

VF-REC

Advanced Transport-Stream/SDI Recorder

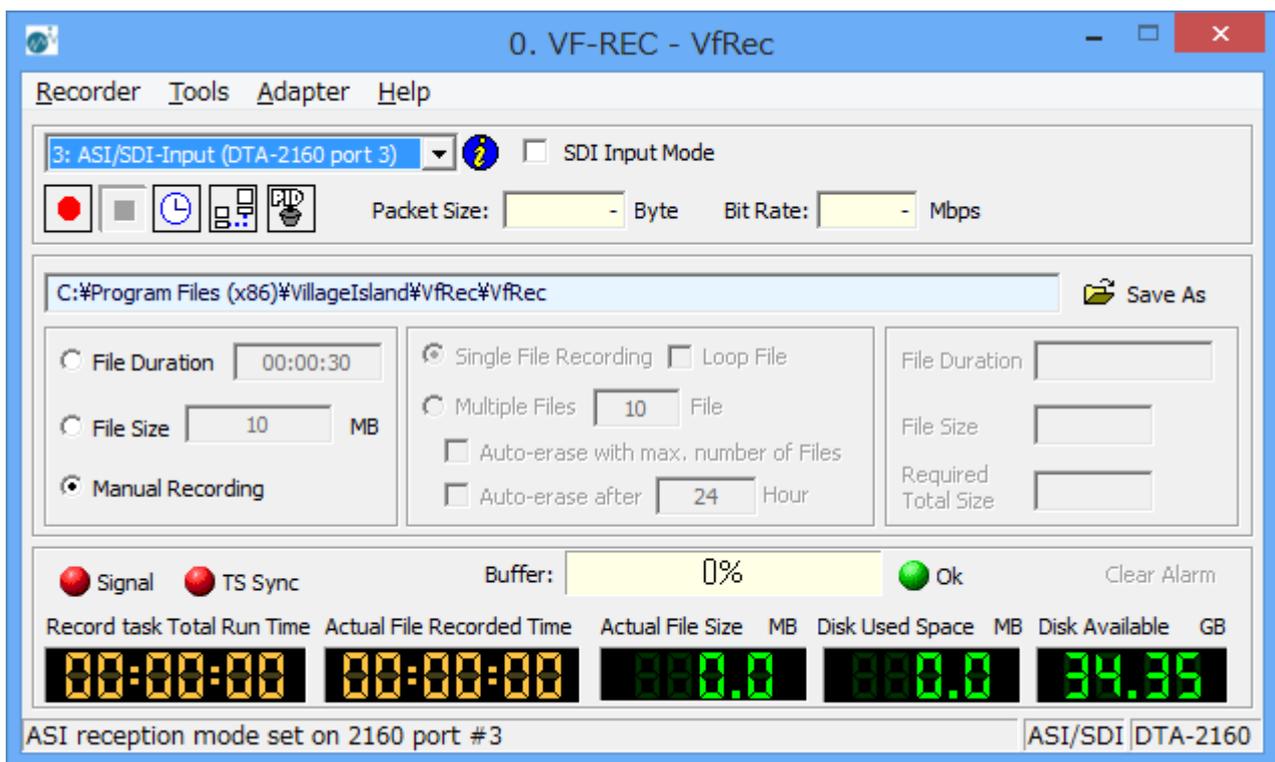


Table of Contents

1. Introduction	3
2. Specifications and Minimum Requirements	4
3. VF-REC Software Installation.....	6
4. VF-REC Revision History	7
5. VF-REC Overview	11
6. SNMP Remote Control	30
7. Support Contact information	35

1. Introduction

The VF-REC is a cost-effective software package designed for Advanced Recording of MPEG-2 Transport Streams or SDI video signals. The VF-REC is intended to be installed by the user on any qualifying PC and work in conjunction with DekTec input devices.

The GUI of the VF-REC displays information about the incoming signal, the recording process and the available disk space in regards with your settings and provides all the necessary controls for the fine tuning of your recording. Chapter 5 gives an overview of the GUI and details how to configure your VF-REC for your specific needs.

The application has integrated functionalities for scheduled captures and continuous (24H/365D) recordings. The user can set-up continuous recording as loop recording on a single file or as multiple files, depending on user needs and disk capacity. Recorded files can be set by size or duration or simply Start/Stop manually controlled.

For multiple files, the *auto-erase* function permits to limit the maximum number of files or to delete files older than a specified number of hours. It is also possible to launch a sequential recording for a specific number of files. No packet loss occurs between consecutively recorded files. A *merge* tool is provided to recombine multiple sequential files and recreate the original signal. When multiple files, file names are indexed and time stamped.

One can launch manually a recording on the spot or schedule it following a user-defined Schedule. The section 5.5.2 details the use of schedules.

Several additional functionalities are provided. The PID filtering permits to define list and ranges of PIDs to replace selected packet by Null Packets. A log file created in the record directory keeps track of all actions by the application. The buffer is monitored and past buffer overflows are reported in the GUI, with the possibility to clear the past alarms. Real-time monitors are displayed regarding application recording run time, actual file size and the actual file duration, the disk used space and then disk remaining space.

The VF-REC is the ideal application for scheduled captures, broadcast signals continuous storage, or simply for your testing and troubleshooting environment. VF-REC can also be used for building replay system at your HFC network local nodes. Several instances of VF-REC can run on the same host system to build cost effective multiple TS recording, for example in combination with DekTec's DTA-124 (4x ASI Input PCI card).

VF-REC supports all DekTec input adapters and provides an adapted GUI for specific inputs like DTU-234 and DTA-160.

2. Specifications and Minimum Requirements

2.1. Key Attributes

Parameter	Value
Input Rate	0...214 Mbit/s*

* for DVB-ASI with DTA-120, DTA-124, DTA-140 , DTU-225 or DTU-245 but DVB-SPI with DTA-122: 108 Mbit/s (max. DVB/SPI rate)

2.2. Minimum PC Requirements

Platform	Windows XP SP3 / Vista SP2 / 2003 SP2 / 2008 SP2 / 7 / 8 / 10
Processor	PIV@1.0GHz** (minimum)
RAM	512MB (minimum)

** Or equivalent AMD processor

2.3. Supported DekTec Adapters

The VF-REC supports the following DekTec adapters:

Type	Description	Input(s)	Output(s)
DTA-115	OFDM Modulator / UHF Upconverter for PCI Bus DVB-T or DVB-H with 1 In/Out ASI Port for DVB-ASI	1x DVB-T/H/QAM/ ISDBT output 1x DVB-ASI***	
DTA-120	DVB-ASI Input Adapter for PCI Bus	1x DVB-ASI	
DTA-122	DVB-SPI (LVDS) Input Adapter for PCI Bus	1x DVB-SPI	
DTA-124	Quad ASI/SDI Input Adapter for PCI Bus	4x DVB-ASI	
DTA-140	DVB/ASI Input+Output Adapter for PCI Bus DVB-ASI	1x DVB-ASI	1x DVB-ASI
DTA-145	Multi-Purpose ASI/SDI Adapter for PCI Bus	2x DVB-ASI***	
DTA-160	GigE TS-over-IP + 3 ASI Ports for PCI Bus TS-over-IP or DVB-ASI	1x Gig-E 3x DVB-ASI****	
DTA-2131	Multi-Standard VHF/UHF Receiver for PCI Express	1x RF	
DTA-2135	Dual DVB-T RF Input for PCI Express Bus	2x DVB-T RF	
DTA-2136	Dual-Channel QAM-A/B/C Receiver for PCI Express	2x QAM RF	2x DVB-ASI
DTA-2137	Dual DVB-S/S2 RF Input for PCI Express Bus	2x DVB-S/S2 RF 2x DVB-ASI****	
DTA-2138	DVB-T2 / DVB-C2 Receiver for PCI Express	1x C2/T2 RF	
DTA-2139	Twelve-Channel QAM-A/B/C Receiver for PCI Express	12x QAM RF	1x Loop Through
DTA-2144	Multi-Purpose ASI/SDI Adapter for PCI Express Bus	4x DVB-ASI****	
DTA-2145	Multi-Purpose ASI/SDI Adapter for PCI Express Bus	2x DVB-ASI***	
DTA-2152	Dual-Port HD-SDI Adapter with Genlock	2x SD/HD-SDI Analogue genlock	
DTA-2154	Quad-Port HD-SDI/ASI Adapter with Genlock	4x SD/HD-SDI / ASI Analogue genlock	
DTA-2160	GigE + 3x ASI Ports for PCI Express	1x Gig-E 3x DVB-ASI****	
DTA-2162	Advanced Network Card with Dual GigE Ports	2x Gig-E	
DTA-2174	Quad 3G-SDI/ASI with 4K Support and Genlock	4x 3G-SDI / ASI	
DTA-2180	H.264 HD contribution encoder	1x SD/HD-SDI 1x HDMI	1x DVB-ASI
DTU-225	DVB-ASI Input Adapter for USB	1x DVB-ASI	
DTU-234	QAM-B Input Adapter for USB	1x RF QAM-B	
DTU-236A	8-VSB / QAM-A/B/C RF Probe and ASI Input for USB	1x RF QAM 1x DVB-ASI	
DTU-238	DVB-T2/T/C, ISDB-T and ASI probe for USB-2	1x RF QAM 1x DVB-ASI	
DTU-245	DVB-ASI Input+Output Adapter for USB	1x DVB-ASI	1x DVB-ASI
DTU-351	HD-SDI Input for USB-3	1x SD/HD-SDI	
DTE-3120	Networked DVB-ASI Input Adapter.	1x DVB-ASI	
DTE-3137	Networked DVB-S/S2 RF Input.	1x DVB-S/2 RF	1x DVB-ASI

*** 2x Output, or 1x Input + 1x Output

**** bi-directional Input/Output ASI port

3. VF-REC Software Installation

3.1. Installation

The VF-REC software installation is self-explanatory. The “VF-REC Setup.exe” program will guide you through the installation process.

The latest version of ‘VF-REC Setup.exe’ can be found in the download section of the DekTec website, at <http://www.dektec.com/downloads>.

The VF-REC requires the Dta device driver for PCI(e) cards or Dtu device driver for USB adapters. The setup program includes an option to install the Dta/Dtu device driver. It is recommended to always install the included driver. The installation process will automatically check the version number of the driver, and leave the current driver on the system if it is newer than the driver in the install package.

3.2. Cautions and Recommendations

- Virus-detecting software (e.g. Norton Internet Security, McAfee Internet security) or Windows Update tasks or any wake-up routines affects your CPU and hard-disk performance especially when continuous 24H recording set-ups and may result in VF-REC buffer overflow and data loss or corruption. Therefore it is recommended to disable all those anti-virus software and other routines tasks from your system for professional applications.
- Trash Can setting.
For continuous recording applications, make sure that the hard-disk that is used for recording has its Trash Can’s property set not to keep deleted files. With this check, you will prevent your hard-disk to get progressively overloaded by old deleted files. For Trash Can properties, right click on the Trash Can icon from the Desktop.
- Continuous recording shortens lifetime of HDDs.
For professional continuous recording, please maintenance it at regular intervals. We do recommend the use of external HDD devices to avoid risk to your main system and system reinstallation nuisances.
- Prevent from operating your Record hard-disk with large file browsing or large file operations while your VF-REC is running to prevent affecting your recording or your disk performances.
- For rates above 120Mbps, use an SSD drive or striped array. Recording of 3G-SDI signal requires a RAID setup of two SSD drives.

