



ISUCUTTER3FS

User Manual

Document Version 1.0 | January 2016



Documentation Updates

Swiss Timing SP reserves the right to make improvements in the products described in this documentation at any time without prior notice. Furthermore, Swiss Timing SP reserves the right to revise this documentation in its content at any time and without any obligation to notify any person or organization of such revision.

Disclaimer

The information provided in this documentation has been obtained from sources believed to be reliable, accurate and current. However, Swiss Timing SP makes no representation or warranty, express or implied, with respect, but not limited to, the completeness, accuracy, correctness and actuality of the content of this documentation. Swiss Timing SP specifically disclaims any implied warranty of merchantability, quality and/or fitness for any particular purpose. Swiss Timing SP shall not be liable for errors contained in this documentation or for incidental or consequential damages in connection with the supply, performance or use of this documentation.

Environment



This symbol indicates that this product should not be disposed with household waste. It has to be returned to a local authorized collection system. By following this procedure you will contribute to the protection of the environment and human health. The recycling of the materials will help to conserve natural resources.

Copyright

© Swiss Timing SP

All rights reserved.

This documentation may not, as a whole or in part, be copied, translated, reproduced, transmitted or reduced and/or stored to any electronic medium or machine-readable form without the prior written consent of Swiss Timing SP

TABLE OF CONTENTS

1	INTRODUCTION.....	1
2	HARDWARE NOTES	2
1.1	Recommended Hardware	2
1.2	Tested Hardware	2
3	INSTALLATION OF TERADEK CUBE.....	3
1.3	PREINSTALLATION	3
1.4	Configuration Using the Web Frontend	3
4	INSTALLATION OF ISUCUTTER3FS	9
1.5	Requirements.....	9
1.6	Installation of ISUCutter3FS	9
1.7	Preferred Network Configuration	10
5	OPERATION OF ISUCUTTER3FS	11
1.8	Starting the System	11
1.9	Recording	11
1.10	Video Cutting.....	13
1.10.1	Insert a Clip	13
1.10.2	Changing the Start and End Position	13
1.10.3	Delete Clip	15
1.10.4	Undo.....	15
1.11	Commands	16
6	PROGRAM CONFIGURATION	17
7	RTSP CONFIGURATION	18
8	FAQ AND TROUBLESHOOTING.....	19
1.12	The video screen of ISUCutter3FS remains black or is frozen.	19
1.13	The video image is hitching or is not indicated properly.....	19
1.14	ISUCutter3FS cannot be connected to the Scoring System	19
9	APPENDIX A	20
1.15	Index of tables.....	20
1.16	Index of Figures	20
1.17	Version History.....	20

1 INTRODUCTION

About this document

This document describes the operation of ISUCutter3FS.

Associated Documents

- FS ISUScoreFS Manual
- FS ISUCalcFS Manual
- FS ISUCutterFS Manual

About the ISUCutter3FS application

This application is an optional feature that provides a Video Replay feature in the Scoring system. This application processes the video signal of RTSP device and saves the complete performance of a Skater. Supported by the Caller, the operator sets the Trim In / Trim Out marks for the individual elements. These marks are then sent to the Judges terminals.

This application provides an easy to handle option to review and replay the performance elements. Trim In and Trim Out marks can be modified, replaced and deleted as desired.

2 HARDWARE NOTES

1.1 Recommended Hardware

- i3 or higher
- Microsoft® Windows® 7/8/10 64bit
- At least 4 GB RAM
- At least 128 GB hard drive
- 1 Gbit network connection
- RTSP device: Teradek Cube with HDMI/HDSI source depending on camera used

For the capturing of the video signal, we recommend at least a consumer HDMI camera. However, we rather recommend a semi-professional or professional camera with an integrated monitor to easily follow the skater. In addition, depending on the number of video clients used, it is necessary to split the video signal to another RTSP device.

Although the cutting and caller application can be controlled with keyboard, we recommend using a mouse and a big screen.

