SportReplay
Multichannel Video Recording and Instant Replay system

User's guide

Revision from November 28, 2006
ReplayMachineSoftware 4.0.0

SoftLab-NSK, Ltd.

Notice

The information in this document is subject to change without prior notice in order to improve reliability, design, or function and does not represent a commitment on the part of this company.

In no event will we be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or the inability to use the product or documentation, even if advised of the possibility of such damages.

Throughout this manual, we make reference to product names that are trademarks of other companies. We are using these names for identification purposes only, with no intention of infringement of the trademarks.

FCC Information

FCC ID:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded cables and I/O cards must be used for this equipment to comply with the relevant FCC regulations. Changes or modifications not expressly approved in writing by SoftLab-NSK, Ltd may void the user's authority to operate this equipment.

Limited Warranty

Our company warrants this product against defects in materials and workmanship for a period of one year from the date of purchase. During the warranty period, products determined by us to be defective in form or function will be repaired or replaced at our option, at no charge. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or as a result of service or modification other than by us.

This warranty is in lieu of any other warranty expressed or implied. In no event shall we be held liable for incidental or consequential damages, such as lost revenue or lost business opportunities arising from the purchase of this product.

Table of contents

1 Introduction

The *SportReplay* system is a hardware/software complex intended for multichannel audio/video recording and instant replay.

The system main sphere of application is sport shows and other entertainments with slow motion instant replay of the most interesting moments.

The *SportReplay* system works in the real-time mode. Video capture can be performed by several input channels simultaneously, at the most, by four channels. The replay speed is controlled from 0 to 200% from the real.

The distinctive feature of the system is its operating speed – just 1-3 seconds – to prepare an instant replay.

Thus, using the system you can carry out the transmission and recording of a telecast in parallel and control instant replay on-the-fly choosing the required perspective and playback speed. Multiple consecutive replays without a pause between are also possible.

Besides, the system allows you to carry out a logotype overlay and add video introductions before replays.

The devices of interface may be various: keyboard, mouse, touchscreen, console.

The playback/replay start/end commands may be performed by the producer from the common mixer providing insert/replay accuracy in live broadcast. In turn, the system can send the start/end commands of a replay to the mixer. The interface with the external equipment is performed by means of the GPI protocol (start/end, GPI in/GPI out).

The *SportReplay* system main program components are the *FDReplayVideoIn* and *ReplayMachineConsole* applications.

The *FDReplayVideoIn* program is intended to control video/audio recording on the hard disk and performs data storages operations.

The *ReplayMachineConsole* application is used to control instant replay.

2 Hardware performance

The *SportReplay* system works on a computer controlled by the *Windows2000/XP OS* and is supplied with one (two-channel model) or two (four-channel model) FD300 input/output boards. The presence of two *FD300* boards allows you to process 4 input and 2 output data streams (for more characteristic details see the *FD300* board description in the *ForwardT setup. Break-out Box* user's guide).

The system is supplied completely assembled and adjusted turnkey in the form of standard 19" units (1U high), which may be installed into any mobile complex or OBV. The exact dimensions of the blocks depending on the model of the system are listed in the table below.

Table 1

SportReplay system blocks dimensions:

Model	Dimensions, mm.
Two-channel, a version	427 x 356 x 43
Two-channel, b version	426 x 574 x 43
Four-channel	424 x 686 x 43

The standard bundling of the system allows you to work with different TV systems (PAL, SECAM or NTSC) and process different types of analog video signal (composite, component YUV and RGB, S-Video). The supply of SDI system is also possible.

