If you are reinstalling TSReader Professional™ on a PC that already has TSReader™ or TSReader Professional™ installed, remove the existing installation first using the Windows ADD/ Remove Programs tool from Control Panel.

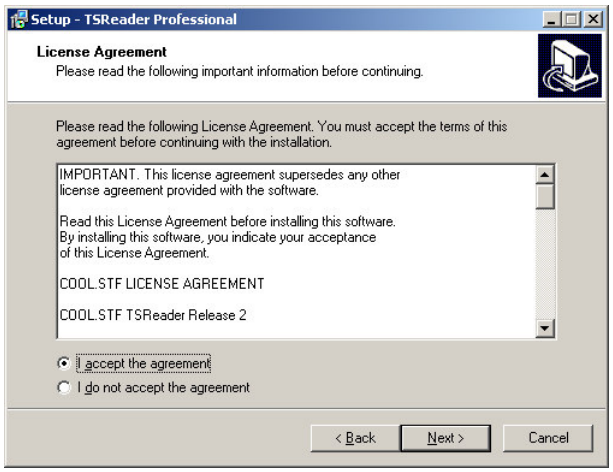
Install TSReader Professional software before you connect the LVDS to USB adapter to the PC.

Install TSReader Professional™

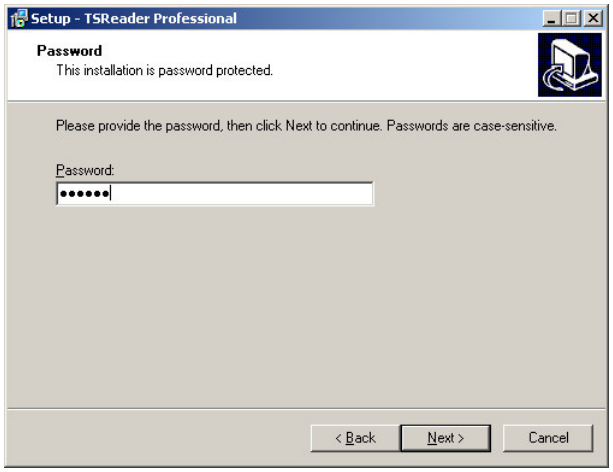
Insert the TSReader Pro™ CD in your CD ROM drive. Press the Windows® START button on your keyboard, select RUN, in the dialog box enter "D:\setup" without the quotes then press Enter. If D is not your CD ROM drive, substitute the correct drive letter. The Setup - TSReader Professional wizard screen appears.



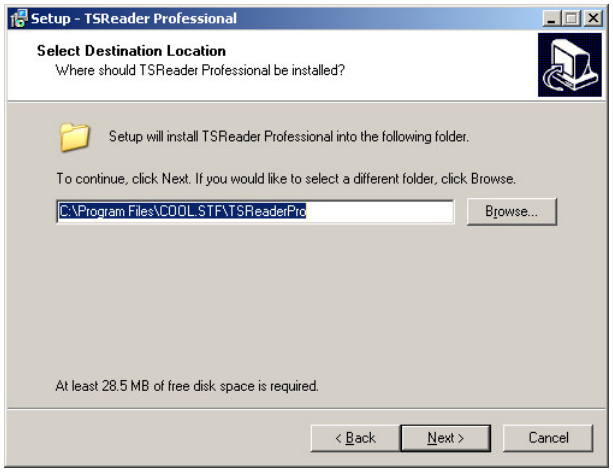
Click the NEXT button. The TSReader Professional License Agreement screen appears



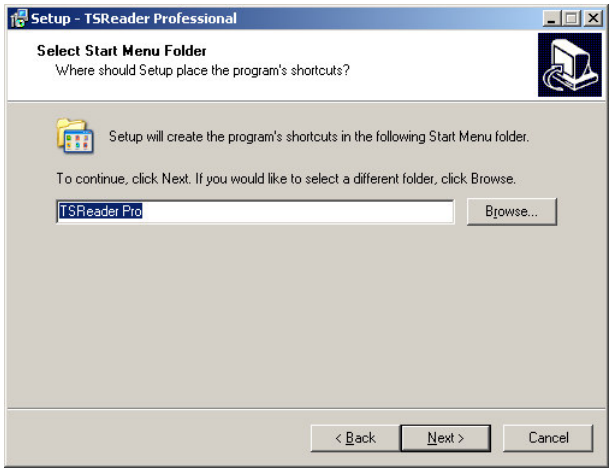
Click the “I Accept the agreement” button then click NEXT. The TSReader Professional Password screen appears.