4. VF-REC Revision History

Revision	Date	Change
V1.22.0.411	2016.07.27	<ul style="list-style-type: none"> Added support for DTA-2180
V1.21.1.407	2016.07.06	<ul style="list-style-type: none"> Fixed Schedule feature of IP devices (keep a different schedule list for each set of multicast group address + port number)
V1.21.0.402	2016.04.19	<ul style="list-style-type: none"> Added missing statistics support for DTA-2131. Fixed Schedule feature bug.
V1.20.1.398	2015.12.21	<ul style="list-style-type: none"> Added support for DTU-238
V1.19.3.392	2015.10.19	<ul style="list-style-type: none"> Can enable APSK mode directly from VF-REC (DTA-2137) Fixed LNB control (DTA-2137)
V1.19.0.385	2015.10.01	<ul style="list-style-type: none"> Converted from DtGrabber+ into VF-REC Fixed 3G-SDI functionality
V1.18.3.368	2015.03.12	<ul style="list-style-type: none"> Added DTA-2174 3G-SDI support T2MI output TS rate is configurable (DTA-2131/2138)
V1.17.2.352	2014.11.05	<ul style="list-style-type: none"> Added L.3 baseband frames capture (DTA-2137) Added DVB-T2 Lite support (DTA-2131) Added support for user-configurable IQ sampling rate Fixed SNMP related issues
V1.16.4.303	2014.03.12	<ul style="list-style-type: none"> Various fixes
V1.16.2.282	2014.01.21	<ul style="list-style-type: none"> Added DAB support for DTA-2131
V1.15.1.259	2013.12.05	<ul style="list-style-type: none"> Added DTU-2154 support
V1.15.0.250	2013.11.05	<ul style="list-style-type: none"> Added DTU-351 support
V1.14.4.241	2013.09.10	<ul style="list-style-type: none"> Fixed SDI recording modes
V1.14.3.237	2013.08.14	<ul style="list-style-type: none"> Fixed multiple files recording issue
V1.14.2.233	2013.07.08	<ul style="list-style-type: none"> Added support for DTA-2162 (dual link reception supported) Added ISDB-T and T2MI support for DTA-2131 Added DTU-236 support
V1.12.3.195	2013.04.10	<ul style="list-style-type: none"> Correction in the setup file
V1.12.2.189	2013.03.19	<ul style="list-style-type: none"> Added support for DVB-T, DVB-T2, DVB-C2 on DTA-2131 Added support for DVB-T, DVB-T2, DVB-C, DVB-C2 on DTA-2138 Fixed SNMP feature for Windows Vista / Windows 7 Added file name timestamp feature for Manual Recording
V1.11.7.150	2013.02.19	<ul style="list-style-type: none"> Corrected behaviour of DTE devices
V1.11.6.140	2013.01.08	<ul style="list-style-type: none"> Corrected bitrate calculation for local Ethernet interface inputs Added correction for support on Windows Server 2003
V1.11.2.119	2012.11.09	<ul style="list-style-type: none"> Added support for DTA-2139 device

v1.10.0.95	2012.10.05	<ul style="list-style-type: none"> Improved writing speed of HD-SDI video format recording Added support for DTA-2131 device Added IQ samples recording mode for DTA-2131 device
v1.9.0.94	2012.08.16	<ul style="list-style-type: none"> Added support for HD-SDI video format Added support for DTA-2152 device Fixed blinking GUI glitches Fixed lost packets problem when recording multiple files Added CNR and BER report, along with improved user experience, for DTA-2137 and DTE-3137 Fixed IP setting problem for DTA-160 and DTA-2160
v1.8.0.93	2012.08.03	<ul style="list-style-type: none"> Fix for dropped packets when recording and merging several files
v1.8.0.92	2012.05.16	<ul style="list-style-type: none"> Support for Dta and Dtu V4 drivers
v1.7.5.90		<ul style="list-style-type: none"> DTE-3137 support Added Raw Recording mode
v1.7.4.84	2011.09.28	<ul style="list-style-type: none"> Fix for crash when selecting an ASI interface
v1.7.3.83	2011.09.26	<ul style="list-style-type: none"> DTA-2136 support Correction for DVB-T recording
v1.7.2.81		<ul style="list-style-type: none"> Correction for handling of -bufsize option Added a command line option "-autostart" to start recording when DtGrabber+ is started Increased the maximum number of schedule data from 20 to 100
v1.7.1.72		<ul style="list-style-type: none"> DTA-2137 LNB control (Polarization and 22Khz tone) and RF reception statuses added DTE-3120 support (Need to be launched with "DtGrabber+ -dte" command)
v1.7.0.71		<ul style="list-style-type: none"> Support for recording a TsolP received with via a local NIC (NOTE: requires a DekTec device with valid license) Improved disk writing performance Add command line option through which the size of the record buffer can be set (-bufsize <size_in_MB>)
v1.6.4.68	2010.02.01	<ul style="list-style-type: none"> Fixed issue with roll-over from file xxxxxx_99999.ts to xxxxxx00000.ts
v1.6.3.67	2009.11.05	<ul style="list-style-type: none"> DTA-2137 support Repeated (every X day) schedule control Multiple File scheduled recording with automatic schedule resuming Transition between connected schedules without packet loss 5 minute prior recording folder pre-access check with SNMP Alarm trap sending

v1.6.1.63	2009.07.28	<ul style="list-style-type: none"> • SNMP Get possible for recording status: Record Task Total Run Time, Actual File Recorded Time, Actual FileSize, Disk Used Space • Miscellaneous details correction for displays and controls • Correction for activation/deactivation of message Logging • Prevention for dangerous setting changes while recording
v1.5.8.59	2008.09.17	<ul style="list-style-type: none"> • Support for 2135, 235 and DVB-T channel lists • Null Packet dropping possible with PID Filtering • File auto-erase logic completed for cases when application is stopped and/or system is rebooted. • Automatic storing of window geometry depending on input
v1.5.6.55	2008.07.14	<ul style="list-style-type: none"> • Option setting to enable auto-deletion of file older than the recording start time
v1.5.6.53	2008.01.7	<ul style="list-style-type: none"> • Support for gathered Snmp Trap sending and for large of character strings within Snmp Traps • Correction for TS file start and stop to be at TS packets bounds
v1.5.5.52	2007.11.07	<ul style="list-style-type: none"> • Correction of frequency List for QAM64-B and QAM256-B • RF Level display for DTU-234 • Snmp improvement for numerous and large of character strings
v1.5.4.48	2007.09.26	<ul style="list-style-type: none"> • Support for recursive Loop recordings • SNMP Control for DTA-160 IP settings. • Corrections for SNMP Trap OIDs and for management of multiple and continuous DtGrabber+ sessions.
v1.5.2.41	2007.07.13	<ul style="list-style-type: none"> • Correction for Schedule control • Correction for DTU-234 ATSC mode
v1.5.1.39	2007.06.20	<ul style="list-style-type: none"> • SNMP Remote Control • Options settings
v1.4.2.35	2007.04.09	<ul style="list-style-type: none"> • Correction for handling of DTU-234 modulation types
v1.4.2.34	2007.03.29	<ul style="list-style-type: none"> • Correction for SDI File header and SDI recording • Bug Fix to prevent Overflow when PID Filtering • Change to XML format for Schedule File
v1.4.0.30	2007.03.01	<ul style="list-style-type: none"> • Scheduling: spot schedule or day of the week. Save and open of schedule file, auto-erasing of old schedules • PID Filtering (according to our market requirement, replacement of user defined PID, or intervals of PIDs by NULL Packets) • Multiple file recording for a fix number of files (So far, multiple file recording was always used together with auto-erasing rules) • Management of settings (registry) per inputs (Necessary for simultaneous recording of multiple streams. I advise to erase previous registry folder of DtGrabber+) • Support of DTU-234. • Some bug fix for window management with DTA-160 • SDI Controls added

v1.3.0.25	2006.11.13	<ul style="list-style-type: none"> • Support for DTA-160 TS over IP • New look-and-feel • Hard disk space checks and prevention messages • Message logging into log file
v1.2.0.14	2006.8.28	<ul style="list-style-type: none"> • Recompilation with latest drivers.
v1.1.0.9	2006.1.11	<ul style="list-style-type: none"> • Loop-file for single file recording • Multiple-files advanced functionalities: erasing file automatically older than X hours, setting Max number of files, creating files with Time stamp and index-number stamp • Merging tool to combine several files

5. VF-REC Overview

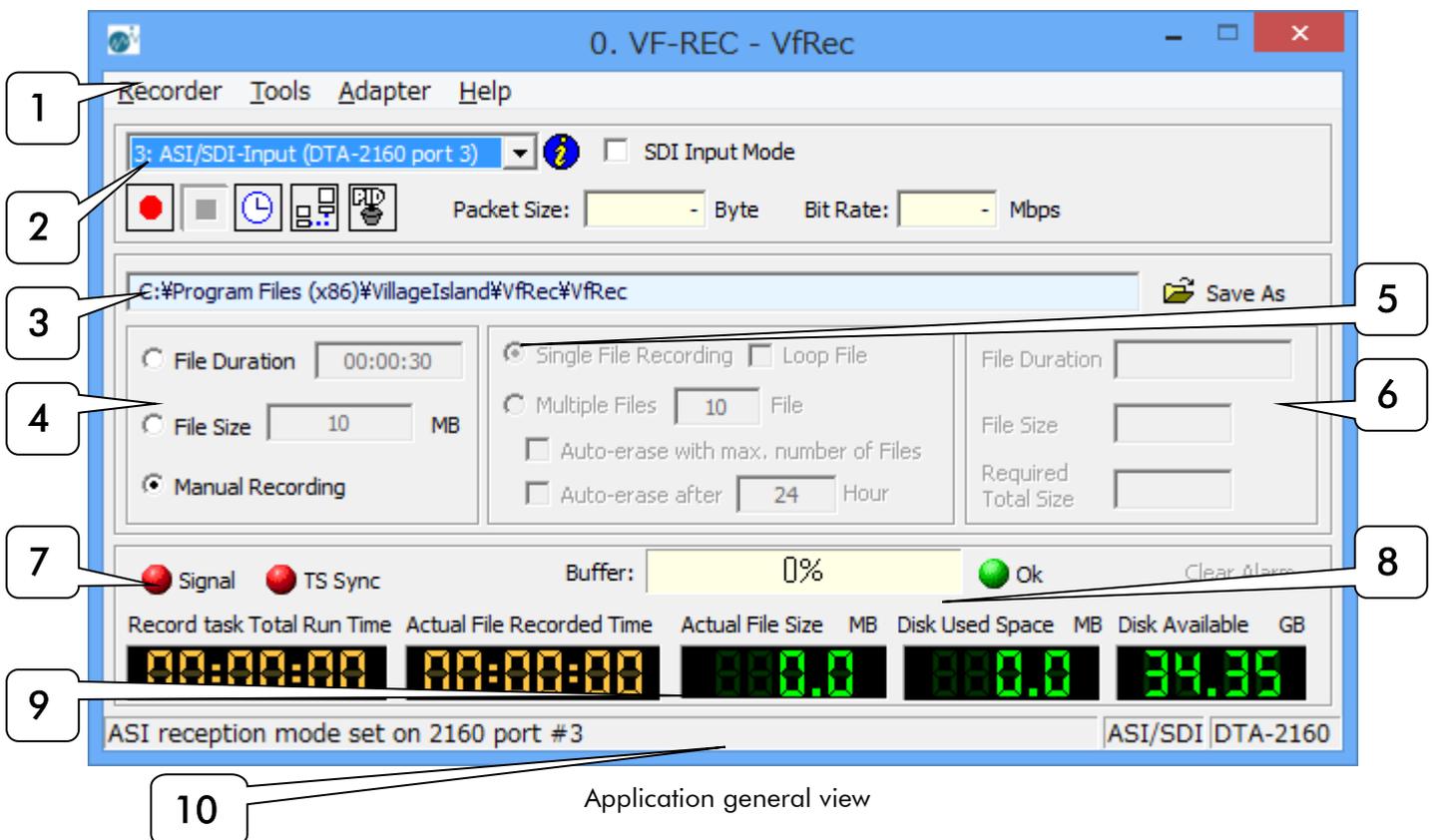
5.1. Launching the VF-REC

Start the VF-REC program from the Start Menu: **start->All Programs->Villagelands-> VF-REC**, or from your desktop click on the VF-REC shortcut, if available.