1.2 Tested Hardware

ISU Judging – System Judges

- ASUS EeeTop ET1620
- MSI AP16 Flex

ISU Judging System – Technical Panel, Cutter

- Lenovo i3 notebook
- Dell i7 Latitude
- Dell i7 M4800 Precision

3 INSTALLATION OF TERADEK CUBE

1.3 PREINSTALLATION

First, configure the correct IP in order to use the web frontend. Proceed as follows:

1. Connect the cube to the power and start the device, using the small dip switch. Wait until the small display indicates the operating status.
2. Enter the menu by pressing the black cursor button
3. Navigate to 'Network Setup'
4. Navigate to 'Ethernet'
5. Navigate to 'Configure'
6. Navigate to 'IP Address'
7. Enter your IP address for the Teradek:



Figure 1 – Teradek cube IP setting

8. Return by pressing the red button
9. You may have to change the subnet mask.

1.4 Configuration Using the Web Frontend

Connect the cube to your network and use a notebook or other computer connected. Open a browser and enter "http://" plus the IP address of the Teradek (e.g. 'http://192.168.1.123').

Upon first access of the web frontend, a setup wizard will automatically start. Just follow the individual steps and select a decoder 'VLC (RTSP) software decoder such as VLC'.

On the second access of the web frontend, a login screen appears where you use 'admin'/'admin' by default.

First, go to Video Setup -> Device Setup and activate the de-interlacer. You may further disable audio to improve the system performance.

Then go to Video Setup -> Stream Settings and on Quickview Stream. Please disable this stream for better performance.

On Primary Stream, note down the link for this stream, because you will later need this information when configuring ISUCutter3FS.

Furthermore, update the Teradek with the latest firmware. A tutorial how to do this is available on the Teradek website:

<https://support.teradek.com/hc/en-us/sections/203355508-Cube-Cube-Pro-Brik>.

In the new firmware, please activate the RTSP/RTP Multicast Package by adding a predefined license in the following screen:

TERADEK

Home Info **System** Network Video Setup Remote Logout

Add-On Activation

The following add-ons are currently installed on this device:

Installed Add-on	License Activation Key

There are currently 0 add-ons installed.

Activate a New Add-on with License Key:

Add Key

[Purchase New Licenses](#) [Remove Selected Add-ons\(s\)](#) [Export](#) [Import](#)

The following add-ons are advanced features which can be installed on this device:

Free Add-ons

Click to select which add-on(s) you wish to activate and then press the "Install Add-on" button below.

RTP/RTSP Multicast Package	d34c241cd2a6b48dc1c628f7a493553a0e05e17b
Proxy Recording Package	60658c2eee61c1a16f9d9c2617c989bfc0eb1e88
Quickview RTP Push Package	3e199d765d8ba78c2e1cbe4429c315ae2363e0d3
RTP Push Package	4b2a1b494ee6399df2561a3fe9cb60b8a7bf1c5f
RTSP Announce Package	7366876eb8a9f644a917f4c31db694aa0375a6d4
Teradek Bond Package	1062d837602d7beca14f60a36f7e42345326e3aa
ZiXi Streaming Package	35105db72f9496cc46469f6eb2a0087fe7b25b76
Teradek Core Direct Package	4829cd20c21b7901ee2188b9b2afaca86f243dc7
Serial Port Control Package	22054a98fc36dbdcacc5c54a8a173da89c35c98a

Install Add-on

Figure 2 – Teradek cube licenses and add-ons

We recommend changing the streaming from unicast to multicast in the Streaming settings:




[Info](#)
[System](#)
[Network](#)
[Video Setup](#)
[Remote](#)
[Logout](#)

Stream Settings

Primary Stream

Quickview Stream

Stream Application

Stream Mode: RTP/RTSP

RTSP Settings

RTSP Port: 554

Max Clients Allowed: 30

Authentication

☐ Enabled
 ☒ Disabled

Multicast

☒ Enabled
 ☐ Disabled

Streaming Interface: Wired

Destination IP Address: 239.192.20.1

Multicast TTL: 5

Video Port: 4510

Audio Port: 1210

RTSP & RTP over HTTP

☐ Enabled
 ☒ Disabled

Video Stream Output

The streaming video on this device can be accessed using the following links:

Primary (RTSP)

RTSP: rtsp://10.1.13.188/stream1

Apply

Cancel

Hide Advanced Settings

Figure 3 – Teradek cube streaming setting

Please check the correct video input and encoder settings with Video Setup -> Encoder Settings and Show Advanced Settings (in the lower right part of the window):

