STREAM MULTISCREEN

User Manual

2010

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1 Introduction

“Stream Labs” thanks you for showing interest in Stream Multiscreen and hopes that our cooperation will be fruitful and continuous.

The purpose of this Manual is to provide information and support for users of Stream Multiscreen hardware software suite based broadcast monitoring systems.

The Manual presents Stream Multiscreen main operation methods, user interface components and their operation, video and audio monitoring options and settings.

The Manual is recommended as a reference aid for monitoring system operators and administrators.

If you have any questions, comments or suggestions regarding Stream Multiscreen operation or documentation, please contact us by any way convenient for you. We will be happy to assist you.

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1.1 Product application

Stream MultiScreen provides a platform for setting up a broadcast control system. Stream MultiScreen suite performs simultaneous output of video, audio and additional information of the received channels on one or several screens, which allows to carry out direct visual on air monitoring. Stream MultiScreen allows to create various configurations of the system informational elements on the screen, which helps to effectively address multiple complex challenges of broadcast control and make the work of the administrator convenient to the maximum. Stream MultiScreen system of alarm messages allows to detect the emergence of such common broadcast output issues as loss of video and audio signal etc., and promptly respond to them making your broadcast more reliable and of higher quality.

1.2 Stream Multiscreen key features

Stream Multiscreen system has the following key features:

- Simultaneous control and playback of video and audio signal sources (up to 24 sources in analog composite version, up to 16 sources in SD-SDI version and up to 32 MPEG TS real time streams on one or several screens when using several **Stream Multiscreen** cards;

- Random window configuration (scaling, partial overlapping of video windows), adding audio indicators, displaying analog and digital clocks and text boxes;

- Support for display of signals on multiple monitors. Support for vertical monitor position;

- High image quality. Supporting resolutions up to WUXGA (1920x1200 pixels);

- Managing signal parameters and error detection, including video and audio loss, silence in audio channels, frozen video, black frame, and block structure in the frame.

- Visual (blinking frame around the appropriate box) and sonic (playing a sound file with set duration) warning indications upon discovery of the above errors;

- Customization of response to alarm events for each signal source, including marginal conditions for error identification and generation of weekly schedule of alarm messages;

- Tracking the alarm events trigger in real time and maintaining a response history (log);

- System backup power supply,

- Quick change of video windows layout configurations by pressing “hot buttons”, with the use of an external control panel and according to the set schedule;

- User-friendly software interface for creating presets that control the output to LCD monitors, drag & drop support;

- Connecting Stream MultiScreen TS to LAN allows to combine several devices into a single network, which can be fully controlled from any workstation in the network.

1.3 Stream Multiscreen broadcast control system components

1.3.1 Main hardware components

The main hardware components of Stream Multiscreen complex are:

Stream Multiscreen cards, expansion cards for video and audio inputs, **Tally** cards.

1. **Stream Multiscreen** cards.
2. PC-based (IBM PC-based) Operator or Administrator workstations (remote workstations).
3. PC-based (IBM PC based) video servers with specialized equipment (and video capture cards) installed, which perform additional functions of the Operator and System Administrator workstation.

1.3.1.1 FS-6 card

FS-6 card is designed to work with analog video signals.

Card features:

- PCI-Express 1x,
- 4 CVBS video inputs,
- 4 RCA jack line audio inputs (fem.),
- **Tally** card connector,
- connectors for video and audio sources connection to the **rear panel**.

Fig. 1.3.1 **FS-6** card

1.3.1.2 MS-8 card

MS-8 card is designed to work with digital and analog video signals.

Card features:

- PCI-X 64bit/66 MHz interface,
- 8 CVBS/SDI video inputs + CVBS/VBS reference signal,
- 8 RCA jack line audio inputs (fem.),
- **Tally** card connector,
- connectors for video and audio sources connection to the **rear panel**.

Fig. 1.3.2 **MS-8** card

1.3.1.3 Rear panel

Rear panel has a standard signal sources input (BNC-in-video, RCA-in-audio) interface. The cards are designed for installation on the back panel of **Stream Multiscreen** server. Figure 1.3.3 shows a typical configuration of **Stream Multiscreen** server.