VF-REC application icon:

5.2. VF-REC Application General Layout



1. Menu Bar: The top area of the VF-REC application contains four menus: Recorder, Tools, Adapter and Help.

2. Adapter: This area displays the selected adapter and configuration/information such as Packet Size, bit-rate etc. of the incoming Transport Streams. Depending on the type of adapter, specific settings appear in this area.

This area also provides buttons for controls (ex: Start, Stop) and activation of functionalities (Schedule, Snmp control, PID filtering,...) of the recording application.

3. Record File Setting: This area displays all the information and settings for the configuration of your recording. On the top of this area is displayed the Record File name.

4. **File Type:** This area permits the user to define Record File by duration, by size or manually controlled.
5. **Record Option:** This area provides controls to select between Single File recording or Multiple File recording. For Single File recording, the loop recording can be selected. For multiple files, a specific number of file can be defined or unlimited number of files can be created through the setting of auto-erase rules detailed in section 4.3.3
6. **Estimates View:** This area displays estimates for File Duration, File Size and Total Size required for your recording configuration.
7. **Status Area:** Signal lock / TS Sync information of the incoming signal is reported in this area.
8. **Buffer Monitoring:** This area displays the status of the hardware buffer and reports when overflow occur. A [Clear Alarm] button permits you to clear and acknowledge past alarm.
9. **Process monitors:** This area displays monitors of the recording process including the total time of your recording configuration, the actual file recording time, the actual file size, the overall disk space used by your recording and the remaining disk space
10. **Message Bar:** Messages displayed in the bottom bar includes event reports, errors, warnings and information from the application. Type of input and of the adapter type info are displayed on the right side.

5.3. VF-REC Application Control

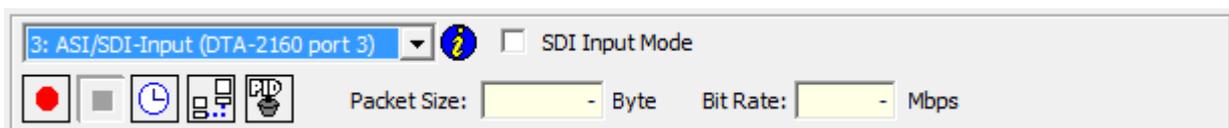
5.3.1. Menu Bar

The menu bar contains four menus:

1. **Recording.** From the Recording menu, the user can set the Record File name and access the application Options (See section 5.6 for details about Options)
2. **Tools.** From the Tools menu, several tools and functionalities are provided like the *merge* tools, the *schedule control* or the *PID filtering* set-up. (See section 5.5 for details about the several tools)
3. **Adapter.** The Adapter menu provides common information about the current adapter and a detailed setting window depending on your adapter, like for DTA-160 or DTU-234 (See Appendix A and Appendix B about how to control those devices)
4. **Help.** The help menu displays contact information for sales and technical support regarding DekTec products. It displays the current version of the application.

5.3.2. Adapter Area

This area indicates the selected adapter and provides configuration/information regarding the input signal. It can provide specific controls like of SDI recording settings, or adapter-related settings. Basic functionality buttons like Start/Stop, plus activation of features such as Schedule, SNMP or PID filtering are in this area too.

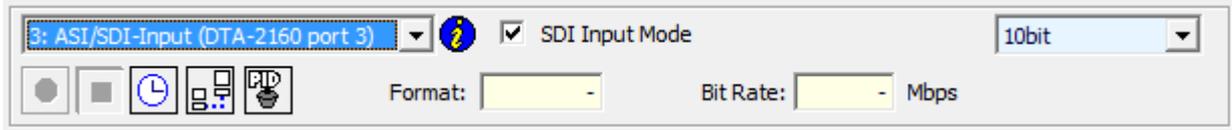


Adapter Area – common view

For MPEG2 TS input, Packet size and TS rate are reported.

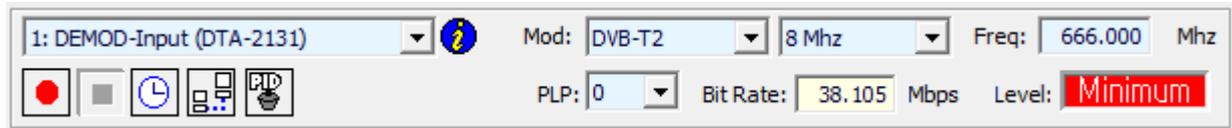
After selecting the SDI Input Mode, video input's number of lines and signal rate are displayed. Specific settings as Huffman compression and recording method (Video Frame/Full Frame, 8bits/10bits) are available.

NOTE: for 10-bit full frame SDI recording with a DTU-225 or DTU-245 it is recommended to use Huffman compression.

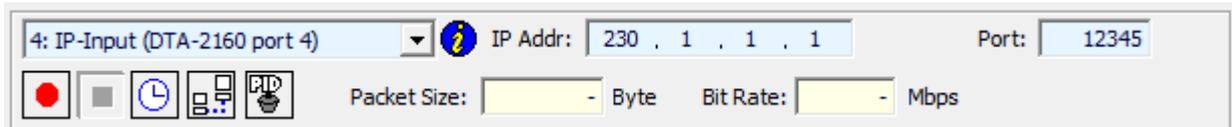


SDI parameters

The Adapter Area controls may vary depending on the selected adapter, as for the DTA-2131 or the DTA-2160



DTA-2131 Adapter View



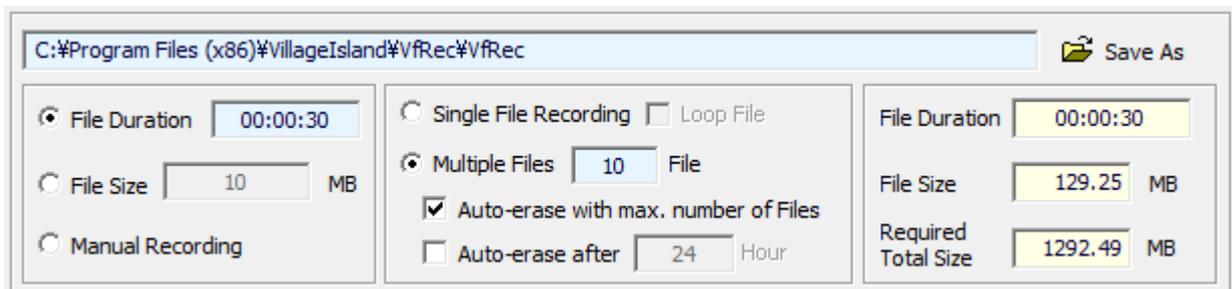
DTA-2160 Adapter View

Note that additional adapter specific settings can be found in the menu **Adapter->Settings**. See Appendix A and B for details.

The button displays the hardware adapter info window, like for the menu **Adapter->Info**.

5.3.3. Record File Settings

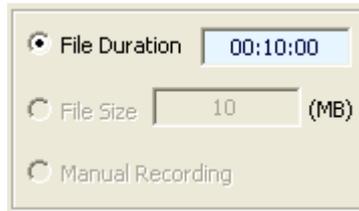
This area gathers all the settings for your recording, from Record File name control to detailed settings.



Record File Settings

Below the File Name setting box, three sub areas: **File Type**, **Record Option** and **Estimates** are provided.

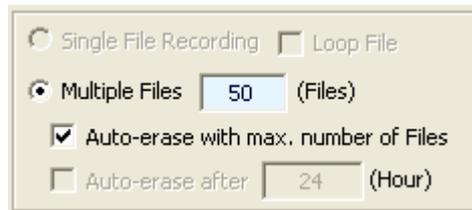
File Type


 A dialog box titled "File Type selection" with three radio button options. The first option, "File Duration", is selected and has a text input field containing "00:10:00". The second option, "File Size", has a text input field containing "10" and "(MB)" to its right. The third option, "Manual Recording", is unselected.

File Type selection

Specify the type of Record file control: Duration (HH:MM:SS), by size (MB) or manually controlled.

Record Option


 A dialog box titled "Record Option settings" with several options. "Single File Recording" is unselected, and "Loop File" is also unselected. "Multiple Files" is selected and has a text input field containing "50" and "(Files)" to its right. "Auto-erase with max. number of Files" is checked. "Auto-erase after" is unselected and has a text input field containing "24" and "(Hour)" to its right.

Record Option settings

The Record Options permit you to select between Single File Recording and Multiple File Recording.

For simple recording on the spot, select "Single File Recording" for the creation of a unique file.

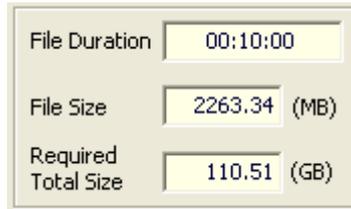
One can set-up a continuous recording on one single file by selecting the "Loop File" option. If "Loop File" is enabled, after the Record File reaches its maximum size or duration, incoming packets will be continuously written from the begin of the file by overwriting progressively the oldest packets. When the record is stopped, the VF-REC reprocesses packets from the file to rebuild the TS signal as originally received by the adapter.

One can launch a sequence of multiple files recording by enabling the "Multiple Files" option and set-up the target number of files. If no *auto-erase* rule is selected, the recording will stop after the last file has been recorded.

Auto-erase rules permits to set-up continuous recording with multiple files. Two type of automatic deletion of old files are available: "Auto-erase with max. number of Files" for automatic deletion of old files so to keep always the maximum number of files as specified by the user; and "Auto-erase after xx (hours)" rules to erase automatically files older than a specified number of hours.

For multiple file recording, file names are stamped with the host PC time at time of file creation and a 5 digit file index. To rebuild a TS File from sequentially created files, the user can use the "merge" tool from the **Tools->Merge** menu. See section 5.5.1 for description about the *merge* tool.

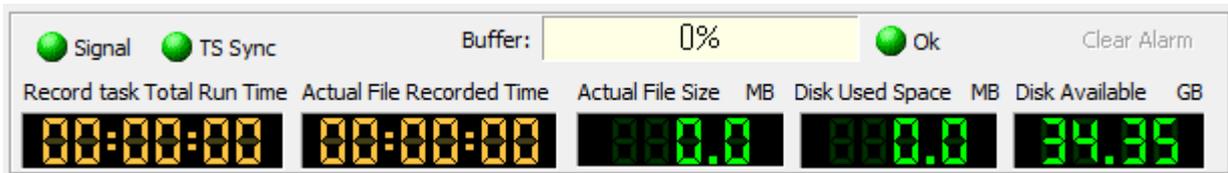
Estimates View



Estimates View

This view provides estimation of File Duration and File Size and the overall size required for your recording depending on your settings. For instance in the case of continuous recording with 50 multiple files of 10 minutes each at a rate 31.6 Mbps, one file will requires 2263 MB and the continuous recording will requires 110.5 GB approximately. VF-REC will check available space in regards with those estimates to validate the start of your recording.