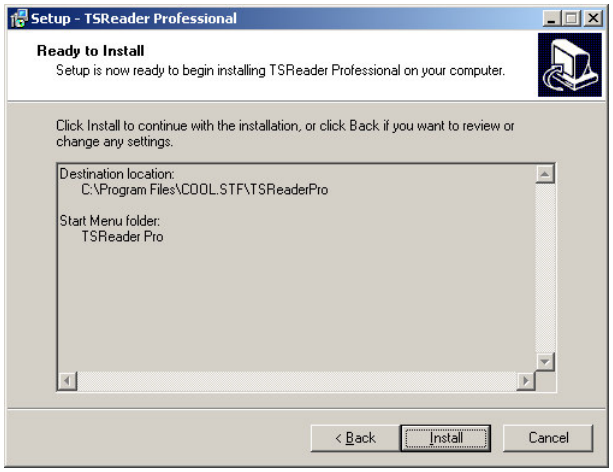
Type in "**xxxxx**" without the quotes, then click the NEXT button. The TSReader Professional Select Destination Location screen appears. ***Note: xxxxx Call factory for code.***



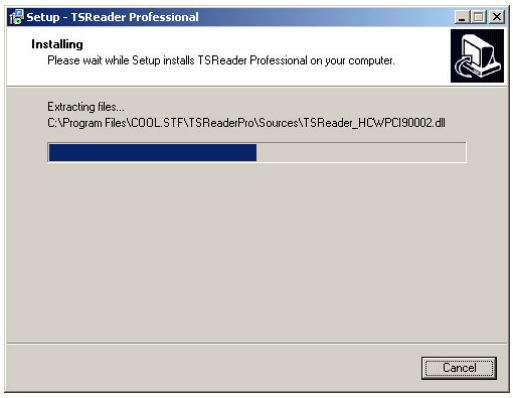
Accept the default location by clicking the NEXT button. The TSReader Professional Select Start Menu Folder screen appears.



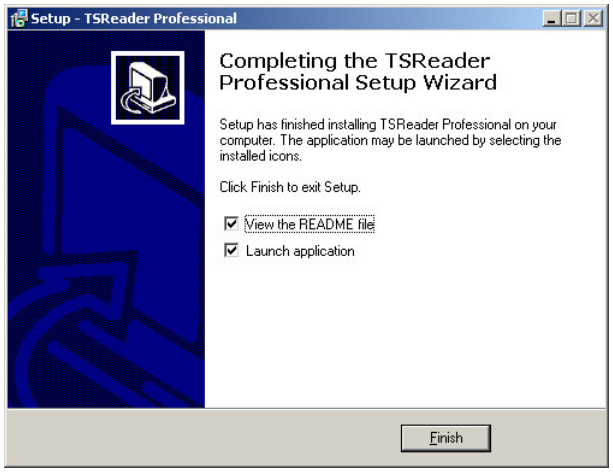
Accept the default location by clicking the NEXT button. The TSReader Professional Ready to Install screen appears.



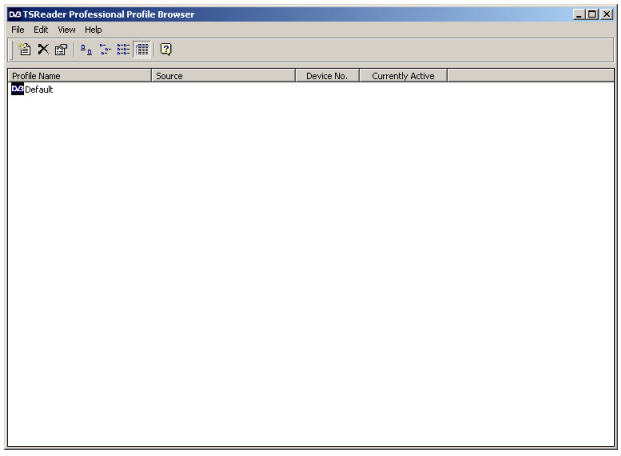
Click the INSTALL button. The TSReader Professional Installing screen appears. A blue progress bar marches left to right across the screen.



Let the installation complete. The TSReader Professional Finish screen appears.



Click the FINISH button. The TSReader Professional README file opens, and the TSReader Professional application starts. Read the README file if you like, then close it. The TSReader Professional Profile Browser screen appears.