3 Video data preview

It's convenient to use the external TV monitors to preview the video data. If you work with the four-channel system, we recommend you to set six monitors (Figure 1): four input monitors (one for each input line) and two output monitors (for the main signal and for preview).
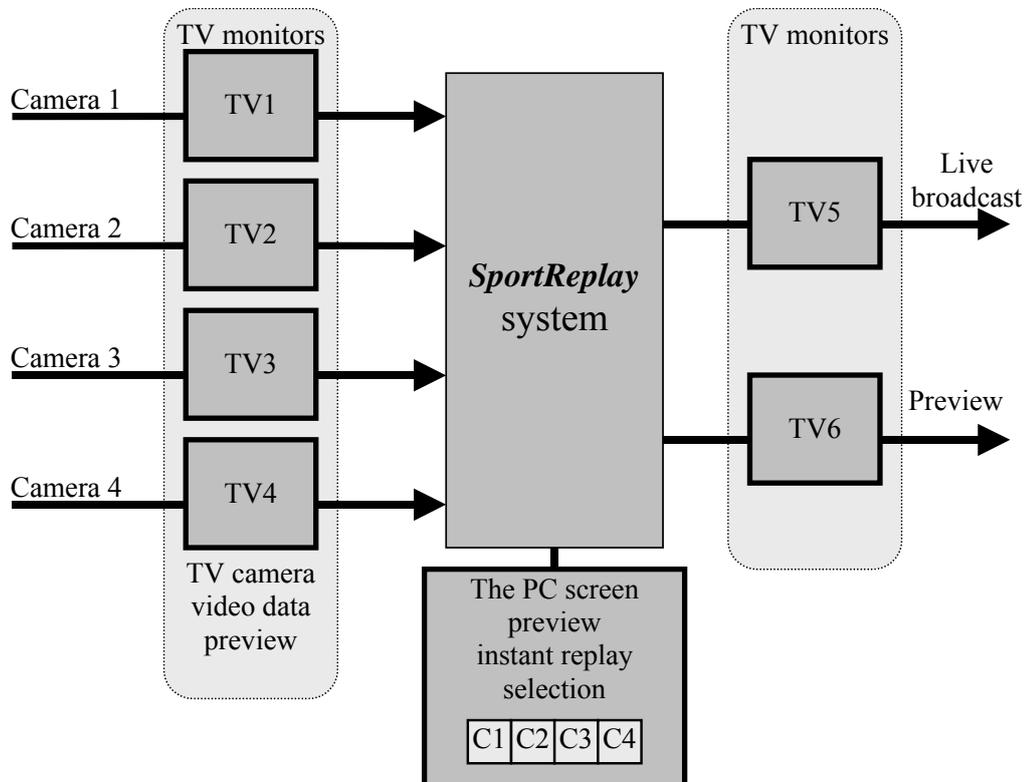

Figure 1. Bundling diagram to preview video data in the four-channel system

If you use the two-channel model, set three monitors (Figure 2): two input monitors (one for each input line, and one output monitor (to preview the live transmission signal).
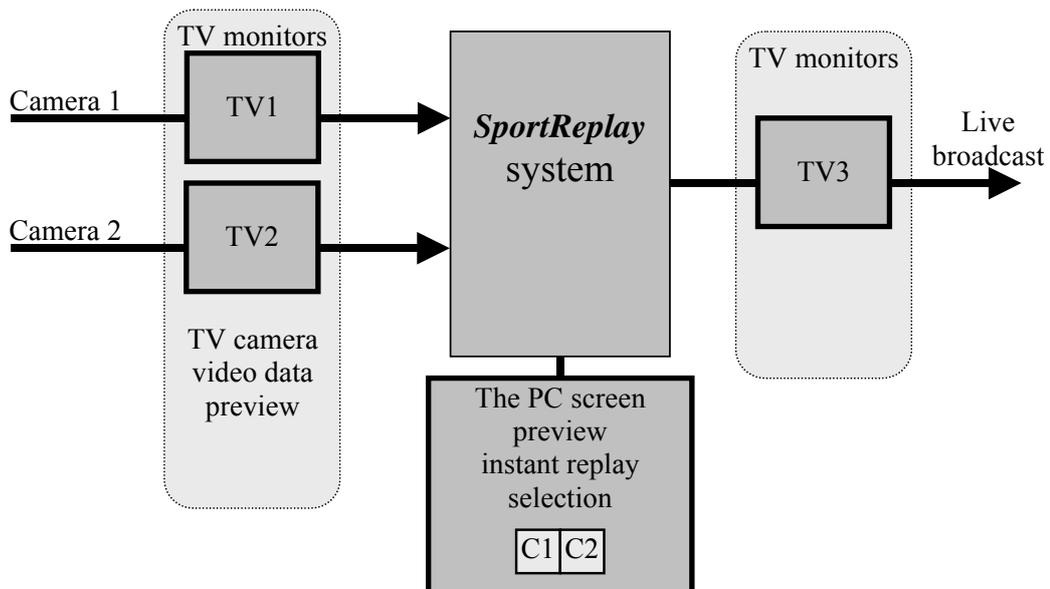

Figure 2. Bundling diagram to preview video data in the two-channel system

4 Cache for video data fast access

When audio/video streams capture and compression, the *SportReplay* system uses the same principles as the *FDPostPlay* system (see the *FDPostPlay* User's guide). The distinctive feature of the system is using cache in the RAM to ensure the video data fast access. This ensured that video data written a certain interval before the current moment, e.g., 10 s, can be reproduced instantly, on-the-fly. The quantity of the interval depends on the size of the allocated area of the RAM.