5.3.4. Status Area



Status Area – Before Start of recording

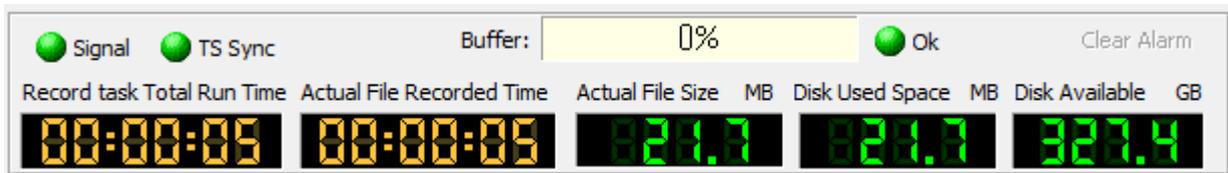
This area provides the status information: in the case of Transport Stream, two LEDs are present for signal detection and for TS Sync. For SDI input signals, only one LED (signal) is present.

Note: Starts and Stops times are traced in the log file. For multiple file recordings, File creation and deletion times are traced in the log file (refer section 5.4 for description about VF-REC logs)

The Status Area includes other status like the **Buffer Monitoring** and the **Process Monitors**.

5.3.4.1 Buffer Monitoring

The input adapter (hardware) buffer status is displayed in real-time and a green LED indicates the normal status.



Control Area – While recording

When incoming the data speed is higher than the disk capacity, this will result in Buffer overflow and data loss. When overflow occurs, the led turns to red then orange and the “overflow” message will be reported. (See section 5.3.5 for Message Bar and 5.4 for VF-REC logs explanation)

If the overflow persists, the application will try periodically to restore itself by purging the buffer. The overflow most likely disappear by itself after occurrence but for the operator to know afterward that it occurred and that data may have been corrupted, the application will keep displaying the orange LED and the message overflow.

The operator can clear the overflow alarm by pushing the [Clear Alarm] button on the right of the Control Area.

Note: All events related to overflow are reported in the Message Bar and traced in the log file (See section 5.3.5 for Message Bar and 5.4 for VF-REC logs explanation)

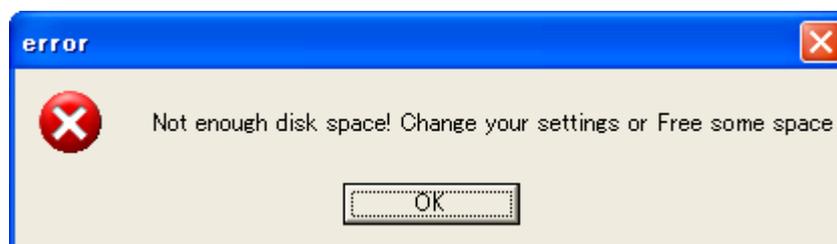
5.3.4.2 Process Monitors

The Process Monitors report Record process periods and disk usage. Are displayed Record task Total Run Time, Actual File Record Time, Actual File Size, Disk Used Space and Disk Available space.

1. **Record task Total Run Time.** This monitor displays the overall running time since the record task was started. For continuous recording like Loop recording or Multiple Files recording with auto-erase rule, the time will keep increasing until the record is stopped by the user. For single file recording without Loop, the monitor will be reset to 0 every time a new record is started.
2. **Actual File Record Time.** This monitor displays the record time of the actual Record File. For Multiple File recording, this monitor is reset every time a new file is created. For Loop File, this monitor keeps displaying the file maximum duration after the first loop is reached.
3. **Actual File Size.** This monitor displays the record time of the actual Record File. For Multiple File recording, this monitor is reset every time a new file is created. For Loop File, this monitor keeps displaying the file size after the first loop is reached.
4. **Disk Used Space.** This monitor displays the overall space used for the current recording task.

Note that the memory spaces displayed refer only to the actual Record done by the instance of the application and doesn't take into account other instance of VF-REC that may be running simultaneously on the same host PC.

5. **Disk Available Space.** This monitor displays the remaining space on the selected disk. In case the user starts a recording exceeding the available disk space, the following pop-up message will be displayed and the recording will be cancelled.



Starting a recording with insufficient disk space

Note: The application will generate an information message when the available disk space will reach a value lower than 2GB, a warning message when less than 200 MB and the application will stop when less than 100MB remains on the disk. The default values for those

events/messages can be customized the Options (See section 4....)

5.3.5. Message Bar

The bottom Message Bar displays messages from the application on the left and type of input and adapter on the right.



Message Bar – Example of message from the application

Messages can be status information regarding the recording process (ex: “Ready”, “Recording”) or report of application actions (ex: “New File Created”, “File Deleted”, “File Reordering”) or information, warning or error messages like overflow messages, insufficient disk space, etc..

Most of the messages are simultaneously traced in the log file (See section 5.4 for detailed message list and explanation about logging).

5.4. VF-REC Messages and Logs

5.4.1. Application Messages

The VF-REC application generates messages in the Message Bar, in a Log File and as SNMP Trap if enabled so. Three levels of message are considered: INFO (Information), WARN (Warning) and ALAR (Alarm) for Alarm messages when recording or the quality of the recording is affected. The following table provides the list of all messages:

Message	Level	Comment
Input Signal Detected	INFO	
Input Signal Lost	ALAR	
Ready	INFO	
Recording started	INFO	
Recording failed to start	ALAR	Common message for both SDI and TS recording
Invalid input SDI signal. Recording aborted!	ALAR	Specific message for SDI recording
File created: <i>FileDirectory + FileName</i>	INFO	
New file created: <i>FileDirectory + FileName</i>	INFO	Only when Multiple File recording
Deletion of old file: <i>FileDirectory + FileName</i>	INFO	Only when Multiple File recording with <i>auto-erase</i> rule
Failed deletion of old file: <i>FileDirectory + FileName</i>	ALAR	Only when Multiple File recording with <i>auto-erase</i> rule
Hardware Overflow	ALAR	
Hardware Overflow. Too many occurrences without recovery, Buffer is purged	ALAR	Application purges automatically the buffer if too many occurrences of the overflow
Alarm cleared	INFO	When the user click the [Clear Alarm] button
Recording stopped	INFO	
File re-ordering started	INFO	Only after stopping a Loop File recording
File re-ordering finished	INFO	Only after Loop File recording
Information: Less than 2GB remaining on your Hard-Disk	INFO	
WARNING! Less than 200MB remaining on your Hard-Disk	WARN	
DANGEROUS! System halted due insufficient Hard-Disk space	ALAR	If less than 100MB on disk, the application stops automatically the recording.
Connected to SNMP service	INFO	
Failed to connect to SNMP service	ALAR	
Disconnected from SNMP service	WARN	

VF-REC Log message list

Note that some additional and more detailed information can be displayed in the Message Bar (ex: Loop File Reordering progress: 75%, ...)

5.4.2. Message Logging

All messages generated by the application are logged into the file "VfRecLog.txt" which is created automatically into the Record File directory. The following provides an example of logs generated by the application with a Multiple File recording with *auto-erase* rule for maximum 5 files. It provides details about times where file are created and deleted. In this example, a TS Sync loss is reported.

```
2007-02-27 16:50:53 Input Signal Detected
2007-02-27 16:50:55 Recording started
2007-02-27 16:50:55 File created: C:\Record_20070227_165055_00001.ts
2007-02-27 16:50:55 Information: Less than 2GB remaining on your Hard-Disk
2007-02-27 16:51:12 New file created: C:\Record_20070227_165112_00002.ts
2007-02-27 16:51:29 New file created: C:\Record_20070227_165129_00003.ts
2007-02-27 16:51:45 New file created: C:\Record_20070227_165145_00004.ts
2007-02-27 16:52:02 New file created: C:\Record_20070227_165202_00005.ts
2007-02-27 16:52:19 New file created: C:\Record_20070227_165219_00006.ts
2007-02-27 16:52:36 New file created: C:\Record_20070227_165236_00007.ts
2007-02-27 16:52:36 Deletion of old file: C:\\Record_20070227_165055_00001.ts
2007-02-27 16:52:52 New file created: C:\Record_20070227_165252_00008.ts
2007-02-27 16:52:52 Deletion of old file: C:\\Record_20070227_165112_00002.ts
2007-02-27 16:53:06 Input Signal Lost
2007-02-27 16:53:07 Input Signal Detected
2007-02-27 16:53:10 New file created: C:\Record_20070227_165310_00009.ts
2007-02-27 16:53:10 Deletion of old file: C:\\Record_20070227_165129_00003.ts
2007-02-27 16:53:15 Recording stopped
```

VF-REC Log File – Example of logs generated by the application

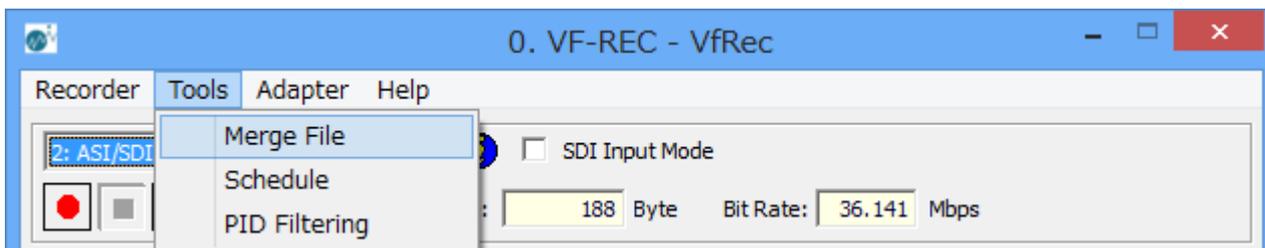
Note: by default, the log file is created as "VfRecLog.txt" within the Record File directory. Therefore it is recommended when running several instance of VF-REC on a same host PC to use separate directory for each recording, or to specify separate log file names per input in the Options (See section 5.6 for details about Options).

5.5. VF-REC Tools

5.5.1. Merge tool

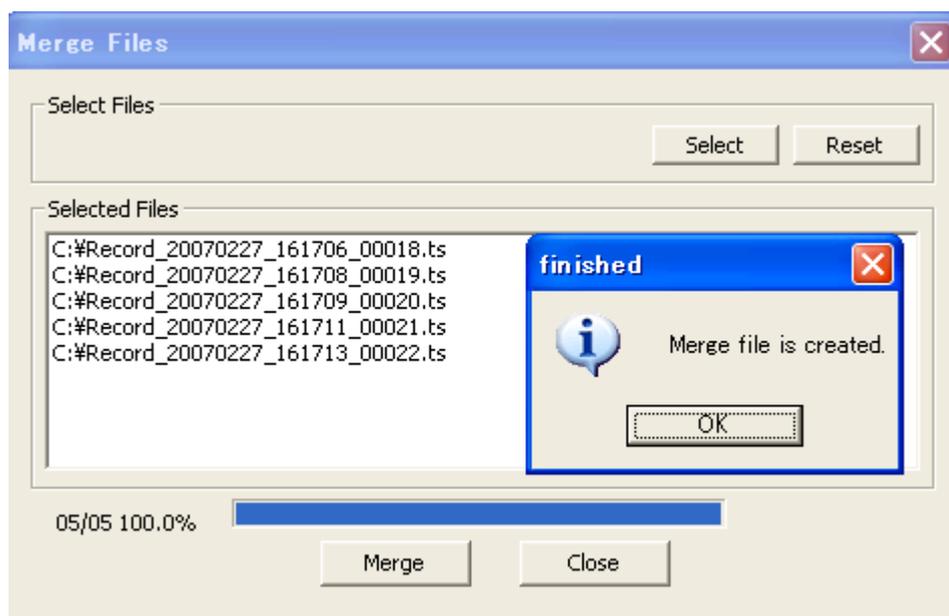
After recording with multiple file option, one may need to rebuild the original signal from sequentially created files. For this purpose, the merge tool was created.

To launch the tool, access the following menu: **Tools->Merge**



Merge tool – Access the merge tool from the Tools menu

From the Merge Files window, select first your input files from the “Select” button then click on [Merge] button to perform the merging. A pop-up window will indicate you when the process is completed.