Close the TSReader Professional application by clicking on the **X** box in the upper right corner. TSReader Professional software has now been installed. Part of the installation was to load drivers for various input devices. The driver the LVDS to USB adaptor uses is the DTVWorks-SPI driver. The next step will install the DTVWorks-SPI driver to communicate with the LVDS to USB adaptor.

Install the DTVWorks-SPI driver for LVDS to USB adaptor

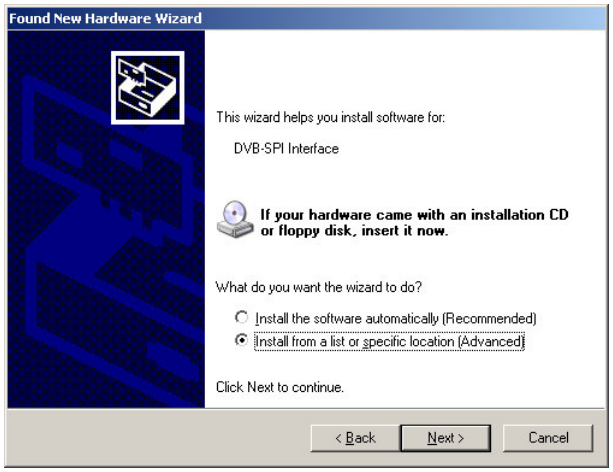
Plug the LVDS to USB adapter 25 pin D connector into the DM1010 rear panel transport stream SPI out connector.

Insert the B side  of the supplied USB cable into the LVDS to USB adaptor.

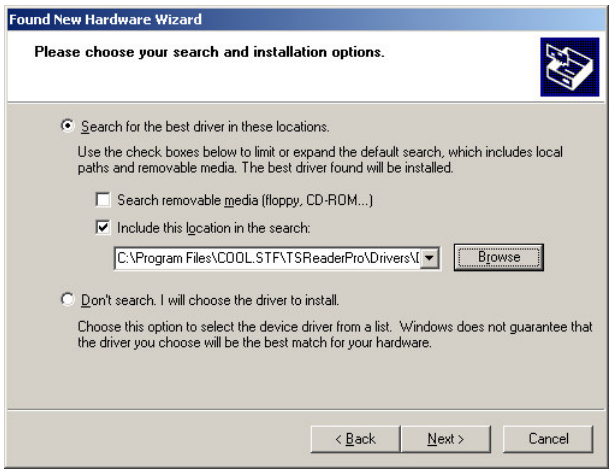
Insert the A side  of the supplied USB cable into a USB 2.0 port on your PC.

A “Found New Hardware” bubble appears at the system status tray on the lower right of the WindowsXP screen. A Hardware renumeration chime sounds and the Found New Hardware Wizard screen appears.

Click the “No, not at this time” button then click NEXT. The next Found New Hardware wizard screen appears. Windows has recognized the LVDS to USB adapter as a DVB-SPI interface device, it now is ready to Help you install the software for the DVB-SPI Interface.



Click the “Install from a list or specific location (Advanced)”, then click the NEXT button. The next Found New Hardware Wizard screen appears.



Make sure that:

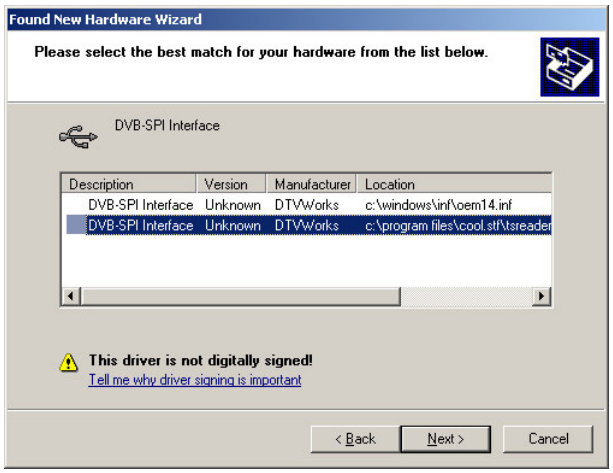
“Search for the best driver in these locations” is selected

“Include this location in the search” is checked

“C:\Program Files\COOL.STF\TSReaderPro\Drivers\DTVWorks” is in the Browse window

(If it is not, click the BROWSE button and navigate to this location.)