TERADEK

Home Info System Network Video Setup Remote Logout

Encoder Settings

Primary Encoder Quickview Encoder

Video Bitrate (bps)
2000000

Audio Bitrate
Audio Disabled

Output Resolution: ☐ Auto ☒ Manual
1280x720p 25

Key Frame Interval
0.5 sec

Title Text: ☐ Show Title ☐ Show Time
ISU 2014

Aspect Ratio: ☐ Use Square Pixels
Auto

Advanced Encoder Options

Caching (range: 70-1000): 300 ms ⓘ

Intra Refresh Mode: Disabled

Compression Profile: High

Frame Structure: Field

Audio Sample Rate: 48000 Hz

SEI Timing: Enabled

Rate Control Options

Rate Control Mode: Auto

Max Transmission Rate: 10.00 Mbps

Static Scene Detection: Disabled ⓘ

Complexity Detection: Disabled ⓘ

Adaptive Framerate: Disabled

Low Bitrate Mode: Disabled

Apply Cancel Hide Advanced Settings

Figure 4 – Teradek cube encoder setting

Video bitrate should not be lower than 2 Mbit (2000000 bps) and not higher than 2.5 Mbit, if more than 8 clients are connected to the Teradek with unicast. If less than 5 clients are connected, a bit rate of 5 Mbps can be used.

For multicast, a bit rate above 7 Mbit is recommended.

Key frame interval must be the lowest selectable value – in this case 0.5 sec.

Compression profile should be changed to 'Main' or 'Baseline', if there are issues on the video clients.

All other settings should be the same as indicated in Figure 4 – Teradek cube encoder setting.

Note: If you're using two Teradek Cubes with multicast in one network, you have to use unique multicast IP addresses.

4 INSTALLATION OF ISUCUTTER3FS

1.5 Requirements

The target PC needs to be set up as follows:

- All hardware components are installed and set up properly
- Windows ® 7/8/10 64 bit with all updates
- Firewall, virus defender, automatic updates should be turned off
- Unnecessary apps should be de-installed to avoid network traffic.

1.6 Installation of ISUCutter3FS

To set up the programs, the ISUScore2FS package is required. Leave the start dialog by clicking on [Next]. Now select the directory. Then select Cutter and Option Video over network:

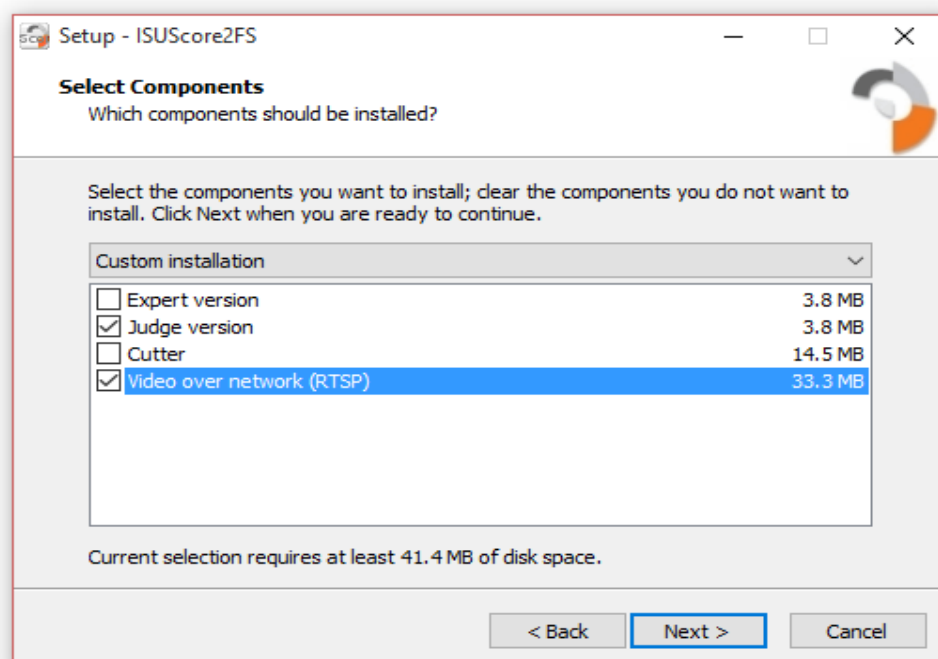


Figure 5 - Install ISUCutter3FS

You have the option to create a desktop icon and to finish the setup.