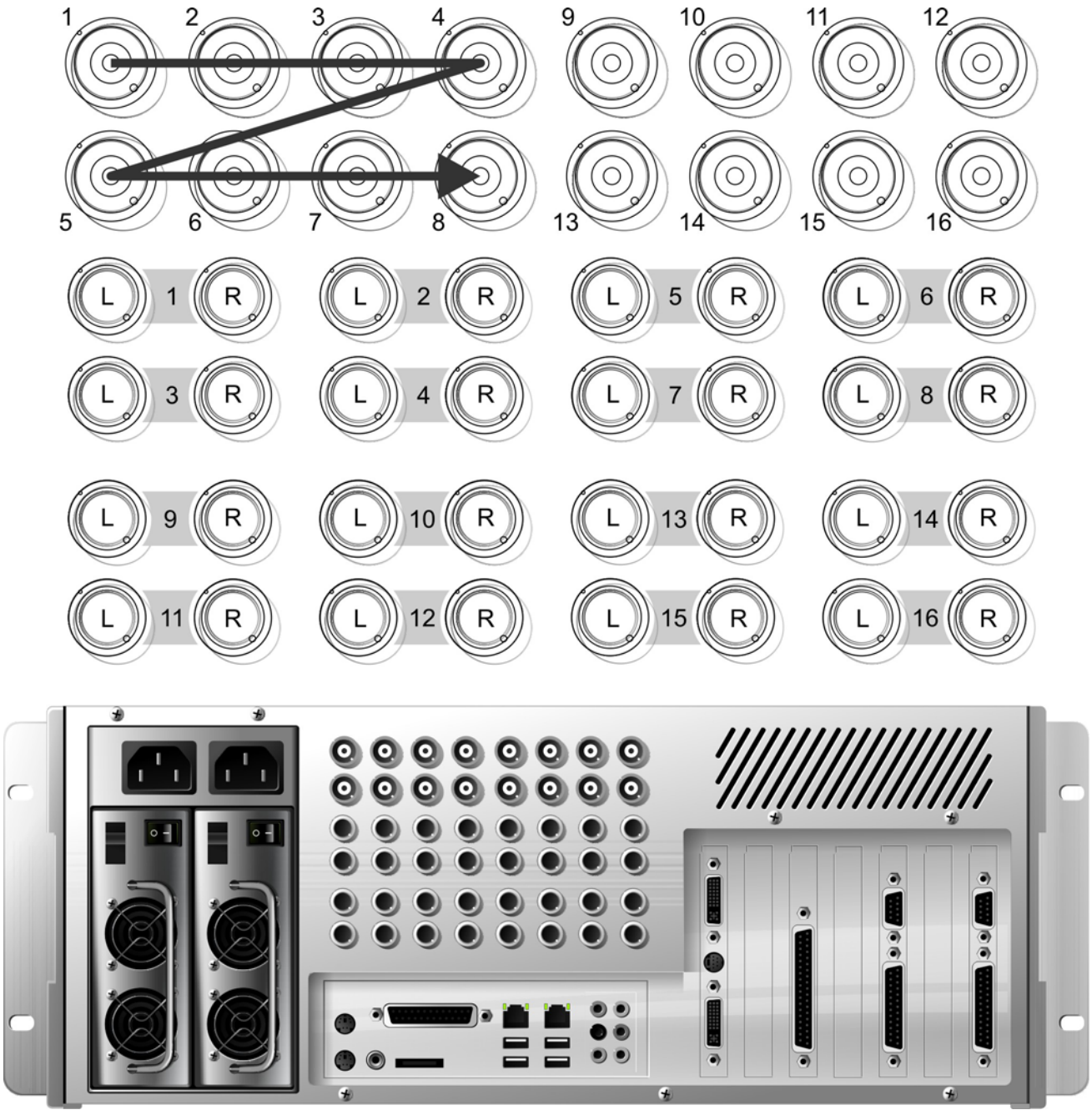


Fig. 1.3.3 Rear panel of 16 channel **Stream Multiscreen** server

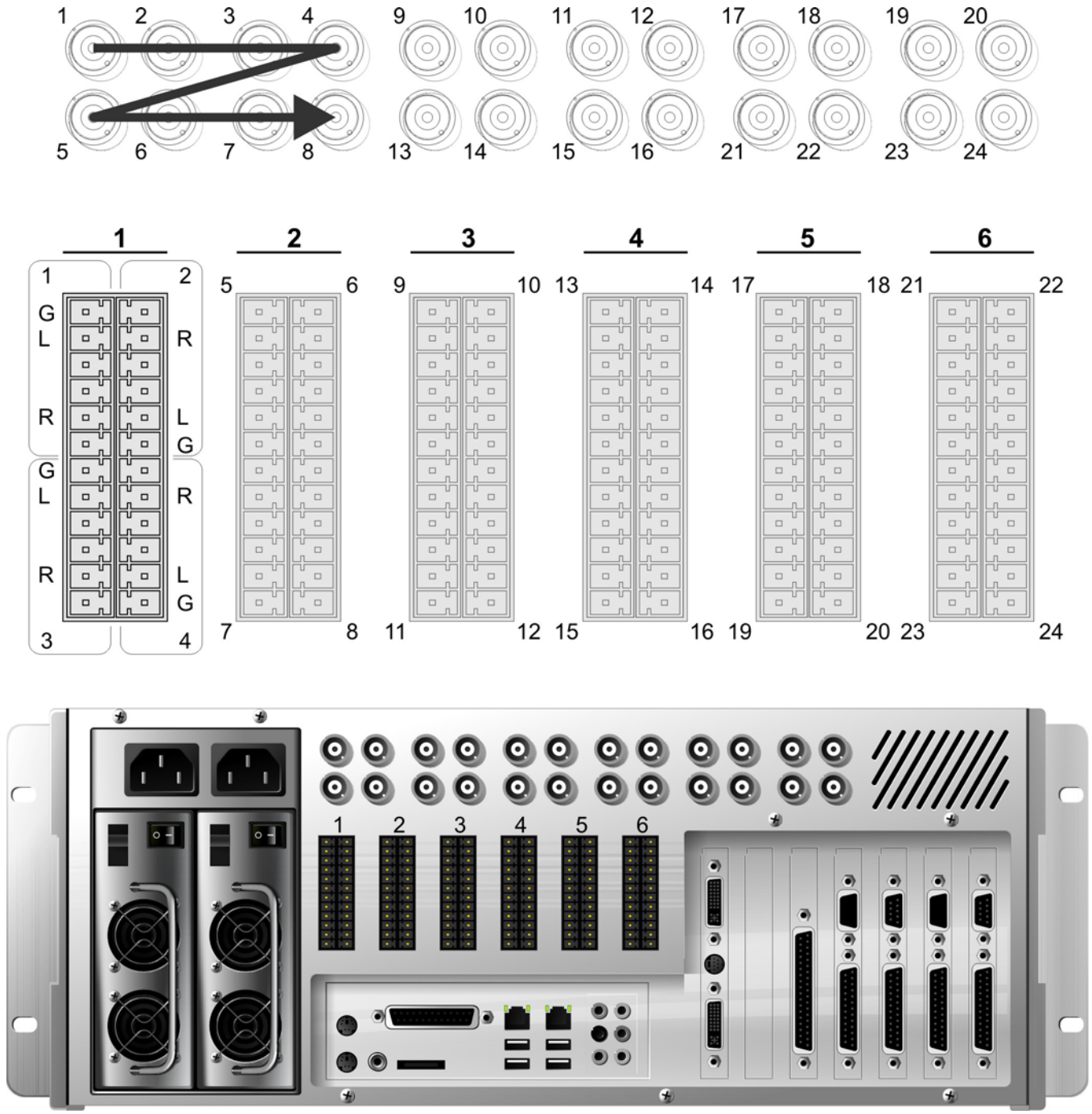


Fig. 1.3.4 Rear panel of 24 channel **Stream Multiscreen** server

Figures 1.3.3 and 1.3.4 present the rear panels of sixteen and twenty-four channel servers. The video connectors' layout and numbering is shown at the top of the image, the audio – in the middle. The bottom of the figure displays the general view of the server back panel.

1.3.1.4 Tally card

Tally card is designed to manage Stream Multiscreen program operation from a console, it is installed on the back panel of **Stream Multiscreen** server.

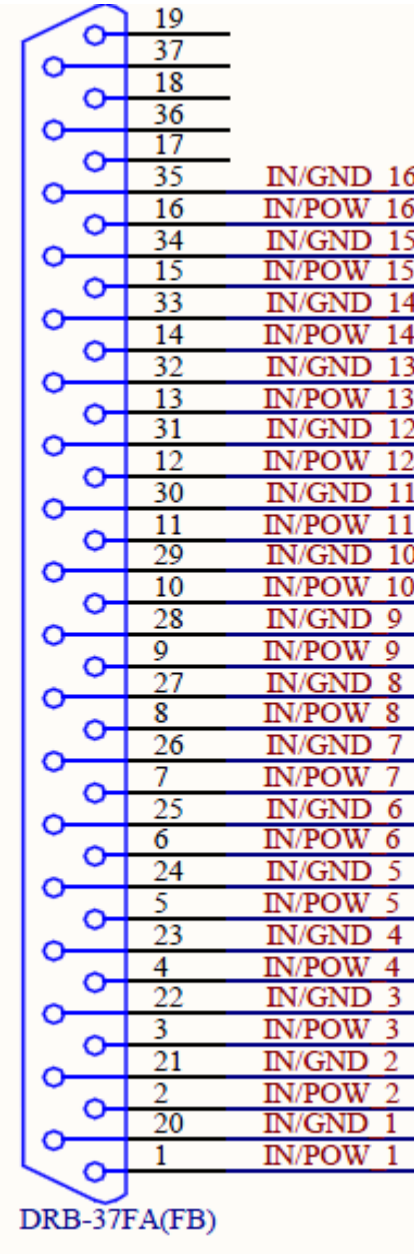


Fig. 1.3.5 **Tally** connector assignment

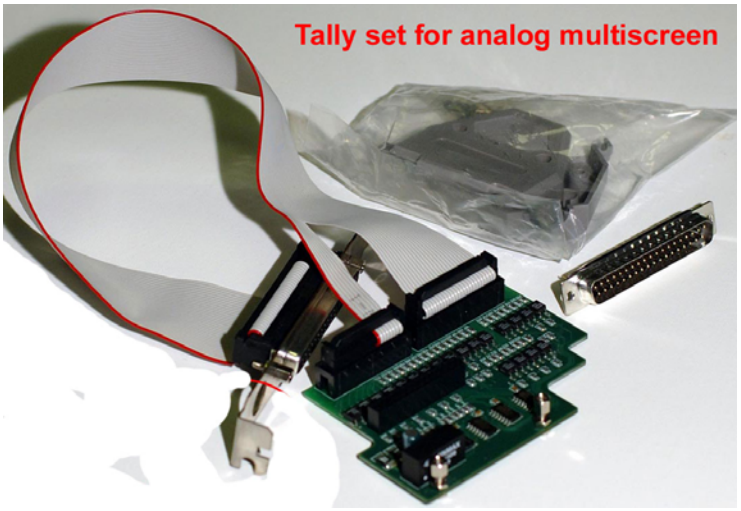


Fig. 1.3.6 **Tally** card for **FS-6**

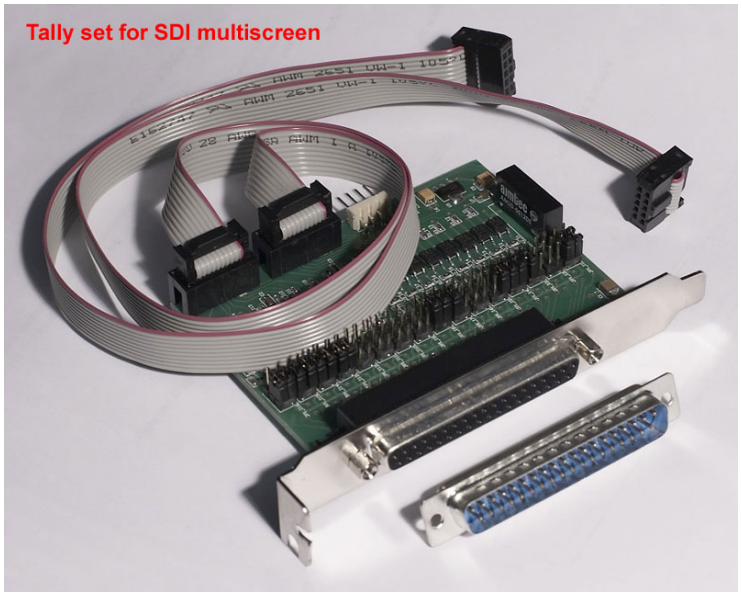


Fig. 1.3.7 **Tally** card for **MS-8**

The system response to Tally event (contact closure) can be configured in the video server settings window, in Configuration Manager Module (see Section 3.2.2).

1.3.2 Stream Multiscreen software modules

Stream Multiscreen complex is represented by the following system modules:

1) **Module of searching and adding Video Server modules to the system** - system module, which performs a search of active **Video Server** components in the network. This module is built into the **Configuration Manager** and **System log viewer** components and it establishes a connection between these components and the active **Video Server** modules in the network.

2) **Video Server** - system module which interacts directly with the system hardware. This module is installed on machines with **Stream Multiscreen** cards, where the information on controlled video sources will be displayed. **Video Server** module collects information about **Multiscreen** cards and monitors connected to the server. This data is passed to the **Configuration Manager** module to create the configuration of available video sources. In addition, **Video Server** module displays the finished monitor configuration after it is received from the **Configuration Manager** module.

3) **Configuration Manager** - system module designed for managing video servers. This module allows you to create different configurations of available video signal sources and transmit them to **Video Server** module for display. In addition, **Configuration Manager** allows you to customize the response of the **Video Server** components to alarm events (events recorded in the system, associated with the distortion or loss of signal, as well as **GPI** control signals).

4) **System log viewer** - system module designed to collect and display system log information of **Video Server** modules. When you start the Viewer, it automatically runs the search for all active **Video Server** components in the network. The server data is transferred to the Viewer, after which the module starts to display the system log information of all available servers in real time.

1.3.3 Communication environment

Communication resources of Stream Multiscreen hardware-software complex allow to create the distributed monitoring systems of television video and audio signals sources. Remote system components automatically interact with one another, forming a uniform monitoring network.

Data exchange and communication between the elements of the system is performed via local computer networks (LAN), Internet channels (WAN), telephone lines (Dial-Up) by using TCP / IP transport protocol.

2 Installing and uninstalling Stream Multiscreen

2.1 System requirements

All Stream Multiscreen software modules are supported on the following Operating Systems:

Windows 2000 (SP3 and higher), Windows 2003 Server, Windows XP.

2.2 Stream Multiscreen installation

In order to install and uninstall all the system components it is necessary to run the program setup. If InstallShield Wizard detects an existing version of the system on the computer, the following window will appear (Figure 2.1):

Fig.2.1 Program reinstall / uninstall options window

In this window, InstallShield Wizard will let you choose the following options:

- Add/Remove program components (**Modify**)
- Update all files in the installed program (**Repair**)
- Remove the program completely (**Delete**)

It is recommended to remove the existing version of the program before installing a new version.

If you are installing Stream Multiscreen for the first time, or if the previous version has already been removed from your PC, you will see the InstallShield Wizard welcome window after you run the setup file (Figure 2.2).