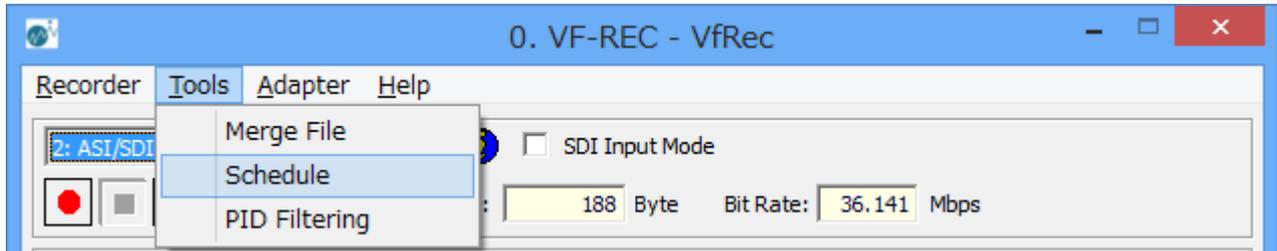
Merge tool – Merging five files

Note that a maximum of five files can be selected by the merge tool, but one can use the merge tool recursively to combine as much as files as necessary.

5.5.2. Schedule control

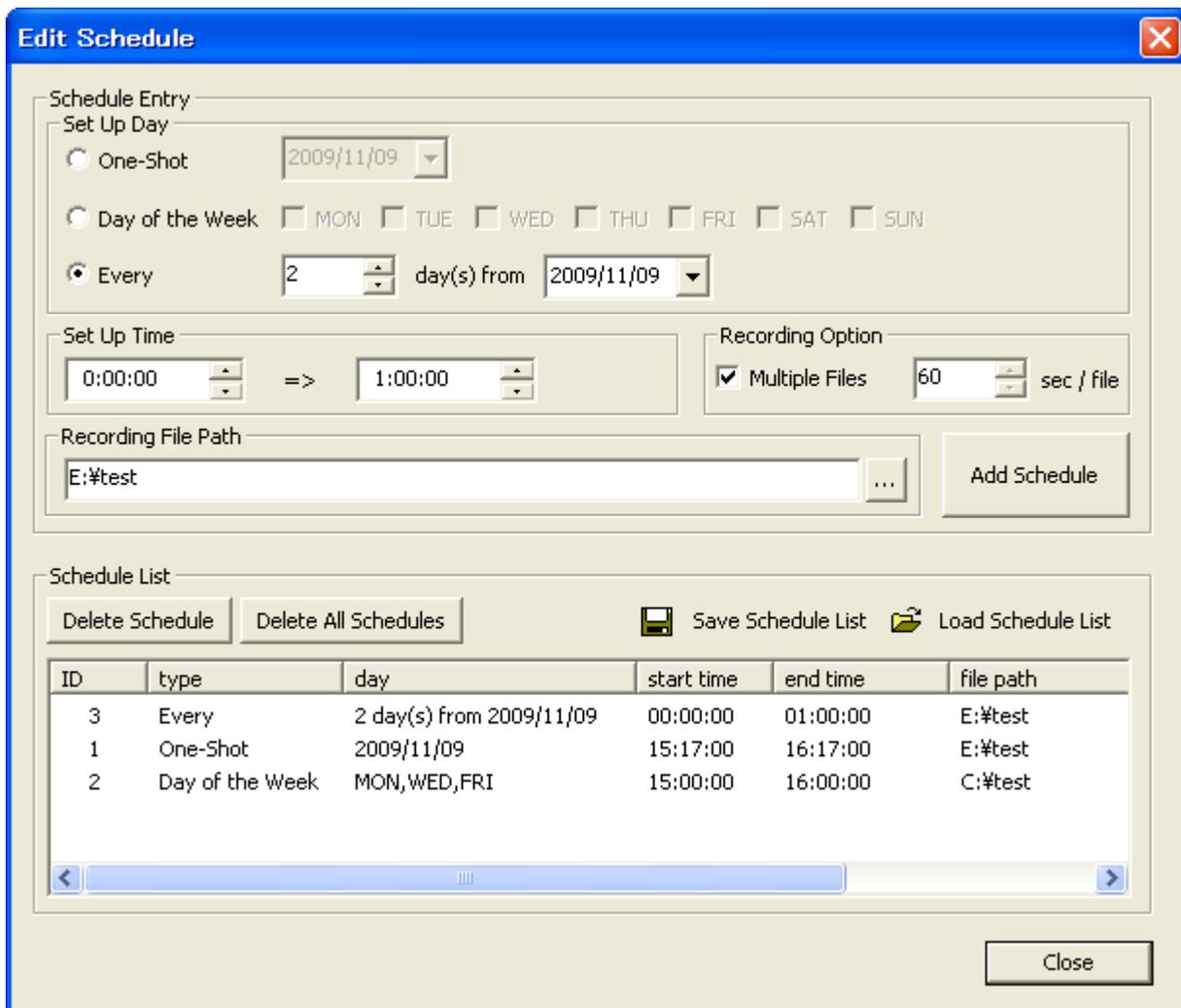
The *Schedule control* permits the user to program recording based on time information.

The Edit Schedule window can be launched from the menu **Tools->Schedule**



Schedule control – Access the Edit Schedule window from the Tools menu

From the Edit Schedule window, enter Schedules info by setting the Day and the Time of the recording.



Schedule control – Edit Schedules window

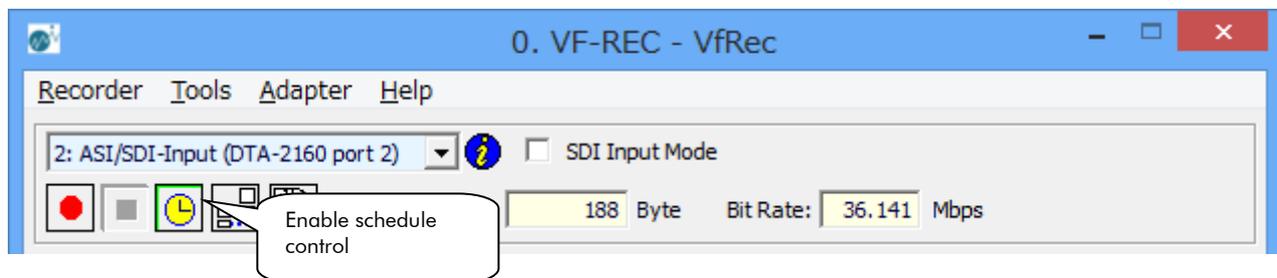
In the Set Up Day area, one can specify a date (“One-Shot” recording), or one or multiple day of the week (like every Wednesday and Friday), or a repetition every X days starting from a specific date.

In the Set Up Time area, one can specify the recording start and stop times. It is also possible to specify a multiple file recording. After checking the path on disk for the scheduled recording, click on “Add Schedule” to add the schedule to your Schedule List. Each new schedule receives an ID and is displayed in the Schedule List.

If the Start Time is later then the Stop Time, the application will assume automatically that Stop Time is for the following day of the start time. If so, the End Time will be displayed with mention “(+1)” in the Schedule List

To save a schedule list in a text file or to restore a schedule list from file, use the “Save Schedule List” and “Open Schedule List” buttons. To delete a schedule from the list, click on the schedule ID and push the “Delete Schedule” button.

When your schedules are correctly configured, make sure to activate the schedule control by clicking on the Schedule button from the main window.



Schedule control – Enabling schedule control

When the Schedule control is enabled, the recordings will start automatically according to the Schedule list information.

Due to the nature of schedule recording (Start and Stop time), it is not possible to schedule a loop file recording.

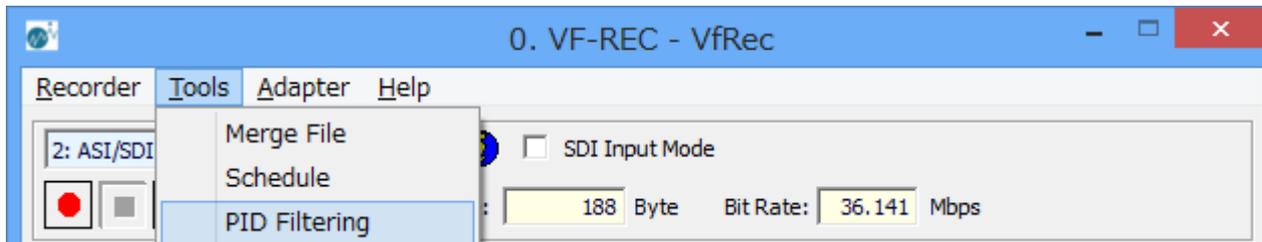
CAUTION: Schedules are executed according to the host PC system’s clock. Therefore make sure that your PC clock is properly synchronized. Old schedules will be automatically erased from the Schedule list once it is started or it is recognized by the application as a time in the past.

CAUTION: If a new schedule is added with a Start time before the current time and the Stop time after the current PC time, the schedule will not start unless the “Auto resume of the current schedule” option (see 5.6.5 Schedule option) is activated.

5.5.3. PID Filtering

The PID Filtering is a simple functionality that permits user to replace defined PID or interval of PIDs with Null Packets, or to simply drop Null Packets.

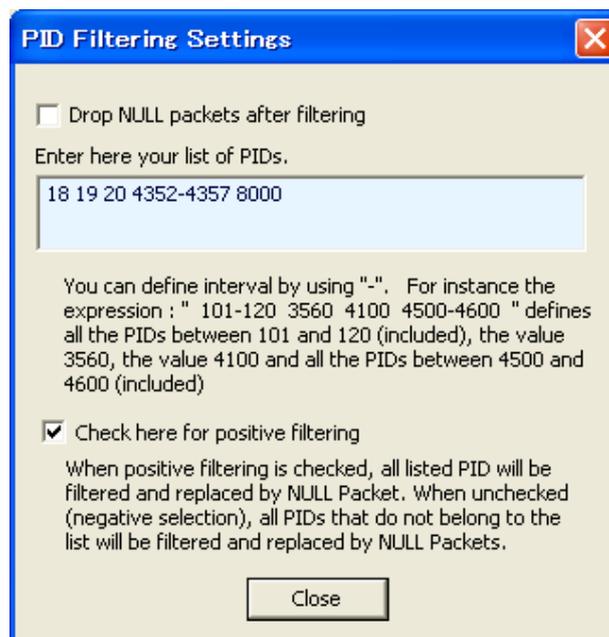
The PID Filtering Settings window is launched from the menu **Tools->PID Filtering**



PID Filtering – Access the PID Filtering setting window from the menu

Check “Drop Null packets after filtering” checkbox to drop all Null Packets.

In the middle edit box, the user can specify the list of item by separating them with space (“ ”) character (see below). Each item can be either a PID value or a PID interval defined with two PID values separated with a dash (“-”) character in between.

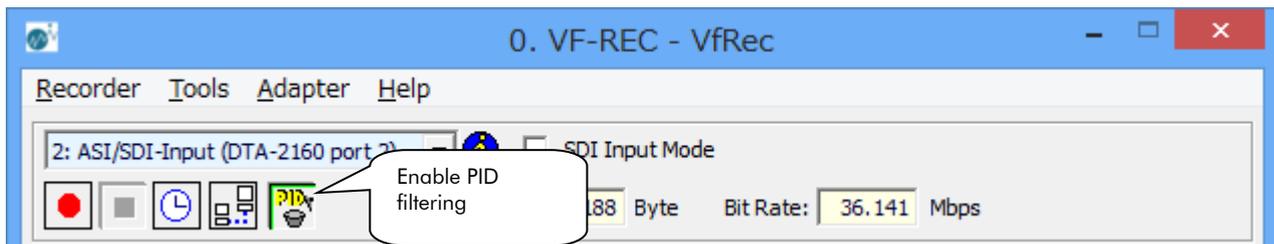


PID Filtering – Settings window

The PID Filtering can set as positive or negative. Positive filtering means that all defined PIDs or PID intervals will be replaced by Null Packet. Negative filtering means that those PID not belonging to the list of PIDs or PID intervals will be replaced by Null Packet.