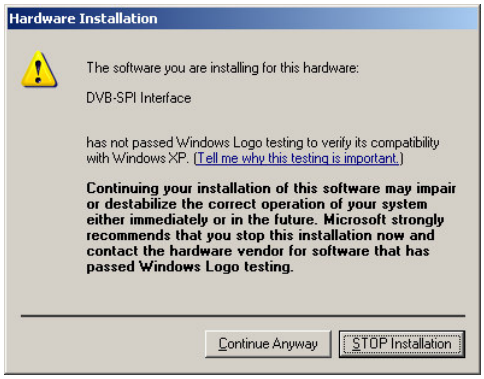
Click the NEXT button. The next Found New Hardware Wizard screen appears.



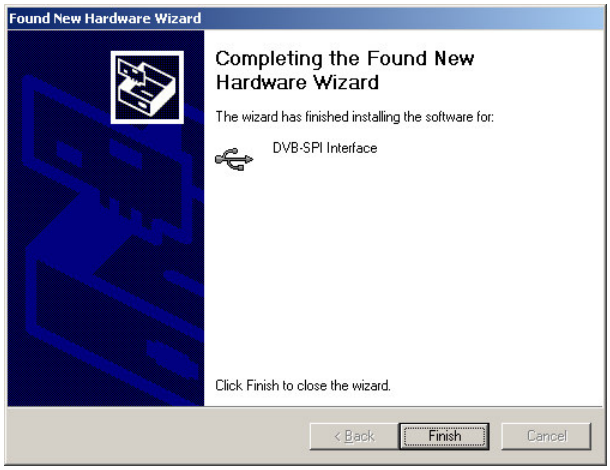
If more than one DVB-SPI interface is listed, select the one located at

“C:\Program Files\COOL.STF\TSReaderPro\Drivers\DTVWorks”

Click the NEXT button. A Hardware Installation screen appears warning this driver has not passed the Windows Logo testing.



Click the CONTINUE ANYWAY button. The system sets a Restore point then completes the installation. The Completing found new hardware screen appears.

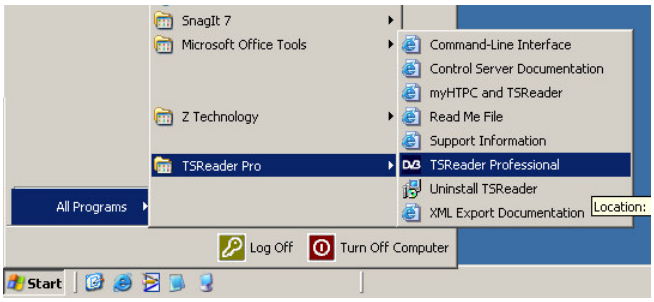


Click the FINISH button.

Associate the 'default profile' to DTVWorks-SPI

Now we are ready to associate the default profile in TSReader Professional to the DTVWorks-SPI driver that communicates as a DVB-SPI Interface with the LVDS to USB adapter. Once the association is made then WinDMpro can start TSReader Professional with the TSReader Pro toolbar button.

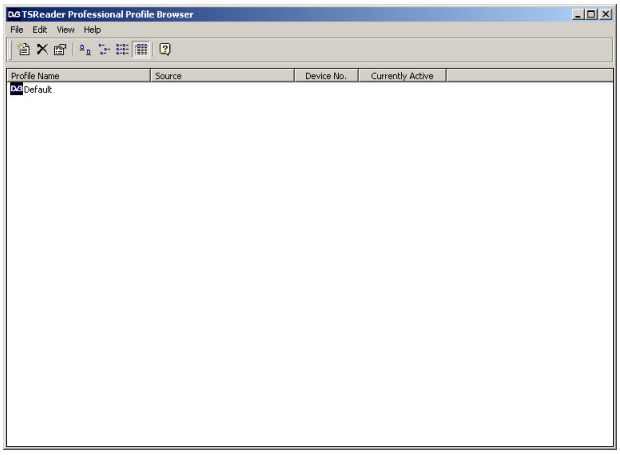
Start TSReader professional by pressing the Windows START key on your keyboard, the clicking on All Programs, the COOLSTF, then TSReader Professional.