The size of the cache is set previously when installing the *SportReplay* system (Figure 3). The value propositioned by default depends on the amount of RAM installed on the computer (Table 2). The user can set another value. The system installation procedure is described in details in the *ReplayMachine Software* setup guide.
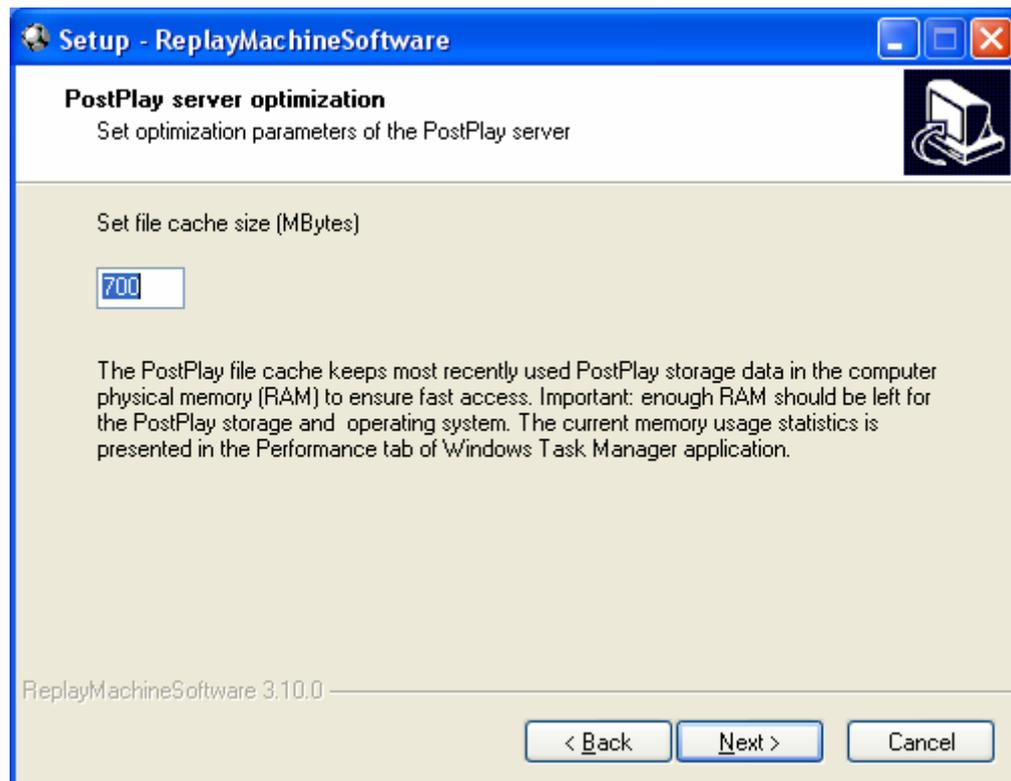

Figure 3. File cache size setup page

Table 2

Cache start setup depending on the computer RAM size:

Size, MB	
RAM	Cache
under 800	0
from 800 to 1 500	200
over 1 500	700

☞ **IMPORTANT**: *The ReplayMachineConsole program stable work requires no less than 200 MB of RAM for the file cache.*