1.7 Preferred Network Configuration

Device	IP
Teradek Cube	192.168.1.200
Calc Notebook	192.168.1.100
Technical Panel	192.168.1.101
Cutter Notebook	192.168.1.102
Judge 1	192.168.1.111
Judge 2	192.168.1.112
	...
Judge N	192.168.1.(110+N)

Table 1 – Preferred Network Configuration

5 OPERATION OF ISUCUTTER3FS

1.8 Starting the System

ISUCutter3FS starts with the following main screen:

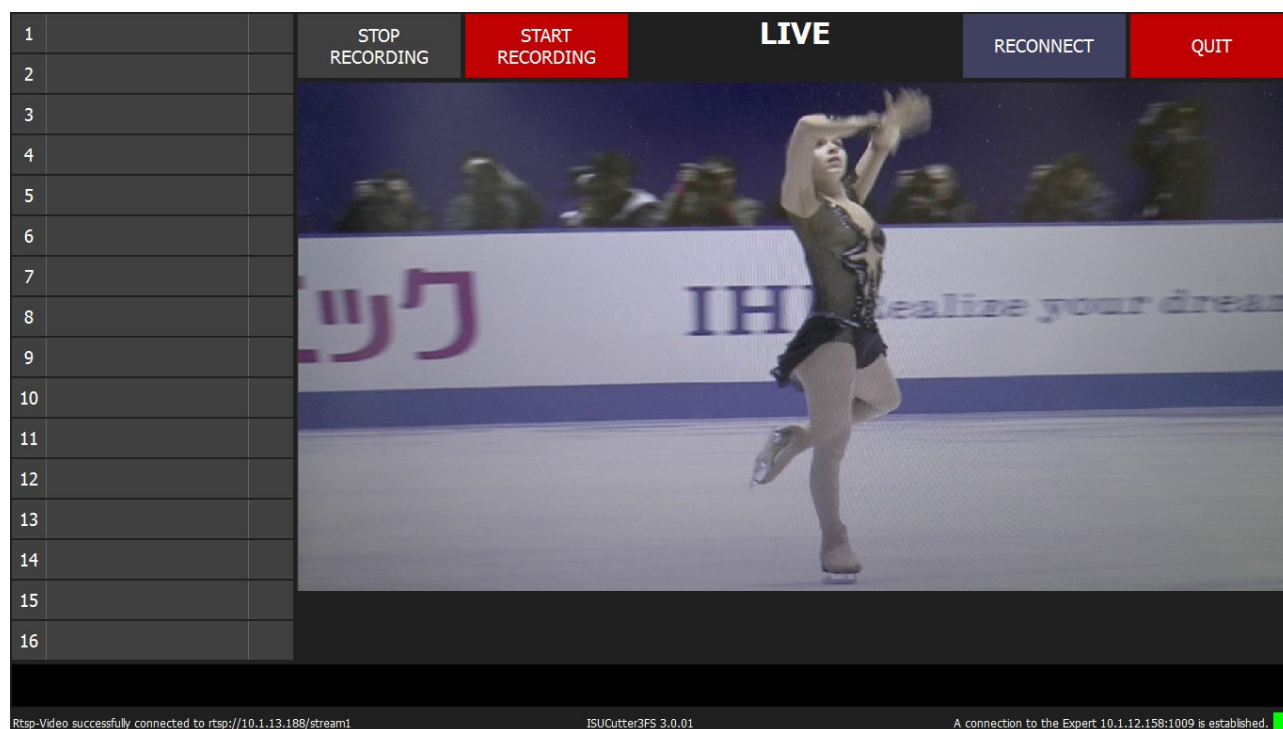


Figure 6 – ISUCutter3FS main screen

This screen displays the current video picture. The left part of the screen indicates a list of a maximum of 16 clips.

The [Quit] button in the upper right part of the screen is used to exit the program. In the upper left part of the screen is the [Start Recording] button that is used to start the Recording. The center of the screen indicates the current video status, i.e. live, recording or playback time.