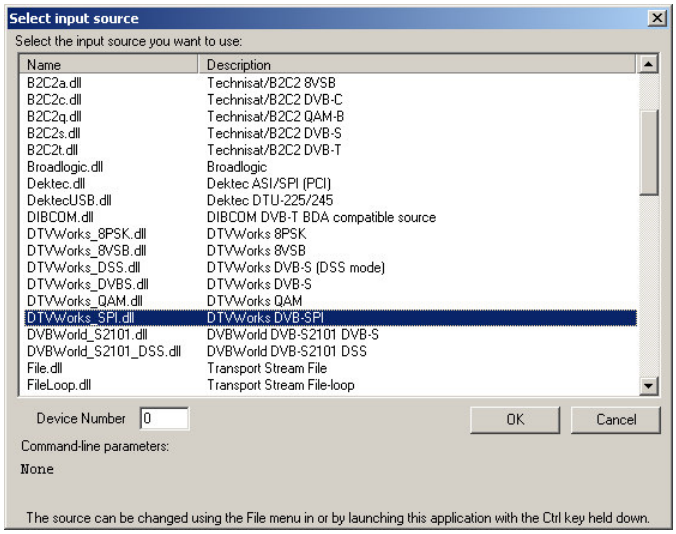
Note: There are other entries in the TSReader Pro folder to access program documentation.

Once this installation is complete see the documentation shown above for a more detailed description of TSReader Pro's many features.

The TSReader Profession Profile Browser screen appears.

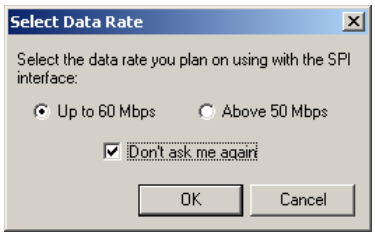


Double click on DEFAULT, The Select input source screen appears.

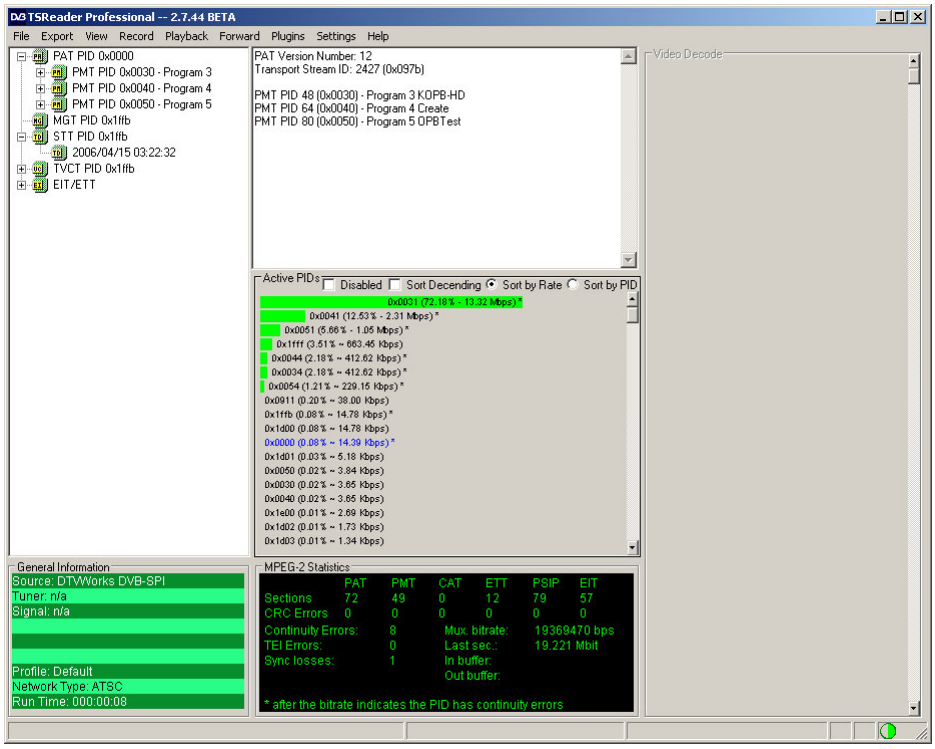


Scroll down to select “DTVWorks_SPI.dll DTVWorks DVB-SPI” Click OK. If you have your Windows firewall enabled a Windows Security Alert screen appears.

Click UNBLOCK. A Select Data Rate screen appears.



Click “Up to 60 Mbps”, check “Don’t ask me again” then click OK. If you have the LVDS to USB adapter plugged into the back of the DM1010, and the DM1010 is tuned to a channel with Sync, EQ, and TOV lock lights lit, and the Transport Stream output is enabled IE “TS+” on the DM1010 display the you should see the TSReader Professional screen appear with the PID table decoded and an active PID list displaying percentage of use of total bandwidth of each program stream.