Fig. 2.2 InstallShield Wizard welcome window

After clicking **Next**, you will be prompted to choose a folder for the program installation (Figure 2.3). If you click **Next** again, the program will be installed in the default directory (C: \ Program Files \

Stream Labs \ Stream MultiScreen). To specify a different destination folder, use Browse. If your specified folder does not exist yet, it will be automatically created during installation.

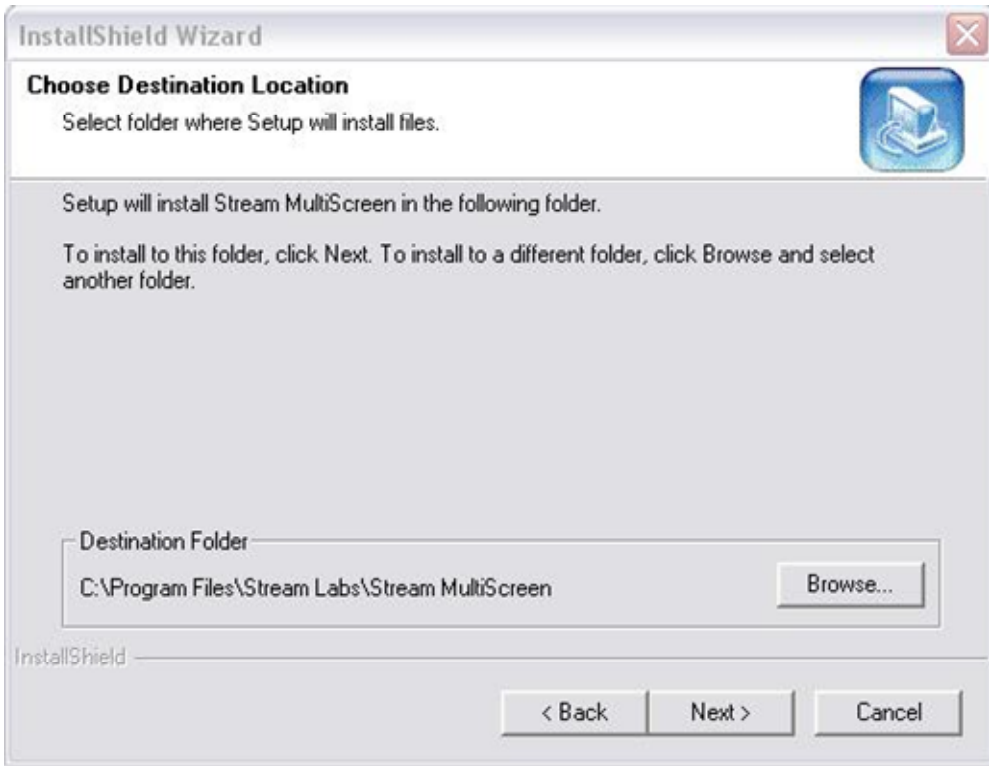


Fig. 2.3 Selecting the program installation folder

After selecting the installation folder and clicking Next, you will be prompted to select the program components you wish to install (Figure 2.4).

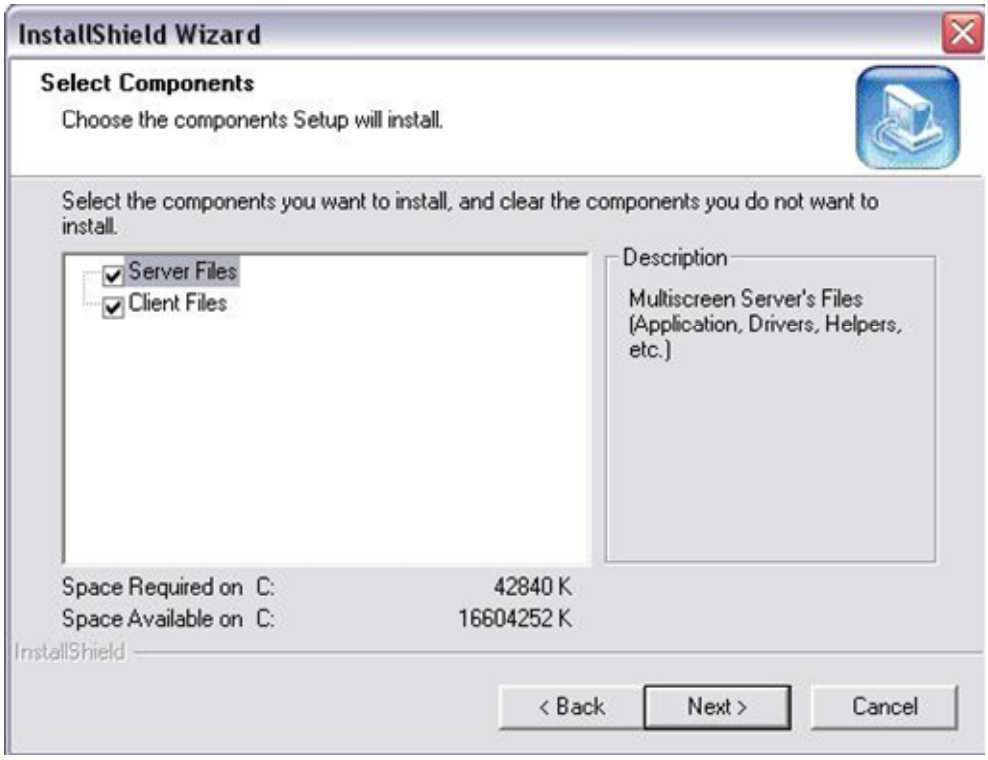


Fig. 2.4 Selecting program components

In order to install a component, you must tick the box next to its name.

Note: *"Video Server syslog Browser" component is installed together with Configuration Manager at the installation of "Client Files" component.*

When all components have been selected, click **Next**.

In the next window (Figure 2.5) you can specify the name of the folder where the program shortcuts for quick access via **Start-> Programs** will be placed**.**

Fig. 2.5 Selecting the name of the program folder in Start menu-> Programs.

Now click **Next** and the program installation will begin.

In the process of copying data system warnings may appear (Figure 2.6). In this case, in order to continue the installation, click *"Continue Anyway"*.

Fig. 2.6 System warning during installation

After successful completion of the installation InstallShield Wizard will ask you to restart your computer (Figure 2.7).

Fig. 2.7 Completion of the installation process

We recommend that you restart the computer immediately after installation. After the reboot the desktop icons should appear for all installed components of the program. If Multiscreen Server

component is installed, it will load automatically on computer startup and its icon will appear in the system tray.

The installation is finished and you're now ready to work.

2.3 Stream MultiScreen removal

To uninstall Stream Multiscreen, run the program setup and select Remove (Uninstall) option in the dialog box (Figure 2.1). After clicking **Next** the program will be removed.

3 Working with Stream Multiscreen

3.1 Module of searching and adding Video Server modules to the system

3.1.1 Module dialog box description

Module of searching and adding Video Server modules to the system is a connecting element which establishes communication between main system components (see section 1.3.2). This module is called automatically when the Configuration Manager and System log viewer are loaded.

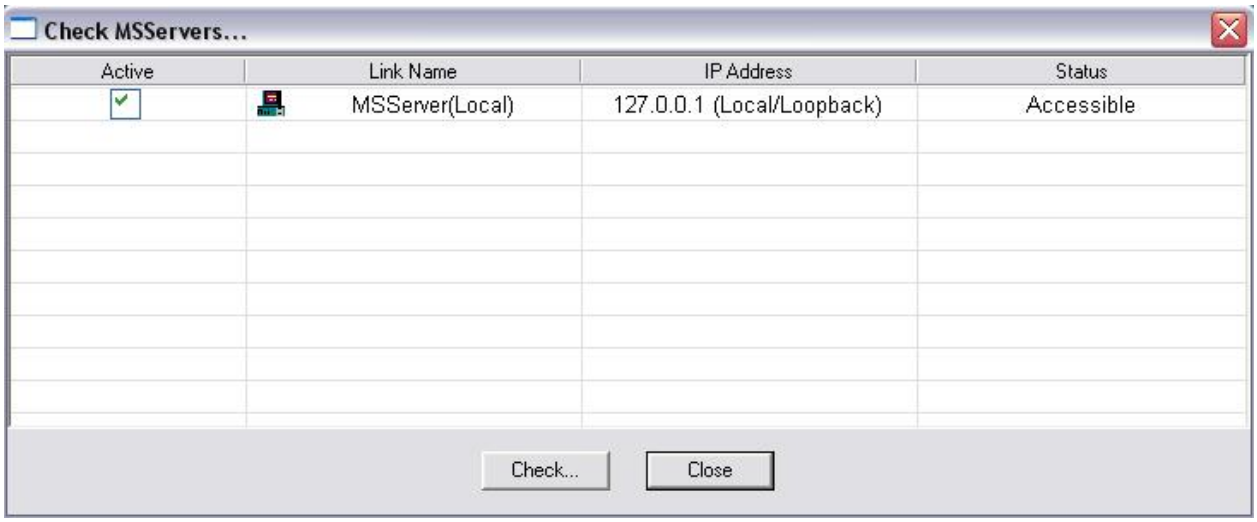


Fig. 3.1 Module of searching and adding Video Server components to the system dialog window

Besides automatic loading, the dialogue window of the module can be called manually:

- In **Configuration Manager** Module (3.3). – through **Servers** menu –> **Update Servers/Sources** or by pressing ,

- In **System log viewer** module (3.5) – by pressing Check MSServers button.

The module dialog box (Figure 3.1) displays all Video Server components found in automatic mode and available at the moment, as well as those specified earlier in the manual mode.

A record of each Video Server component in the module dialog window is presented in the following information fields:

Active – indicates that Video Server module is active (used by the system).