The lower part of the screen contains the video time line and further information, including the version of ISUCutter3FS.

1.9 Recording

In order to start the recording, click the [StartRec] button in the left upper corner of the screen. If a Scoring System is connected, the left field beside the time marks is filled with the elements sent by the Expert.

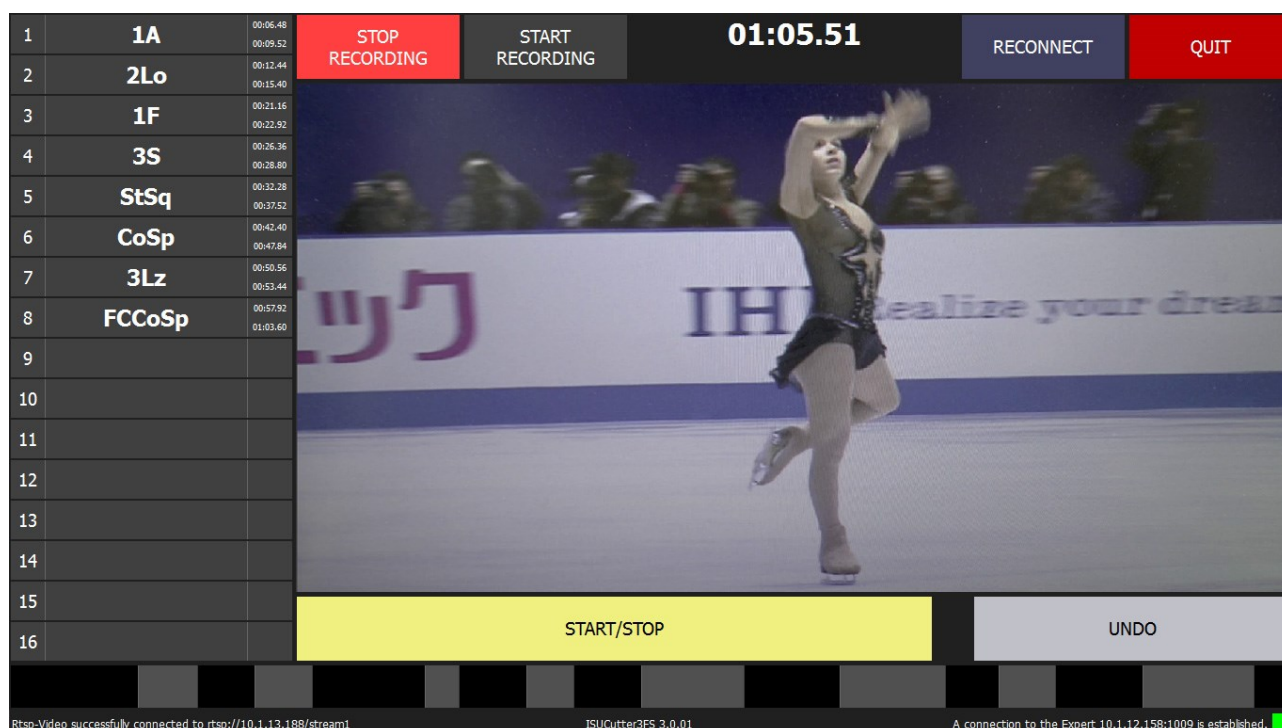


Figure 7 – Recording

The button [Stop Recording] is highlighted in red, and a recording timer is displayed.

Note: ISUCutter3FS only records videos until the Recording status is changed again (button in the upper left corner), or if the hard disk is full. If a Scoring System is connected (see lower status line; a small green rectangle indicates correct connection), the Scoring System filters all commands. If this application does not respond, ISUCutter3FS becomes inoperable and needs to be closed.

In order to create individual clips from the video material recorded, click the [START/STOP] button. The current time is automatically entered in the list on the left part of the screen, when [START] is selected. When clicking the [STOP] button, the clip of the current element is stopped, and the second time (time out mark) is entered in the list. Alternatively, you can use the [SPACE] key to set the marks.

Use the [Undo] button to reset the last time out mark. If a mark has been set too late, use the following steps to correct the mark.

The record can be stopped with the [Stop Recording] button. A dialog is opened to confirm your selection. Select "Stop!" or Cancel.