Caution: Using PID Filtering consume additional CPU load. For continuous recording, we advise you to monitor your CPU performances in regards with the input TS and PID Filtering settings before installation.

To enable the PID filtering, make sure that the Control button PID Filtering is pushed



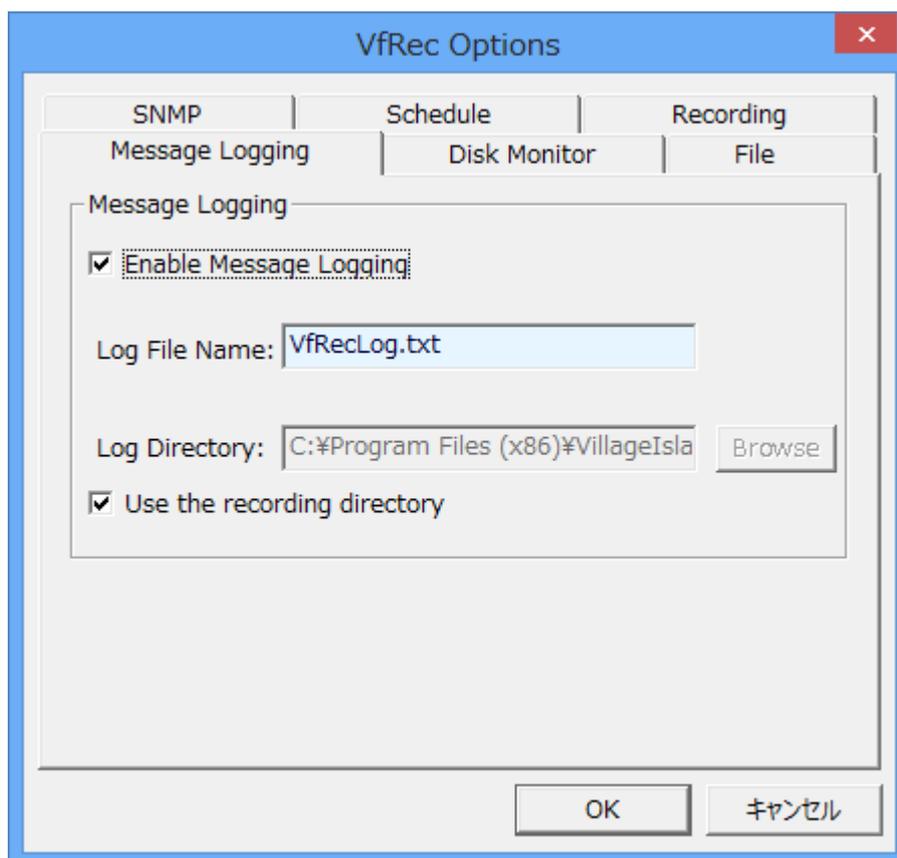
PID Filtering – Enable PID Filtering

5.6. Options

The options are available from the menu **Recorder->Options** and permit to fine-tune detailed settings of the application. All the options settings are saved in the windows registry in regards with the adapter input selected.

5.6.1. Message Logging options

From this window, the user can enable or disable the Message Logging, but can also specify the Log File Name. The message logging file is saved by default in the same directory as the recording file, but if the user want to specify a different directory uncheck the “Use the recording directory” option.



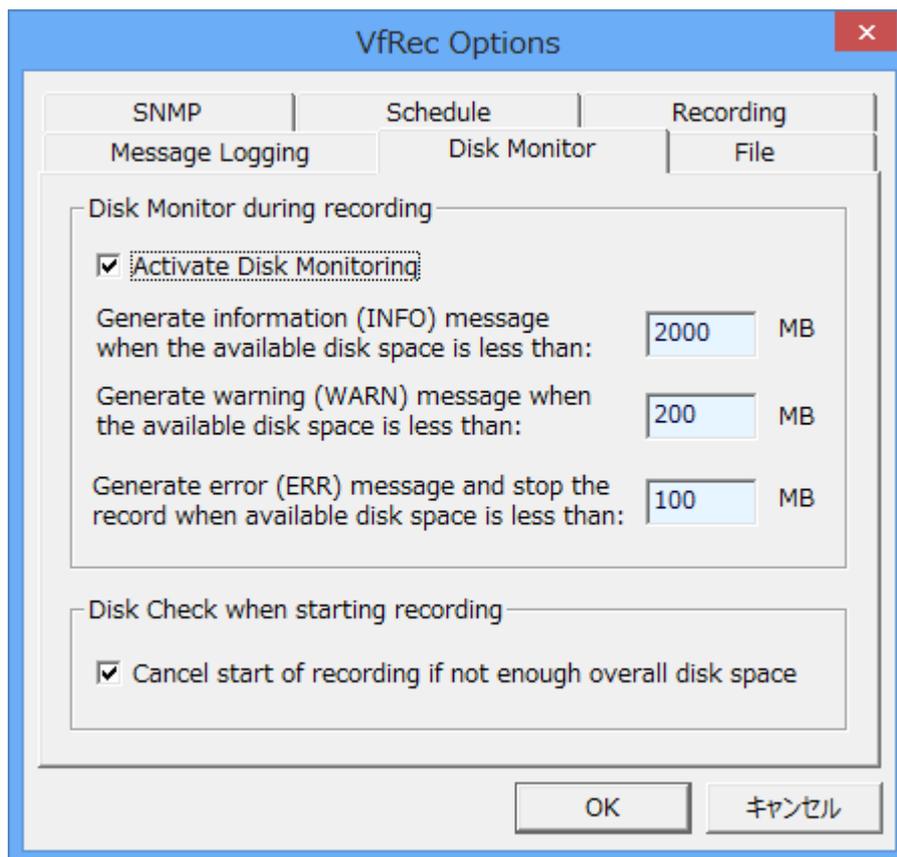
VF-REC Options settings – Message Logging

5.6.2. Disk Monitor options

From this window, the user can specify threshold levels for Disk Available Space to perform following actions:

- Generate an information (INFO) message when Disk Available Space reaches less than a certain value.
- Generate a warning (WARN) message when Disk Available Space reaches less than a certain value.
- Generate an error (ERR) message and stop the recording when Disk Available Space reaches less than a certain value.

The user can also disable the Disk Monitor by unselecting the “Activate Disk Monitor” checkbox.



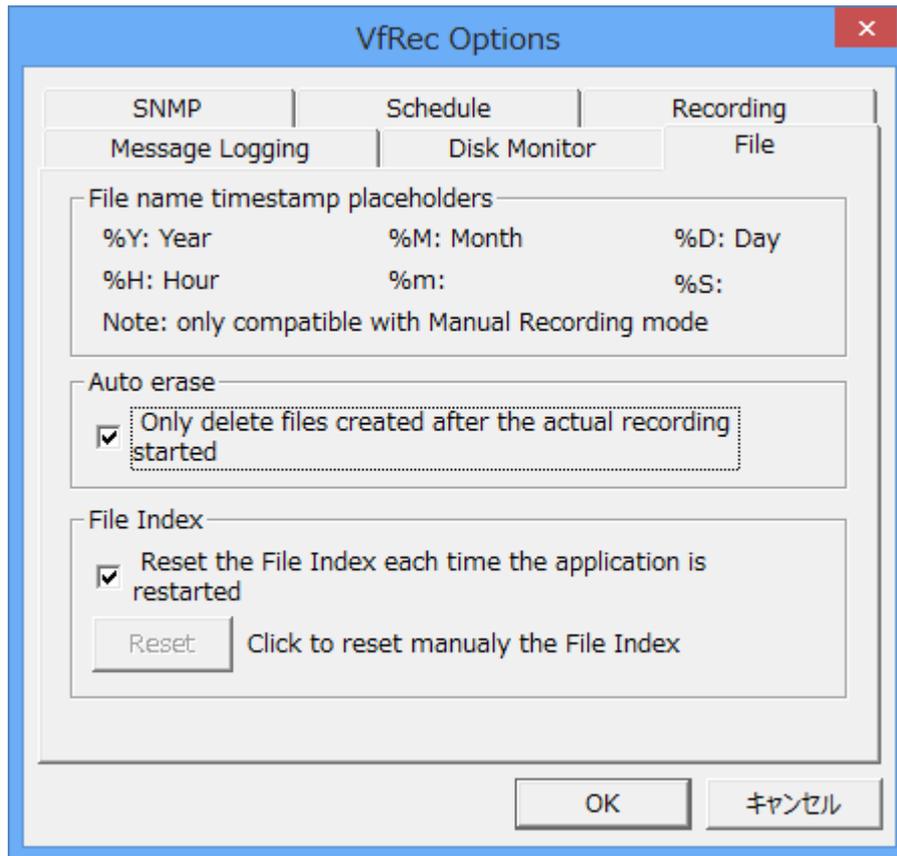
VF-REC Options settings – Disk Monitor

CAUTION: Do note that recording will not start if the Disk Available Space is less than the specified minimum size. Unless the “Cancel start of recording if not enough overall disk space” checkbox is not checked.

5.6.3. File options

Timestamping in the filename can be achieved by using a set of specific tags: %Y for year, %M for month, %D for day, %H for hour, %m for minute and %S for second. Except the M for minutes and months, the rest of the letters are case insensitive. This feature is only compatible with Manual Recording mode –the rest of the modes handle timestamping of the filenames automatically.

By default the VF-REC will only achieve auto-erase of files that were created after the recording was started, but by unchecking the “Auto erase” checkbox it is possible to disable this control and permit the auto-erase to keep working on file that were created even before the last server reboot occurred, or the last application restart, or the last recording task restarted. This is useful when using the “auto-erase after X hours”

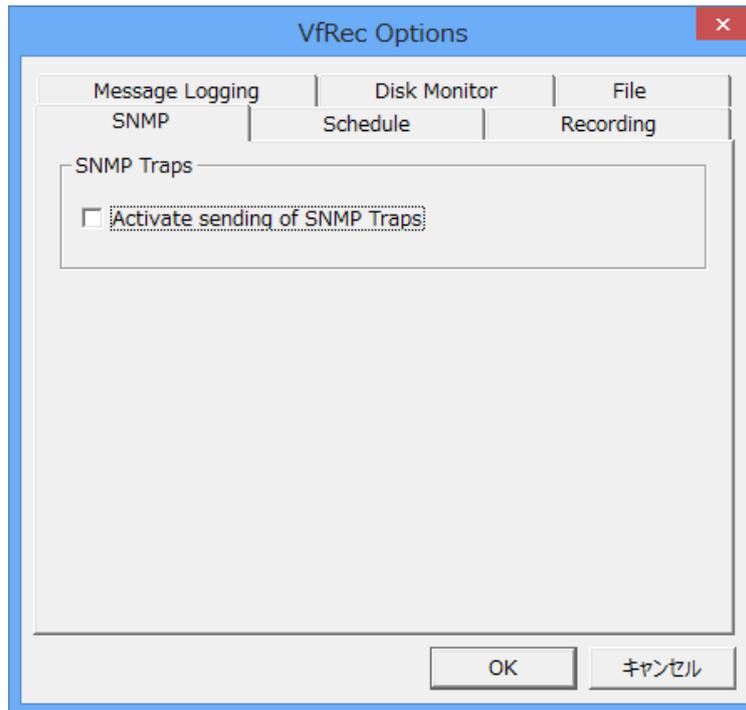


VF-REC Options settings – File

When recording multiple files, the File index keeps incrementing each time a new file is created, BUT the index is reset to '1' every time a recording is restarted. For critical and optimal disk usage, it is necessary to keep the File Index increasing each time a new file is done and independently if the server was rebooted, the application restarted or the recording task restarted. To enable this, uncheck the "File Index" checkbox. You can also manually reset the File Index using the "Reset" button.