You may change the file cache size using the *PostPlayConfiguration* application intended for the *PostPlay* system parameters setup (see the *FDPostPlay* User's guide). Set the new value in the **Data cache size** edit field of the **PostPlay flow** control group, the *PostPlay Configure* window (Figure 4).
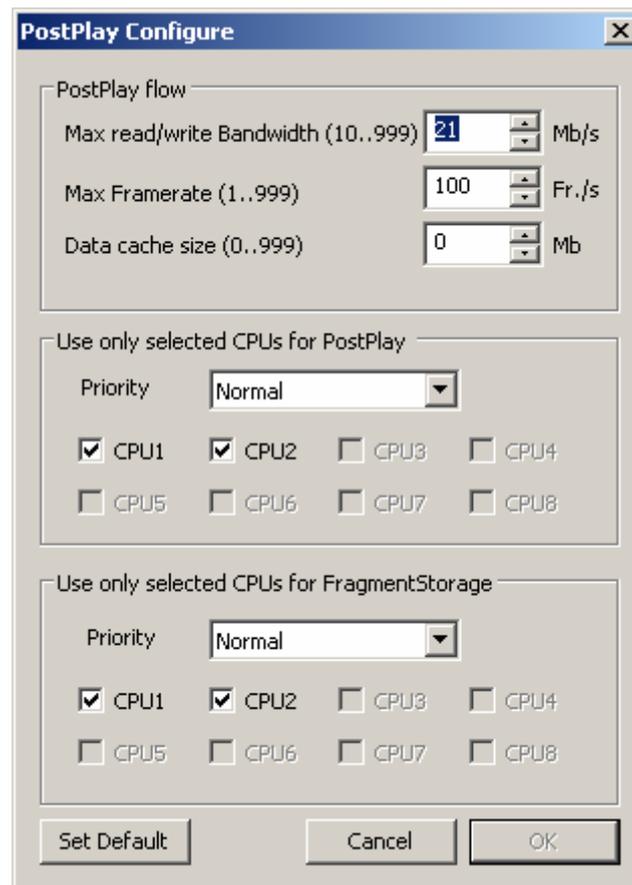
Figure 4. The PostPlay server configure

We recommend you to allocate for the cache maximum possible volume of memory (at the minimum, 200 MB). But for all that, it's necessary to consider the other tasks requirements of the resource including the data storages processing and, surely, the operating system tasks.

To determine a possible cache size in a specific case on a computer used only for the *SportReplay* system work we recommend you to carry out the following steps:

- launch the FDReplayVideoIn application, create storages for the required number of recording channels;

- launch data output into the created storages;

- launch the *ReplayMachineConsole* application and open all the required storages for reading;

- estimate the quantity of the idle physical memory, subtract from it approximately 200 MB required for the OS work;

- the remained memory value may be allocated for the cache.

5 Working with the system

5.1 Board configure

For the *FD300* input/output boards setup launch the *FD300Configuration* program. Carry out the following settings on the setup pages of the program window:

- *Format*. Select the required TV standard (***PAL***, ***NTSC***, ***SECAM***) and image size (***FullFull***).
- *Output*. The **Analog Video Output**: ***Y/C+CVBS*** or ***YUV+CVBS*** output settings, the rest is by default.
- *Line A/Line B*. Connect a video source to the corresponding input. Select the input line and set the image parameters (brightness, contrast etc).
- *Sound*. Make sure the audio/video synchronization mode (the **Allow low level audio/video synchronization** option used for the sound input) is on.

> ☞ *IMPORTANT: The FD300 board registration must allow the input/output video stream execution. In the* **Selected Board Info** *edit field of the application main window must be present the following lines:* **Video capture supported** *and* **Video playback supported** *as well as* **Dual channel video input supported.** *Besides, in the* **Supported applications** *list must be present "SportReplay".*

5.2 Cache configure

Set the file cache size using the *PostPlayConfiguration* application (see the *FDPostPlay* User's guide). The new value setup is performed in the *PostPlay Configure* window (Figure 4), the **Data cache size** edit field.

5.3 Data record

The *FDReplayVideoIn* program (see the *FDReplayVideoIn* User's guide) controls hard disk video/audio record and performs data storages operations.

First set each data input line storages. Then launch input data record procedure. The written information is stored and when the transmission is ended, it's available for any operations such as playback, editing and recording on any data carriers.

5.4 Replay control

To control instant replay use the *ReplayMachineConsole* application (see the *ReplayMachineConsole* User's guide*).*

The operator may mark an interesting event when continuous recording on all channels. Then with a button click choose the channel to show the instant replay, and it's ready for playback.

In addition to that there is an ability to edit an episode beginning: you may shift forward/backward any number of frames in order to select precisely the moment to show the instant replay.

All the marked episodes are written in the list of events and ready to be replayed any moment.