1.10 Video Cutting

Switch to the cutting mode by clicking the [Stop Recording] button.

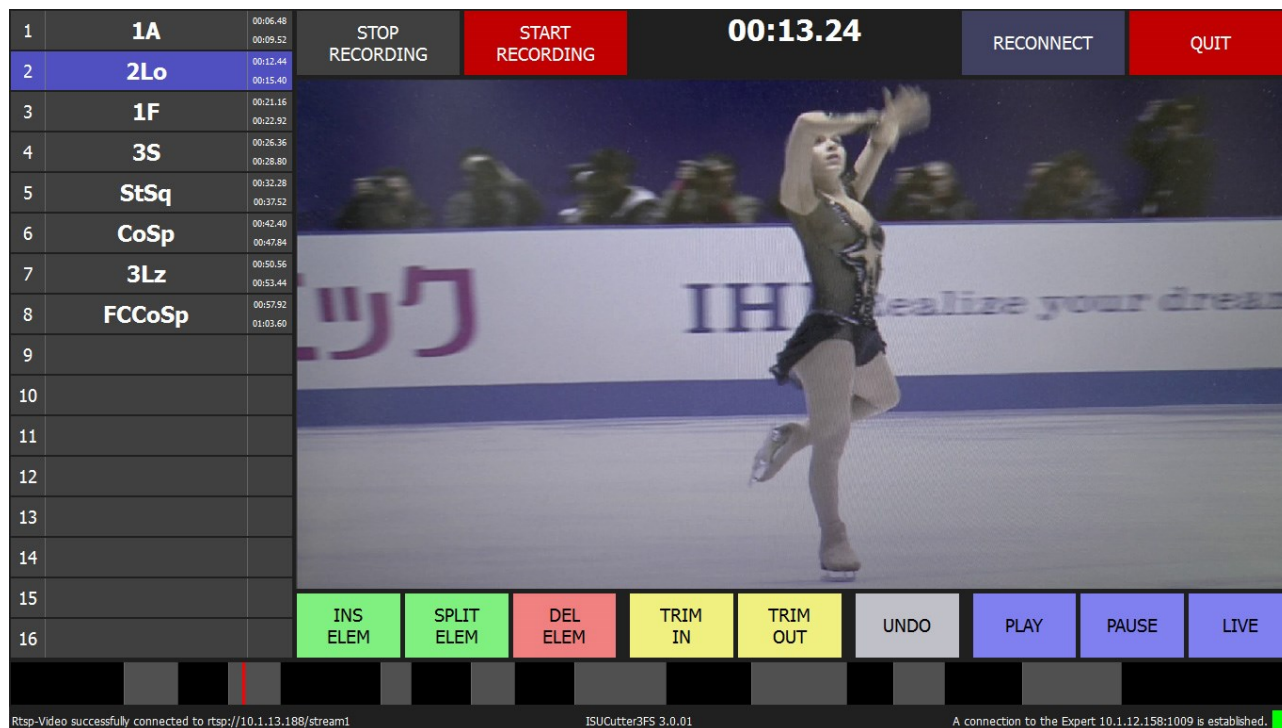


Figure 8 - Video Cutting

The lower part of the screen now provides buttons to insert, copy and delete clips. Below is the time bar and the clips contained therein.

Elements marked with a review request by the Expert are marked with a red boxed 'R' allowing the video cut system operator to edit these elements with high priority.

Start the playback of one element by clicking on it in the left list. The element is highlighted in the list.

1.10.1 Insert a Clip

In order to insert a clip (for video cutting purposes) or an element (performance), first select a position in the clip list. Then define the time by clicking on the time bar. The application now switches from the current video picture to the indicated time in the video. The video is stopped. Now click on the [INS ELEM] button. The clip is created and consists only of the still picture.

1.10.2 Changing the Start and End Position

The cutting marks are called in and out marks. First select an element. Then click in the timeline or use the mouse wheel on the video window for navigating to the new in or out point. Then press [TRIM IN] or [TRIM OUT] button.

1.10.3 Delete Clip

In order to delete a clip, select the desired clip from the left list. Click the [DEL ELEM] button. A dialog box is opened in which you have to confirm that you really want to delete the clip.