5.6.4. SNMP options

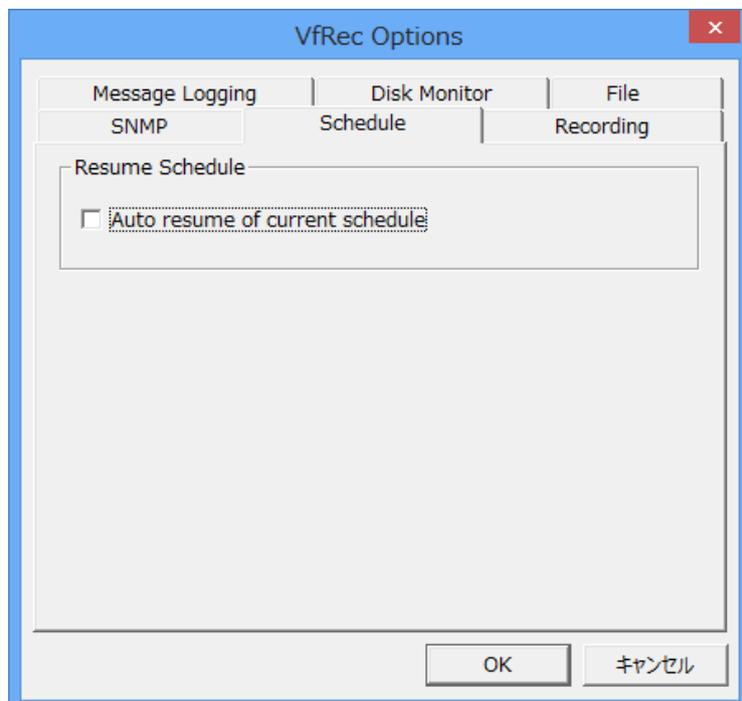
Check/uncheck "Activate sending of SNMP Traps" checkbox to enable/disable the sending of SNMP Traps. For complete description of the VF-REC SNMP control, refer Chapter 6. SNMP Remote Control



VF-REC Options settings – SNMP

5.6.5. Schedule options

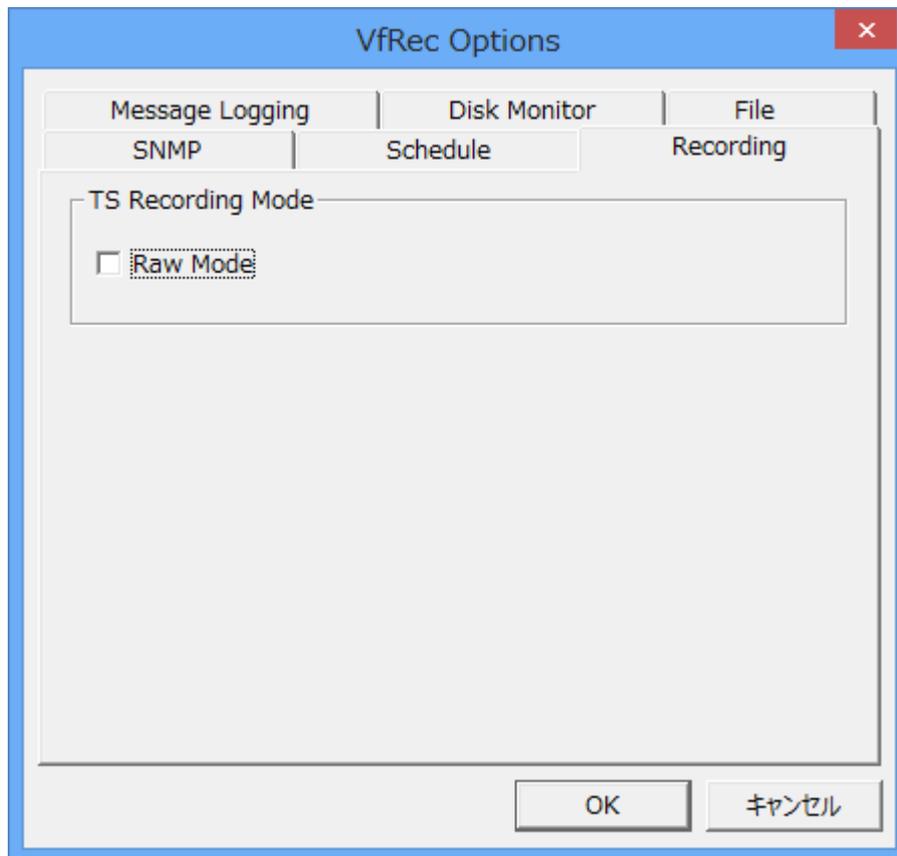
The “Auto resume of current schedule” will permit to automatically start or resume a scheduled recording whenever the current time is between a Start time and a Stop time. This permits to auto resume recording if an application or the server/PC has been reset/reboot.



VF-REC Options settings – Schedule

5.6.6. Recording options

If the user wants to record without notion of packets, check the “Raw Mode” option.



Vf-REC Options settings – Recording

In Raw mode, all incoming valid data bytes are stored and the Packet Size field in the main dialog is set “Raw” with orange background.

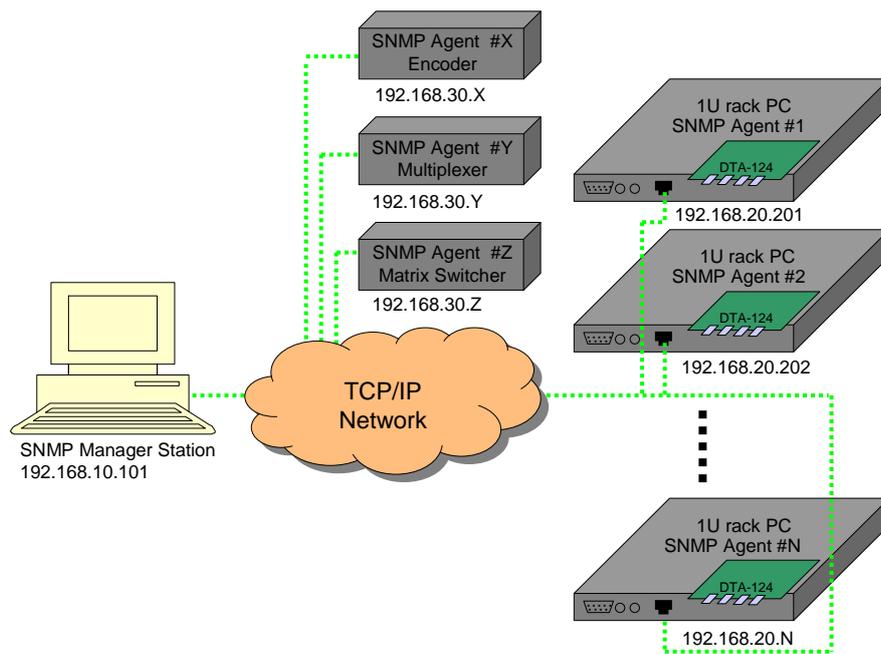
6. SNMP Remote Control

6.1. About SNMP

Commonly used in the broadcast industry, the Simple Network Management Protocol (SNMP) is an open standard that enables management and monitoring of remotely controlled devices over TCP/IP network. SNMP is defined in [RFC 1157](#), "A Simple Network Management Protocol (SNMP)" (*). The following link provides also a nice introduction to SNMP: <http://www.cisco.com/warp/public/535/3.html> (**).

Similar to a client<->server configuration, an SNMP Manager (client) accesses a remote controlled SNMP Agent (server) and browse through its hierarchical structure called the MIB (Management Information Base) to check statuses and set parameters. Each node of the hierarchical structure receives an address-like OID (Object Identifier). For the SNMP Manager to know SNMP Agent's nodes and properties, the MIB information available as a MIB file can be imported to the SNMP Manager. An SNMP Trap mechanism permits also the SNMP Agent to report information, error or any event to the SNMP Manager.

The following graph shows a simple system architecture where DTU-124 connected VF-REC applications (running over the network 192.168.20.x) other SNMP controlled equipments (on a separate network 192.168.30.x) are managed by a SNMP Manager (192.168.10.101).



SNMP Control – Example of SNMP Controlled Network

Each Village-Island function that is controllable by SNMP has its OID defined under 1.3.6.1.4.1.28766, which stands for ISO(1).ORG(3).DOD(6).INTERNET(1).PRIVATE(4).ENTERPRISE(1).VILLAGE-ISLAND(28766)

Check section 6.4 for explanation about the OID and MIB structure of Village-Island function controllable by SNMP.

(*) SNMP is part of a larger architecture called the Internet Network Management Framework (NMF), which is defined in Internet documents called *requests for comments* (RFCs). The SNMPv1 NMF is defined in RFCs 1155, 1157, and 1212, and the SNMPv2 NMF is defined by RFCs 1441 through 1452.

(**) by Cisco System Inc (Copyright 1996 © Cisco Systems Inc.)

6.2. How to set-up your SNMP control

This section details how to enable and configure the SNMP Agent functionality for your DekTec application. SNMP Manager’s installation and configuration is not part of this scope.

In the “C:\ Program Files\Villagelsland\VfRec\” directory, you will find in addition to the VF-REC executable, the VISNMP.dll file and the MIB file. The MIB file is to be passed to the SNMP Manager, while the VISNMP.dll file is an extension DLL to be used loaded by the Windows SNMP service to permit communication by your host PC/Server to permit SNMP communication towards VF-REC. VISNMP.dll will also be called by the SNMP service provided by Windows.

6.2.1. Install the SNMP services

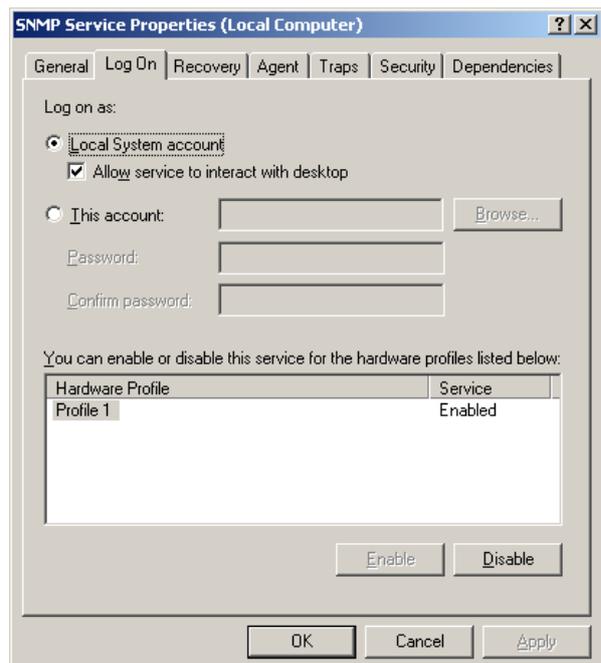
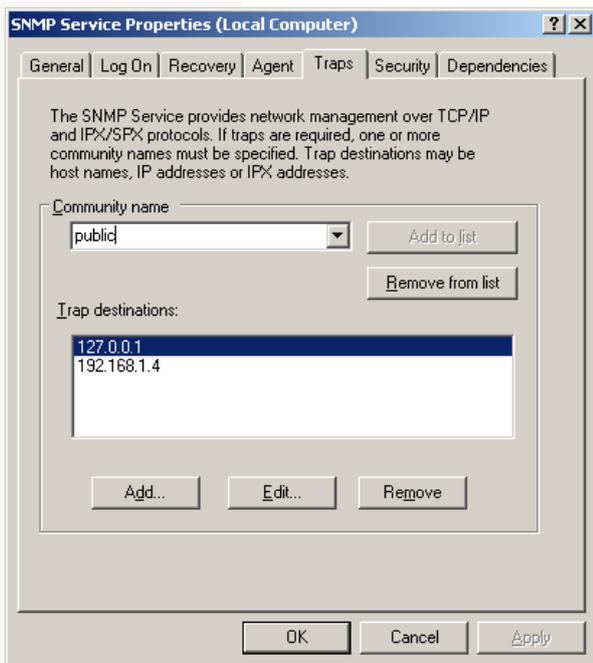
Check that the services “SNMP Service” and “SNMP Trap Services” are available on your Windows system. Check the list of installed services in the “Start Menu”, “Control Panel”, “Administrative Tools”, “Services”. If the services are not started, start them and make sure they are automatically started by the system during system start-up.