Link Name – video server name used in the system (default: MSServer(xxx.xxx.xxx.xxx), where xxx.xxx.xxx.xxx – is the module IP address). When necessary, you can assign a random name to the server by selecting this field.

IP Address – IP address of the computer where the video server module is installed. You can edit the video server IP address by selecting this field*.

***Note**: Avoid changing the IP-address of the video server found in the automatic mode, as this could lead to loss of communication with data servers.*

Status – a field which shows the video server availability. Possible values: Accessible - module is available at the moment, Inaccessible - module is not available.

3.1.2 Adding and removing video server modules

To add a video server module manually, left click in the **Active** field of the first free line in the video servers entries. A new video server module account will appear in the table with the default fields (**Link Name** - MSServer (0.0.0.0), **IP address** - 0.0.0.0., **Status** - Inaccessible). In order to make the video server accessible, you must specify the IP address of the computer where the video server module is installed in the IP address field. After specifying the IP address, the program will try to connect to the video server. If the connection attempt is successful, the Status field will change to Accessible, otherwise it will stay Inaccessible.

To remove a video server module from the list, left click in the **Active** field of the appropriate account and confirm the deletion by clicking **Yes** in the window.

3.2 Video Server module

3.2.1 Module description

Executable file: MSServer.exe. Video Server module does not have a user interface. When loading, a “TV set” icon  will appear in the system tray. To shut the module down, right click on the icon and select Exit (stop video server operation) from the menu.

3.2.2 Configuring the video server in the Configuration Manager Module

3.2.2.1 View Servers Preferences window in the Configuration Manager Module

Despite the lack of a visual interface, the properties of video server module can be configured through the Configuration Manager Module.

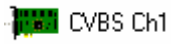
In order to adjust the properties of the video server, run the Configuration Manager Module and select **View Server Preferences** in the **Servers** menu. In the window that appears, you can see a list of all currently available video servers on the left. If you double click the selected server, all available signal sources will appear under the server icon (Fig.3.2).

Video Server Settings:

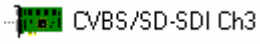
- **Playback parameters: Transport Stream files storage path** – full path to the directory on your video server hard disk for output of TS streams from files (used for demonstration purposes).
- **Recording parameters: Transport Stream files storage path** – full path to the directory for recording video streams on the video server local hard disk.
- **Configure Kramer inputs: Change** – change the KRAMER matrix connection configuration (for more information on the use of Kramer matrix, see Appendix A).

Depending on the card, the following video sources may be available for configuration:

- MPEG_TS format transport stream (MPEG2 transport stream, ISO/IEC 13818-1 with Mpeg2/H.264 compression codec);



- analog video signal from card input;



- digital / analog video signal from card input.

When you select the signal source icon, the panel with the properties of this source appears on the right (Fig. 3.2).

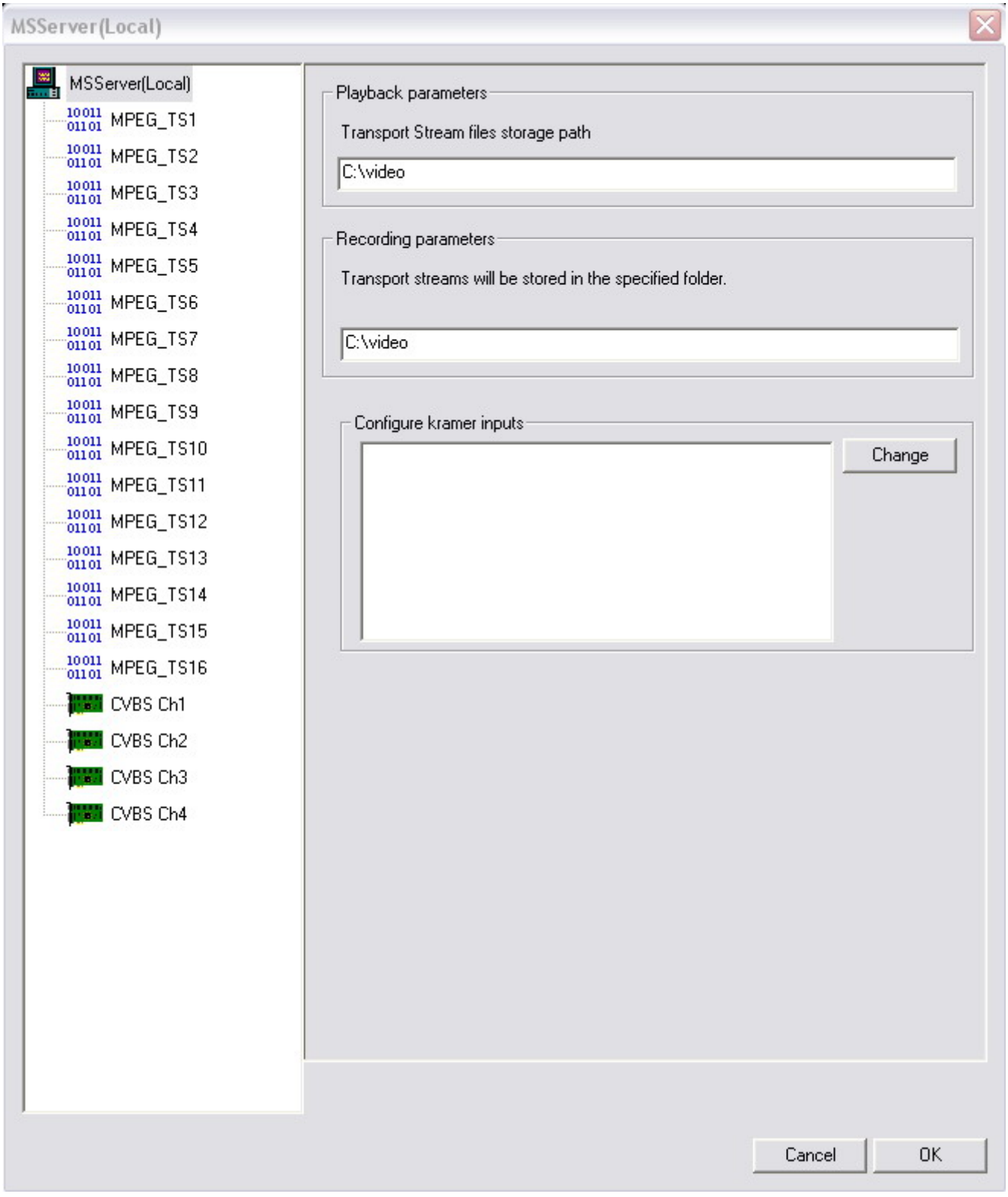


Figure 3.2 View Server Preferences window

3.2.2.2 Setting the properties of the signal source

Channel name

Figure 3.3 Caption panel

The names of the channels are set in the program by default according to the type of the signal source. Nevertheless, it is possible to change the name of the channel to any desired value. In order to do this, in the **Caption (Title)** panel select the name of the channel manually and enter the name in the opened field.

Setting the properties of the alarm events

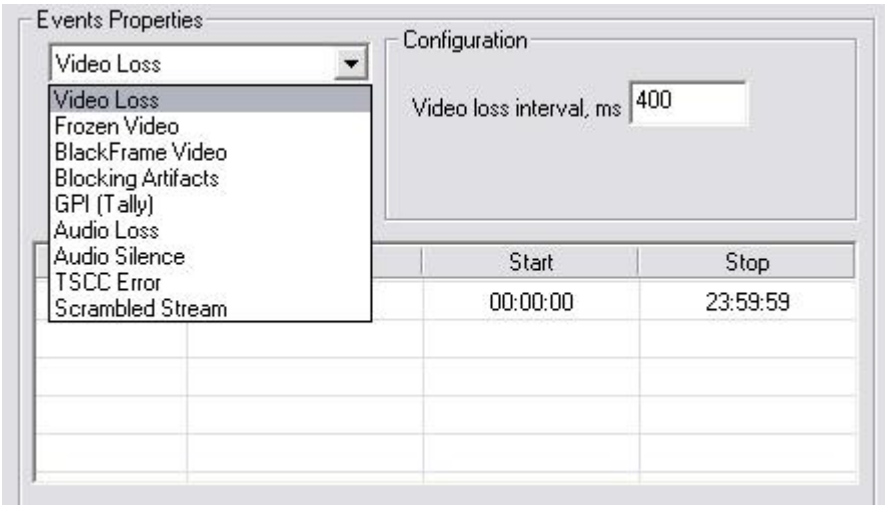


Fig. 3.4 Event Properties window

The program allows to customize the system response when it encounters the following alarm events:

Video Loss – disappearance of the video signal source

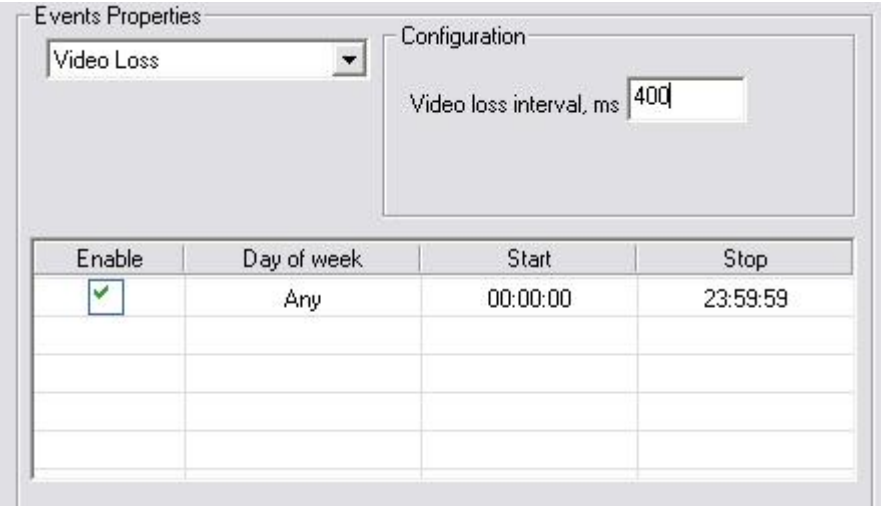


Fig. 3.5 Video Loss alarm event settings

Frozen Video – still video image from the signal source

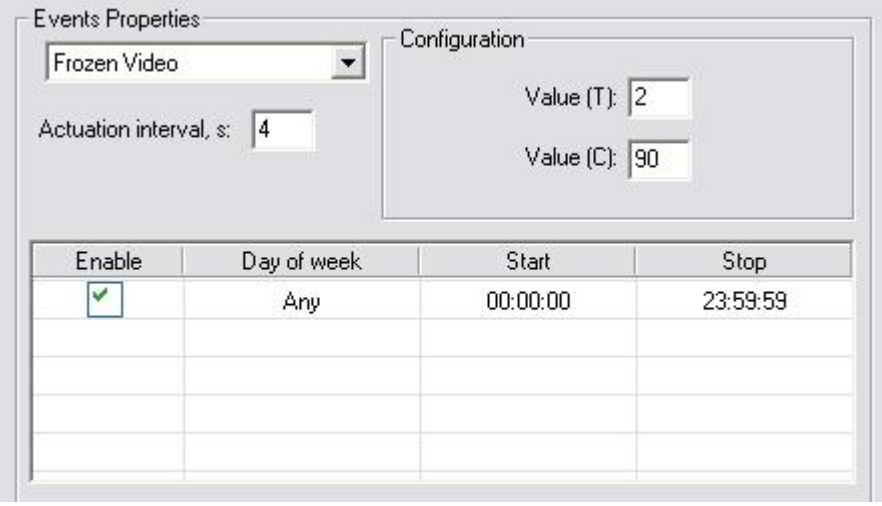


Fig. 3.6 Frozen Video alarm event settings

This alarm event has the following settings:

Actuation interval – the time interval over which the system will respond to the alarm event.

Value(T), % – the threshold sensitivity of the similarity of the two frames in comparison (how similar the images in the frames should be to consider them identical).

Value(C), % **–** the threshold sensitivity of the sampling from the actuation interval (the number of frames from the total actuation interval, which exceeded the **Value (T)** parameter). When this parameter is exceeded, the decision on occurrence of alarm event is made.

Scheduler – schedule compilation wizard, which allows to track the emergence of alarm events in the time intervals defined by the user.

BlackFrame Video – black frame in video image from the signal source

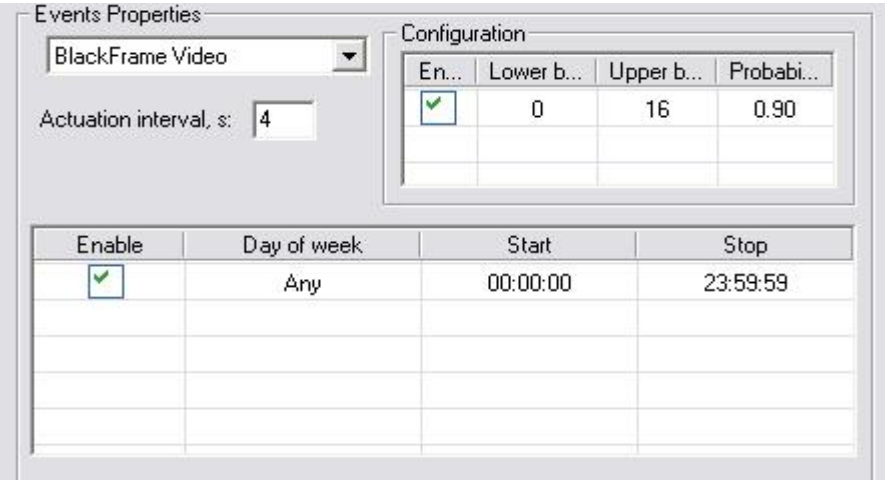


Fig. 3.7 BlackFrame Video alarm event settings

To configure this alarm event, you can use such parameters as **Actuation interval**, and **Scheduler** (see **Frozen Video** settings), and an additional **Threshold** parameter:

Enable – activate threshold settings,

Lower border – lower level of brightness of “black” in a pixel,

Upper border – upper level of brightness of “black” in a pixel,

Probability, % – the threshold ratio of the number of pixels with brightness ranging from **Lower Border** to the **Upper Border** to the total number of pixels in the frame.

Note: ***BlackFrame Video*** *alarm event happens only upon the occurrence of* ***Frozen Video*** alarm event. **Blocking Artifacts** – presence of block structure in the frame

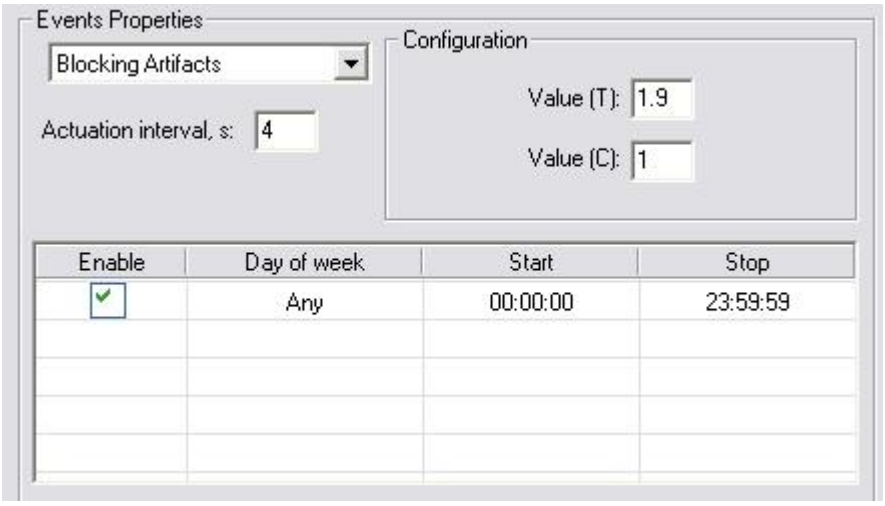


Fig. 3.8 Blocking Artifacts alarm event settings

Blocking Artifacts alarm event settings are completely identical to the **Frozen Video** event settings (see above).

GPI (Tally) – Tally actuation signal from the signal source (more about Tally see Section 1.3.1)

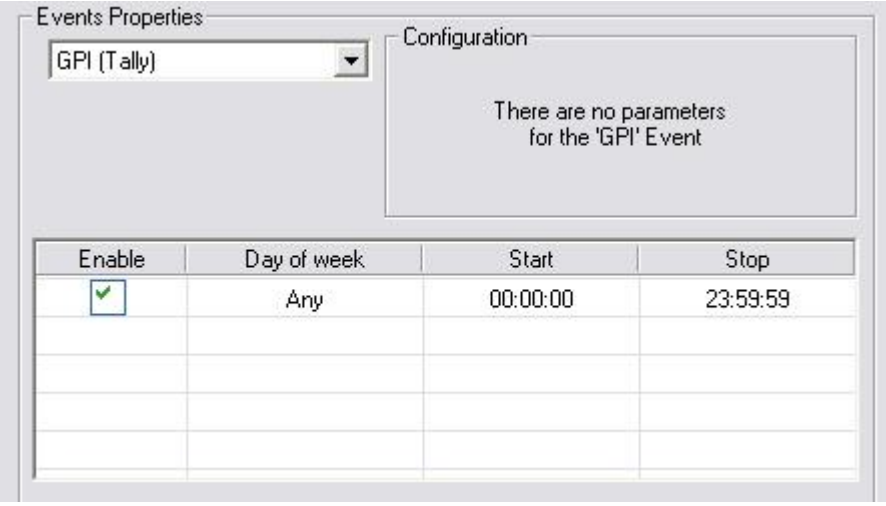


Fig. 3.9 GPI (Tally) alarm event settings

Tally alarm event settings feature the familiar option **Scheduler** (see **Frozen Video** settings paragraph).

Audio Loss – loss of sound in the channel

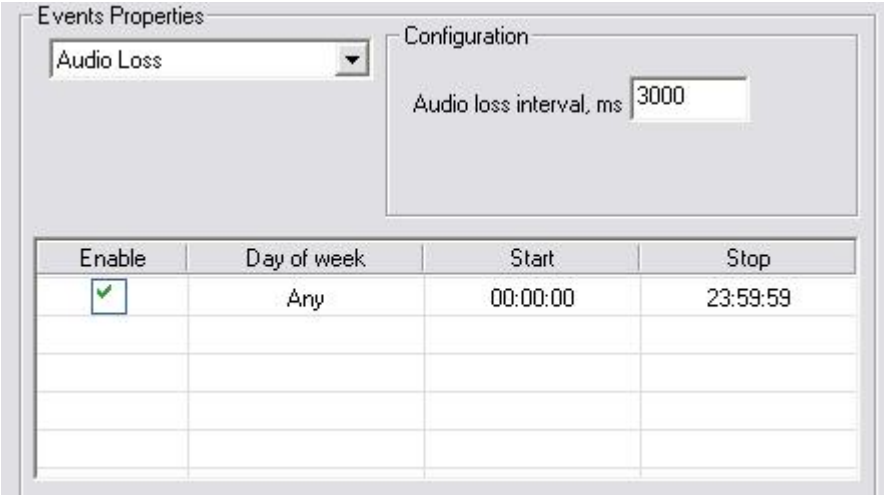


Fig. 3.10 Audio Loss alarm event settings

In addition to standard parameters, such as **Actuation interval** and **Scheduler**, there is an extra **Audio loss interval** setting. This field specifies the interval, during which the absence of sound in the channel should be observed.