Note: The naming of the scoring system remains the same.

1.10.4 Undo

You can undo every step by clicking the [UNDO] button.

1.11 Commands

Button	Action
Esc	Exits the program or exits a dialog box
Enter	Confirmation of dialog box
Space	In the Playback mode: Pause or resume the current clip In the Recording mode: set new time in / time out marks
F1 / Ins	In the Cutting mode: a clip is inserted
F3 / Del	In the Cutting mode: the current clip is deleted. In the Recording mode: the last cutting mark is deleted.
F4 / Pos1	In the Playback mode: A new In point is set.
F5 / End	In the Playback mode: A new Out point is set.
F6	In the Playback mode: The clip is stopped or continued.
F7	In the Playback mode: The clip is replayed in normal speed (rewind)
F11 / L	In the Playback mode: back to the live picture
F12 / Break	Switch from the cutting to the recording mode and back.
Arrow up	In the cutting mode: selects the previous clip from the clip list.
Arrow down	In the cutting mode: selects the next clip of the clip list
Arrow left	In the Playback mode: switches to the previous screen.
Arrow right	In the Playback mode: jumps to the next image.
I	Re-initialize video
C	Re-connect to Caller / Expert
D	Close connection to the Caller and activate local work

Table 2 - Keyboard shortcuts

6 PROGRAM CONFIGURATION

The ISUCutter3FS folder contains the configuration file dvcutter.ini:

```
[dv]
  recframes = 50
  playframes = 50
  playdelay = 100
  file = temp.dv
  input = 0
  deinterlace = false

[isu]
  ip = 127.0.0.1
  port = 1111
```

For down compatibility reasons it has the old [dv] section, which can be ignored, but the [isu] section is still needed to configure the connection to the technical panel.

Our example shows the Scoring system (Expert) on the local PC with port 1111.

7 RTSP CONFIGURATION

The ISUCutter3FS folder contains the video configuration file rtsp.ini:

```
[rtsp]
; fps =
file = temp.h264
stream1 = rtsp://192.168.1.200/stream1
deinterlacing = 0
resync = 1
loglevel = 0
```

'file' specifies the location of the recording file. The local folder is the program folder, i.e. the file = temp.h264 stores the file directly in the program folder. Make sure you have write access to this folder.

'stream1' specifies the URL for the RTSP stream.

'deinterlacing' is reserved for future use.

'resync' = 1 means that a resync is done after each skater to be sure all timings are in sync. If 'resync' = 0 a complete re-init is done.

'loglevel' = 0 is the indicator for what kind of messages are logged. 0 is errors only, above 30 is verbose.

8 FAQ AND TROUBLESHOOTING

1.12 The video screen of ISUCutter3FS remains black or is frozen.

ISUCutter3FS does not receive data from the RTSP stream.

- Check if all devices connected to network.
- Check if camera is connected to RTSP device
- Check if all devices are powered and running.
- Check for errors shown at RTSP device.

Re-connect all devices with the PC. Re-start ISUCutter3FS or re-initialize it using 'Reconnect' in the File menu.

1.13 The video image is hitching or is not indicated properly.

This issue may be caused by performance problems:

- Processor too slow; other applications may impact the performance
- Network jam
- Video bit rate is too low
- Too many clients are connected to the RTSP device

1.14 ISUCutter3FS cannot be connected to the Scoring System

Check whether:

- All network components are connected and working properly
- The network has been set up correctly, i.e. if the Scoring PC is connected to the network
- The Scoring System is running properly
- ISUCutter3FS contains the correct IP address and the correct port.

9 APPENDIX A

1.15 Index of tables

Table 1 – Preferred Network Configuration	10
Table 2 - Keyboard shortcuts	16

1.16 Index of Figures

Figure 1 – Teradek cube IP setting.....	3
Figure 2 – Teradek cube licenses and add-ons	5
Figure 3 – Teradek cube streaming setting.....	6
Figure 4 – Teradek cube encoder setting	7
Figure 5 - Install ISUCutter3FS	9
Figure 6 – ISUCutter3FS main screen.....	11
Figure 7 – Recording	12
Figure 8 - Video Cutting	13

1.17 Version History

Version	Date	Modifications since last version
1.0	27.01.2016	Initial version

NOTES