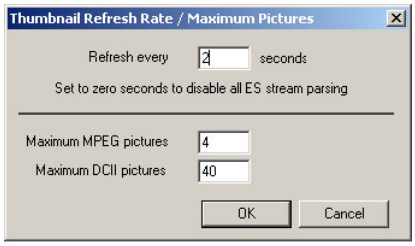


Enable common TSReader Pro settings for WinDMpro

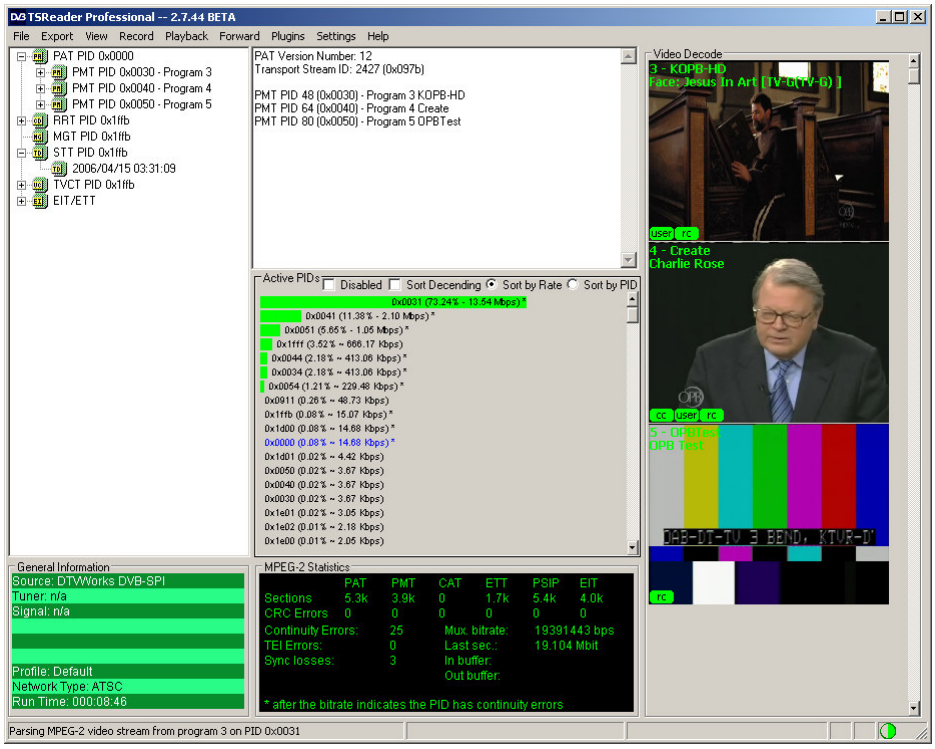
You may want to change some of the default settings of TSReader Pro.

Turn on Video Thumbnails (default is setting is disabled)

In TSReader Pro click on the “Settings” menu, select “Thumbnail Thread”, then select “Priority Normal”. Then click on “Settings” menu again, select “Thumbnail Thread”, then select “Refresh Rate” the following screen appears.



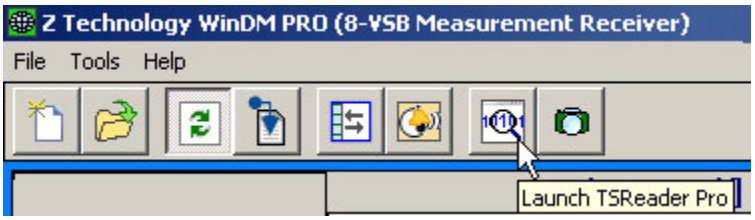
Enter 2 in the seconds field, then click OK. The TSReader Pro screen with video thumbnails appears.



Congratulations, you are now ready to use TSReader Professional software with the DM1010 Professional demodulator.

Starting TSReader Pro from WinDM Pro

To start TSReader Pro from WinDM Pro click the TSReader Pro button in the WinDM Pro toolbar.



Section 4: SPI Connector Pin-Out

Transport Stream SPI Connector Pin-Out

The LVDS to USB adapter uses the male 25 contact type D subminiature connector specified in ISO Document 2110 (1989), with the contact assignment shown in table 1.

Table 1 - Pin Assignment

Pin	Signal line	Pin	Signal line
1	Clock A	14	Clock B
2	System Gnd	15	System Gnd
3	Data 7 A (MSB)	16	Data 7 B
4	Data 6 A	17	Data 6 B
5	Data 5 A	18	Data 5 B
6	Data 4 A	19	Data 4 B
7	Data 3 A	20	Data 3 B
8	Data 2 A	21	Data 2 B
9	Data 1 A	22	Data 1 B
10	Data 0 A	23	Data 0 B
11	DVALID A	24	DVALID B
12	PSYNC A	25	PSYNC B
13	Cable Shield		