Audio Silence – audio signal level decline

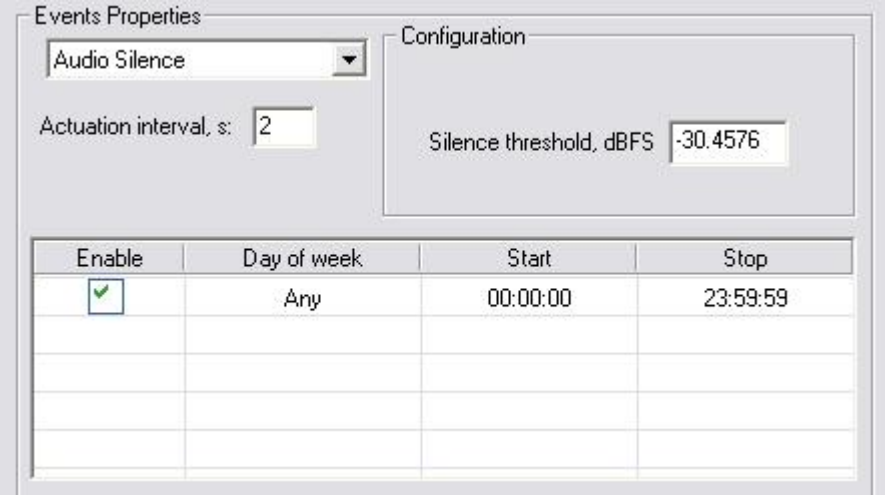


Fig. 3.11 Audio Silence alarm event settings

Audio Silence alarm event panel contains the following fields: **Actuation interval** and **Scheduler** (see **Frozen Video** settings). In addition, there are special fields for defining the audio level threshold value

History, ms – time during which the decline of audio level below threshold value is observed.

Silence Threshold, % – threshold value of signal level.

TSCC Error – loss of transport stream packages

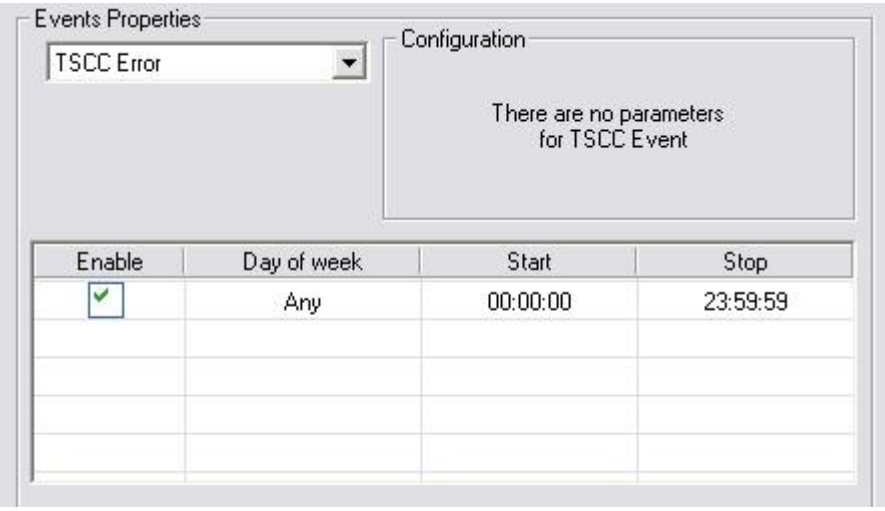


Fig. 3.11 TSCC Error alarm event settings

This alarm event can be configured with two settings: **Actuation interval**, and **Scheduler.**

Scrambled Stream – notification of an encrypted stream

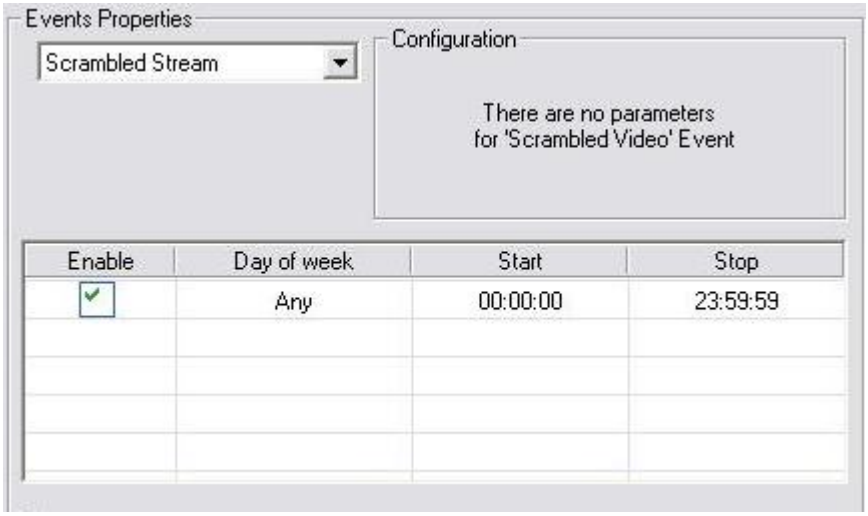


Fig. 3.13 Scrambled Stream alarm event settings

The **Scrambled Stream** alarm event panel provides only the **Scheduler** field (see **Frozen Video** settings).

Setting the alarm event response

The system has three types of response to the appearance of an alarm event:

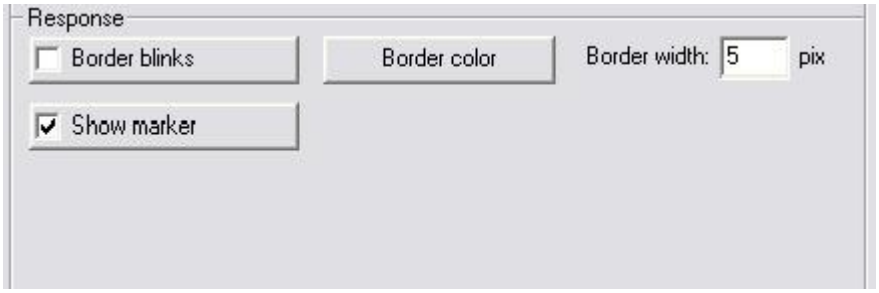


Fig. 3.14 Alarm event response settings

Border – frame around the signal channel display element (video / audio)

Settings:

Border Blinks – allow flashing frame

Border Color **–** frame color adjustment

Border Width **–** setting the frame width in pixels

Audio Signal

Settings:

Audio signal – enable audio

Duration – sound duration

Marker – displaying an alarm event marker in the frame

Settings:

Marker **–** enable alarm event marker

Apply button

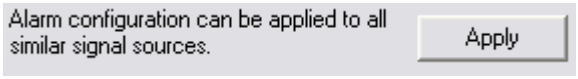


Fig. 3.15 Apply button

Apply button allows you to extend the alarm event settings configuration to all signal sources of the same type.

3.3 Configuration Manager Module main window

3.3.1 Structure of the main window

Configuration Manager Module presents an environment for creation and management of video server configurations.