If the SNMP services are not installed yet, please go to “Start Menu”, “Control panel”, “Add\Remove Programs”. Click “Add/Remove Windows components”. Check the checkbox “Management and Monitoring Tools”. Then push on “Detail” button and make sure that “Simple Network Management Protocol” is checked and click “OK” to close the window. Then click “Next” to complete the installation. Eventually, you may need Windows installation CD inserted to complete the installation.

6.2.2. Configure the SNMP service properties

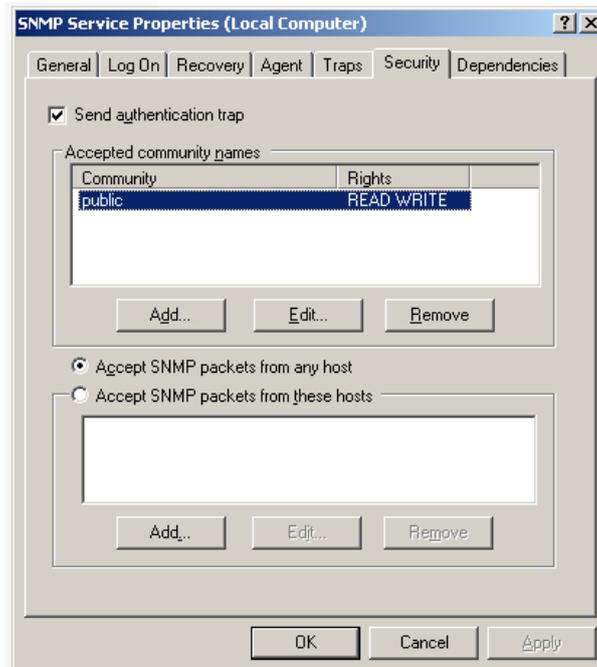
Right click on SNMP service and click Properties to configure your SNMP service.

To enable the sending of SNMP Trap from your machine, select the tab “Traps”. Type “public” on “community name” combo box and click “Add to list” button. In order to specify the destination address for SNMP traps, click “Add” and add the IP address (for instance, type “127.0.0.1” if your SNMP Manager is on the same machine). In the “Log On” tab, check that the “Local System account” and the “Allow service to interact with desktop” are checked. Also check that the “Profile 1” is enabled. For Windows 2003 Server specially, make sure that the Administrator account is used, or that the Local System account is the Administrator account.



SNMP Service properties setting – Traps tab and LogOn tab

Now from the tab *Security*, check the checkbox "Send authentication trap". Click "Add" under "Accepted community names". On appearing dialog box, select "READ WRITE" on "Community rights", enter "public" on "Community name", and click "OK". If you want to accept requests only from a particular client, then select "Accept SNMP packets from these hosts" and click "Add" underneath that. Type the host name or IP address and click "OK" on the appearing dialog box. After all this, click "Apply" or "OK" and close the "SNMP Service"s "Properties dialog.



Security tag - SNMP service properties

6.2.3. Confirm registry settings

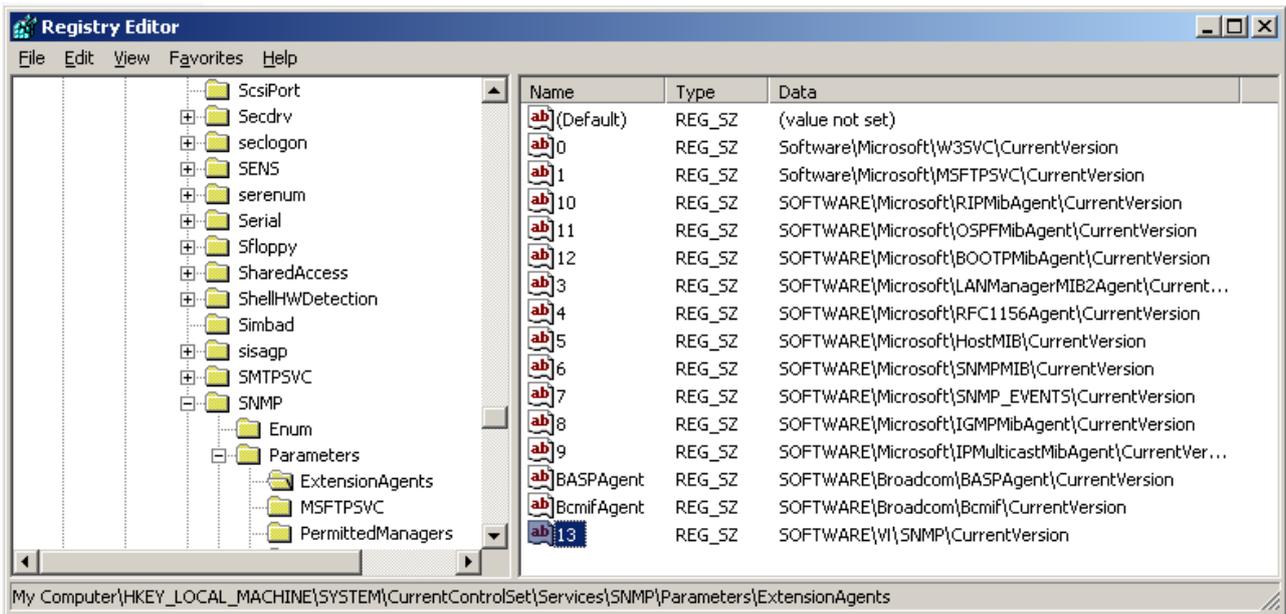
Although the registry settings are performed automatically by the VF-REC installer, in case of any trouble please check this section's details.

To permit the Windows SNMP service to communicate with VF-REC, the VISNMP.dll is provided and is referenced in the Windows Registry. From "Start" menu, select "Run Command" and type the command "regedit" to launch the Registry Editor. Make sure that in the location:

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\SNMP\Parameters\ExtensionAgents]
(in case a 64 bit version of Windows is being used) or:

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Service\SNMP\Parameters\ExtensionAgents]
(in case of 32 bit Windows), the following line is added:

"SOFTWARE\VI\SNMP\CurrentVersion".



HKEY_LOCAL_MACHINE Registry Settings – add the link to SOFTWARE\VI\SNMP\CurrentVersion

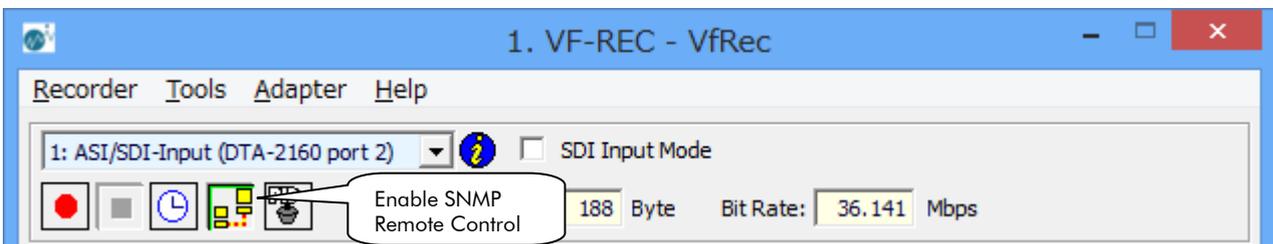
Finally, check that in the location [HKEY_LOCAL_MACHINE\SOFTWARE\VI\SNMP\CurrentVersion], the following line has been added for the variable "Pathname":

"C:\Program Files\VillagelIsland\VfRec\VISNMP.dll" and that the file is present in the C:\Program Files\VillagelIsland\VfRec\ directory.



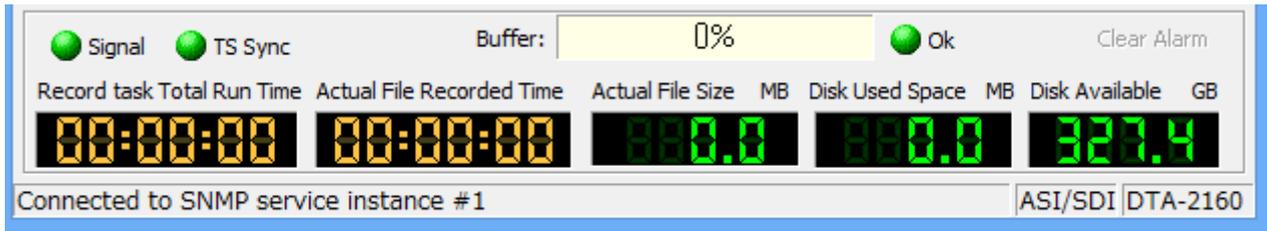
6.3. Enabling/Disabling SNMP control from VF-REC

To enable the SNMP Control of the VF-REC, click on the Remote Control button in your control area. Once enabled, the Remote Control button will be displayed in yellow as illustrated below.



SNMP Control – Select SNMP Remote Control

After a while (maximum 5 seconds), the VF-REC will automatically connect to the VISNMP service and the message "Connected to SNMP Service" will be reported in the Message Bar.



SNMP Control – VF-REC connected with SNMP service

Now, you can start control the VF-REC through SNMP. SNMP Traps will automatically be sent to all authorized SNMP Managers.

6.4. About the OID and MIB Structure of SNMP controllable DekTec functions

Multiple combination of adapters and applications can co-exist a single computer/server, which is identified by its IP address. Each function is identified by its OID node but to differentiate between the multiple adapters and application a specific OID structure has been designed.

The OID root [1. 3. 6. 1. 4. 1. 28766] is common to all Village-Island functions running on the host computer. Consecutive values designate, by order, the *Application Id*, the *Application Inst*, the *TrapOrObject Indicator* and finally the part which is application dependant.

- The *Application Id* is unique for each application controllable by SNMP. For instance, the *Application Id* for VF-REC is the integer 0x04. The *Application Id* value cannot be 0x00 (zero).
- The *Application Inst* indicates the instance number of the application for this *Application Id*. This value is a number referring to the order in which the several instance of this application where started; ex: the first application to be started will receive the instance number 0x01, the second 0x02, etc..
- The *TrapOrObject* indicator distinguishes between Trap (0x01) or Application Parameters and statuses (0x02).

For understanding of the Application Dependant field, please refer to the MIB file included in the Installation Package and copied into the [C:\Program Files\Villagel Island\VfRec] directory.

The following graphs illustrate the MIB structure for VF-REC functions.

For understanding more about the MIB file structure and syntax, please refer to [RFC 1213](#), "Management Information Base for Network Management of TCP/IP-based internets: MIB-II"

7. Support Contact information

VF-REC is developed in cooperation by **Village Island Co., Ltd.**

For assistance regarding the use of VF-REC contact us at:

Village Island Co., Ltd.

3-19-1-5F, Shirokanedai, Minato-ku,

Tokyo 108-0071 Japan

Tel: +81 3 6409 6206

Fax: +81 3 6409 6207

email: support@village-island.com

website: <http://www.village-island.com>