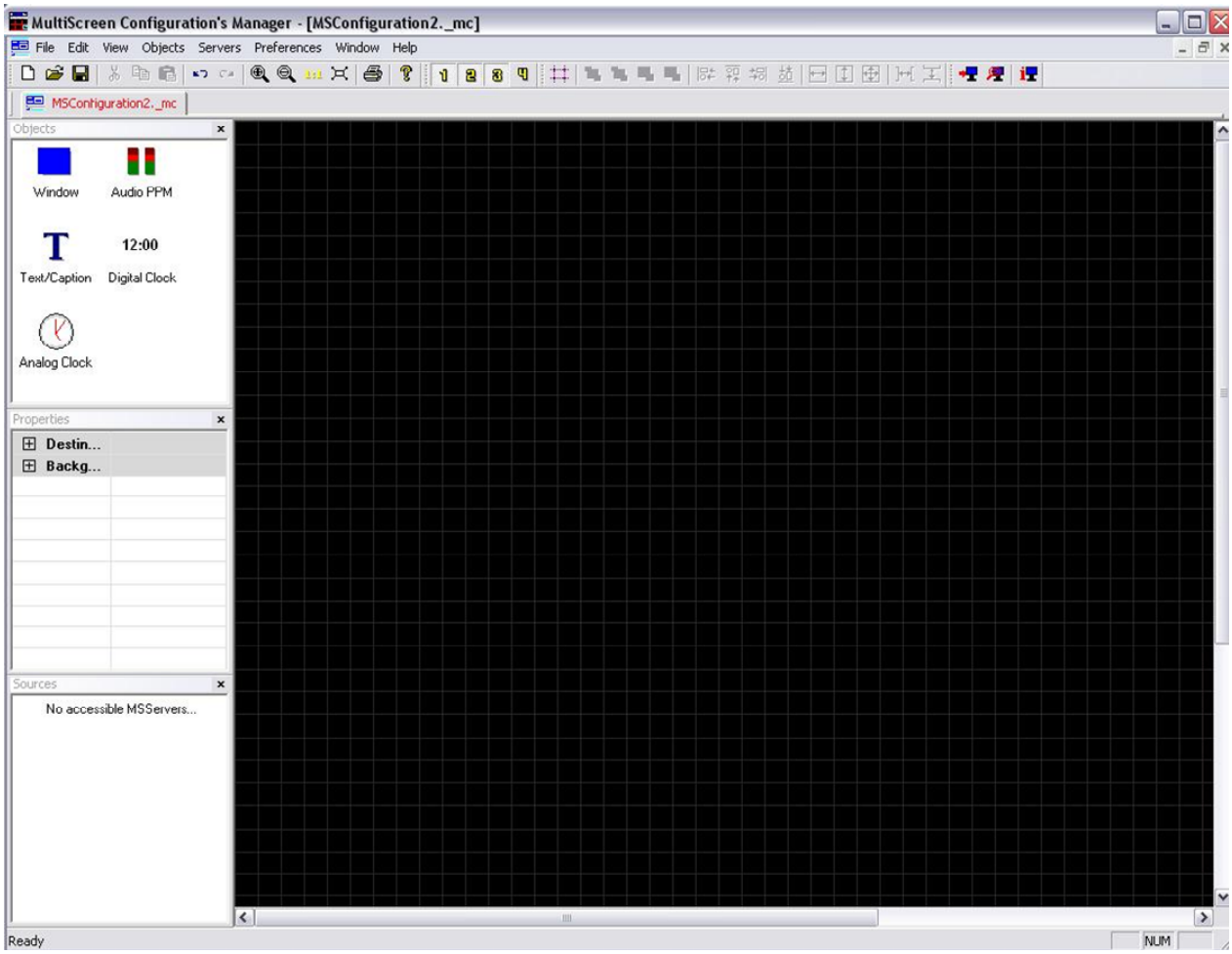


Fig. 3.2 Configuration Manager Module main window

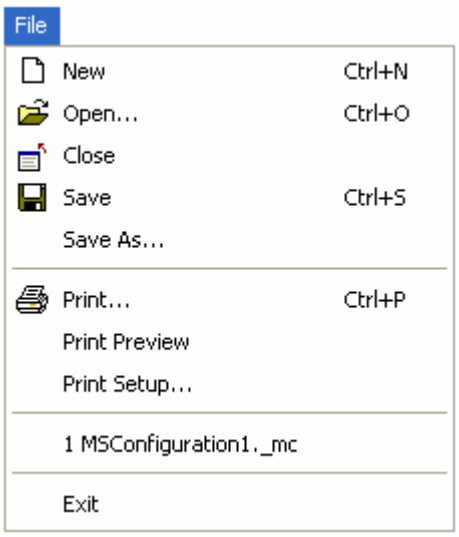
Configuration Manager Module main window consists of the following components:

- Menu items: **File, Edit, View, Objects, Preferences, Window, Help,**
- Toolbars: **Standard, Controls, Objects, Status Bar, Server Bar, Window Tabs,**
- Workspace,
- Control panels: **Objects, Properties, Sources.**

In the following section we give a detailed description of the above components.

3.3.2 Menu items

3.3.2.1 File menu



New [Ctrl + N] – create a new (empty) configuration

Open [Ctrl + O] – open an existing configuration (configuration files have the ._mc extension)

Close – close active configuration

Save [Ctrl + S] – save active configuration

Save As – save active configuration under a different name

Print [Ctrl + P] – print active configuration

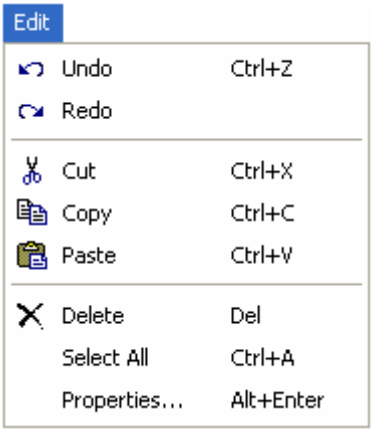
Print Preview – preview active configuration before printing

Print Setup – print settings

MRU Files – last opened configuration files (MRU - Most Recently Used)

Exit – close the application with the option to save all changes in all the edited configurations

3.3.2.2 Edit menu



Undo [Ctrl + Z] – cancel the last editing operation in the active configuration (command depth – one action)

Redo – repeat the last editing operation in the active configuration (if it was cancelled by **Undo** command)

Cut [Ctrl + X] – remove the selected object from the active configuration and save it to the clipboard

Copy [Ctrl + C] – copy the selected object in the active configuration and save it to the clipboard

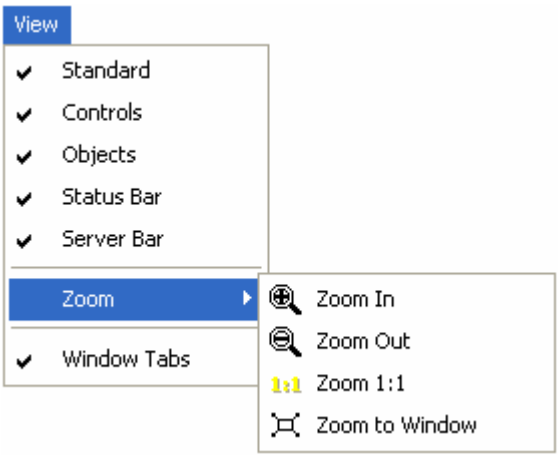
Paste [Ctrl + V] – insert an object from the clipboard into the active configuration

Delete [Del] – remove selected objects from active configuration

Select All [Ctrl + A] – select all objects in the active configuration

Properties [Alt + Enter] – show properties (in **Properties** window) of the selected object in active configuration (object properties are displayed automatically when you right click an object)

3.3.2.3 View menu



Standard – show / hide the standard toolbar

Controls – show / hide **Objects**, **Properties**, **Sources**, **Templates** toolbars

Objects – show / hide the object settings toolbar

Status Bar – show / hide the application status bar

Server Bar – show / hide the video server settings toolbar

Zoom – scale the active configuration working canvas

- **Zoom In** – magnify image

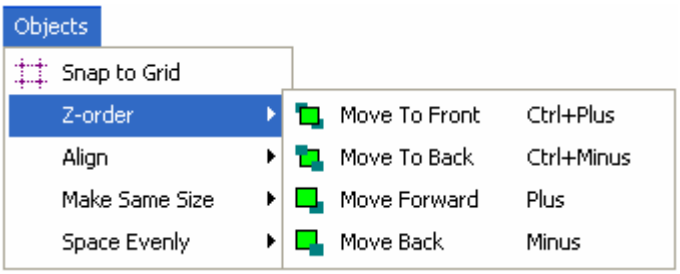
- **Zoom Out** – reduce image

- **Zoom 1:1** – display image in 1:1 scale

- **Zoom to Window** – display image in the workspace window (scale to the size of the window)

Window Tabs – show / hide the tabs with the open application configurations

3.3.2.4 Objects menu



Snap to grid – enable / disable the binding of window object to the grid (see Preferences menu)

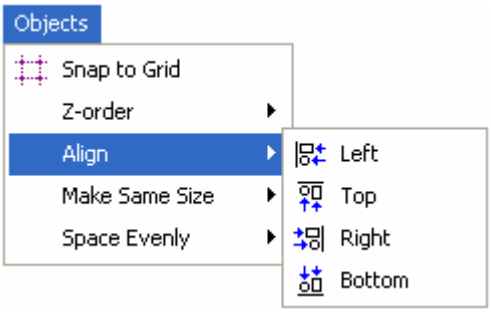
Z-order – change the "level" of the selected object in active configuration

- **Move To Front [Ctrl + Plus]** – place the selected object “above” the rest of the objects

- **Move To Back [Ctrl + Minus]** – place the selected object “below” the rest of the objects

- **Move Forward [Plus]** – move the selected object one level higher

- **Move Back [Minus]** – move the selected object one level lower



Align – align the selected objects according to the “reference object” in the active configuration

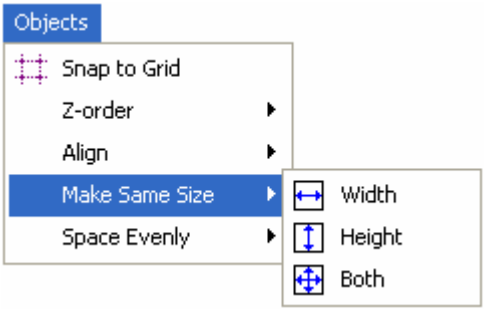
Note: The reference object is the last selected object.

- **Left** – position alignment by the left edge

- **Top** – position alignment by the upper edge

- **Right** – position alignment by the right edge

- **Bottom** – position alignment by the lower edge

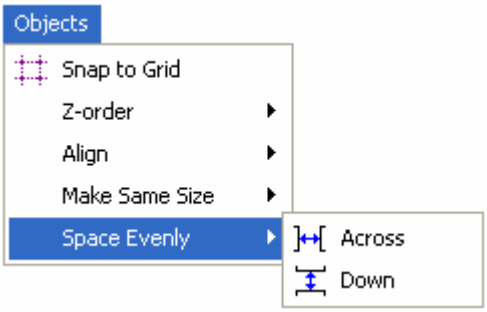


Make Same Size - align the sizes of the selected objects according to the “reference object” in the active configuration

- **Width** – size alignment by width

- **Height** – size alignment by height

- **Both** – size alignment by width and height

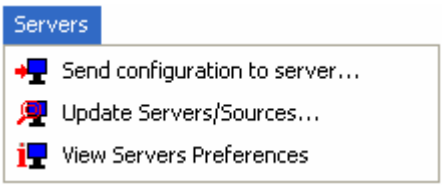


Space Evenly - align the intervals between the selected objects in the active configuration

- **Across** – align intervals horizontally

- **Down** – align intervals vertically

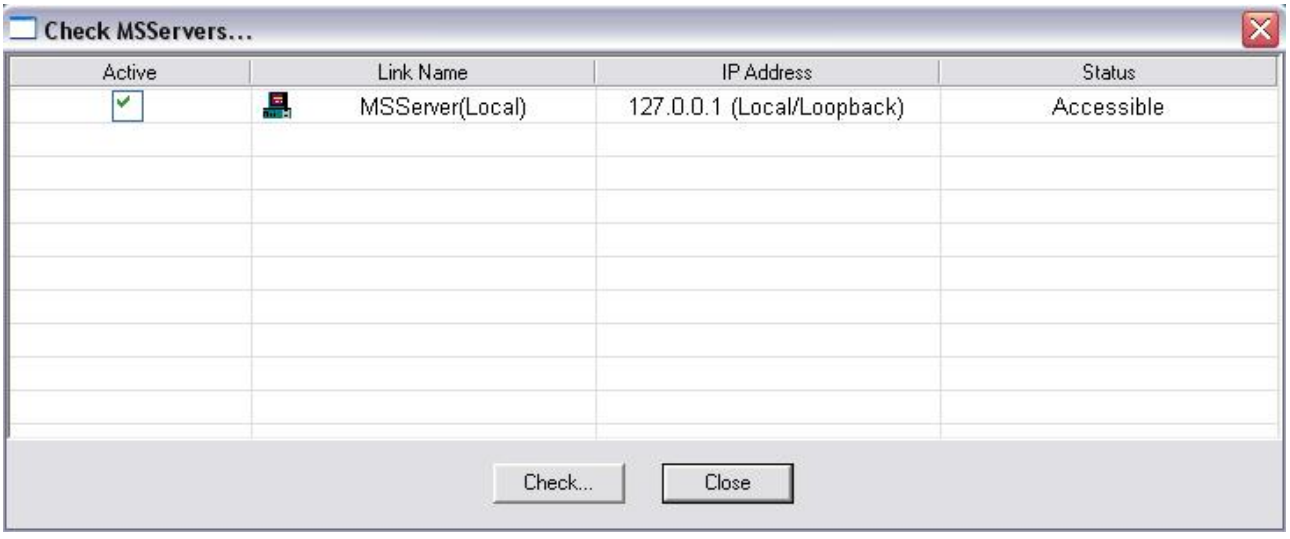
3.3.2.5 Servers menu



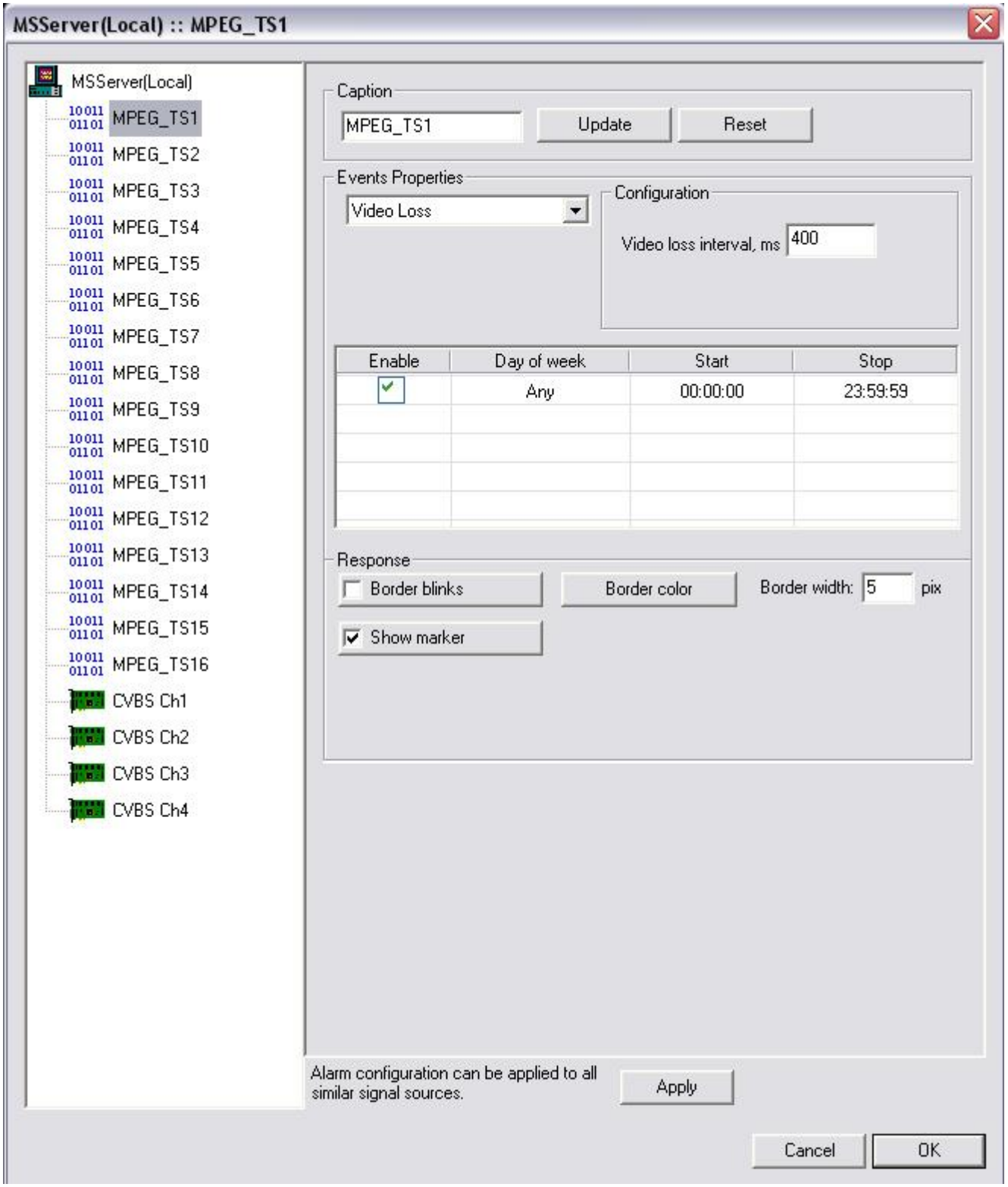
Send configuration to server... – open the dialog for sending an active configuration of one of the available Video Server modules to a monitor.

Note: It is impossible to send an "empty" configuration, or a configuration in which one or more objects extend beyond the limits of the workspace.

Update Servers/Sources... – open the dialog of searching and adding **Video Server** modules to the system (see Section 6.1).

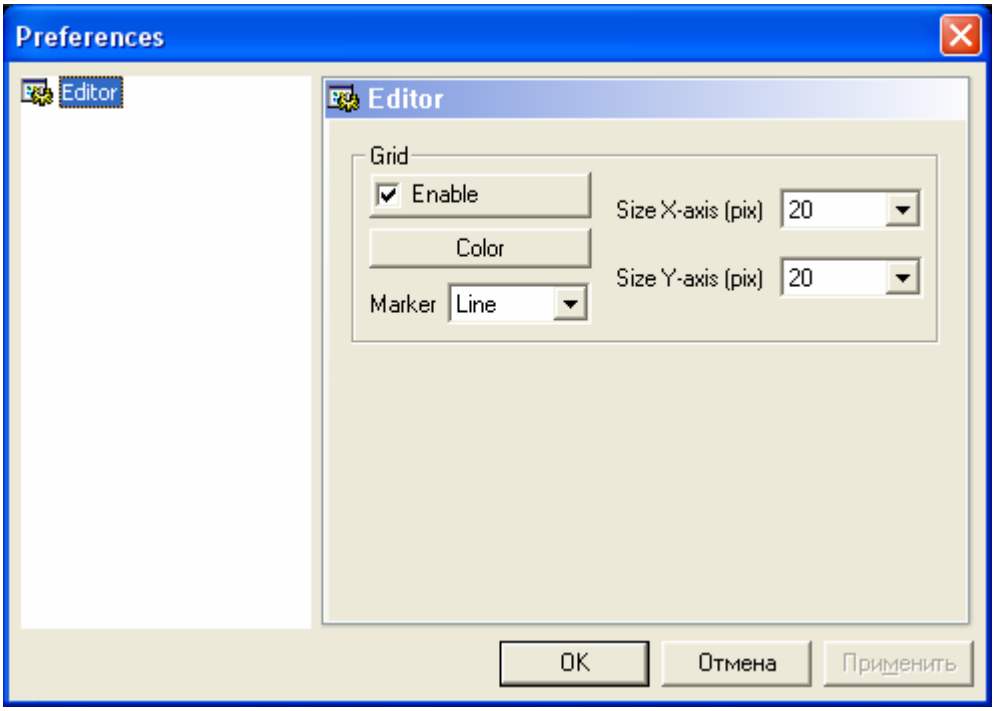


View Servers Preferences... – open the dialog for adjusting the preferences of the available Video Server modules.



This dialog allows you to change the basic settings of the Video Server modules, and some properties (actuation schedule and response to alarm events, log entries) of the signal sources which belong to these modules (see Section 3.2.2.1).

3.3.2.6 Preferences menu



Open the Preferences dialog. *Note: this dialog changes the preferences for the **Configuration Manager** Module only.*

Editor – editor settings

Grid – editor window grid parameters:

Enable – show / hide grid

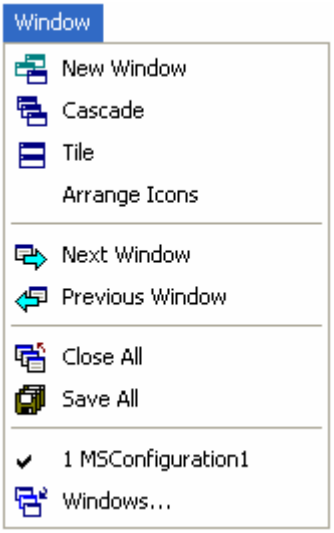
Color – grid color

Marker – type of grid lines (line, dotted line, points)

Size X-axis (pix) – change the interval between neighboring grid lines horizontally (the size is specified in pixels)

Size Y-axis (pix) – change the interval between neighboring grid lines vertically (the size is specified in pixels)

3.3.2.7 Window menu



New Window - create a new (duplicate) active configuration representation window

***Note**: A configuration can have one or more representation windows. This property can be used to edit the configuration in different scales: one window can display the general configuration scheme, the other - some specific segment.*

Cascade - arrange the configuration windows in a “cascade” (overlap)

Tile - arrange the configuration windows one after another vertically

Arrange Icons - arrange icons at the bottom of the window

Next Window - switch to the next configuration presentation window

Previous Window - switch to the previous configuration presentation window

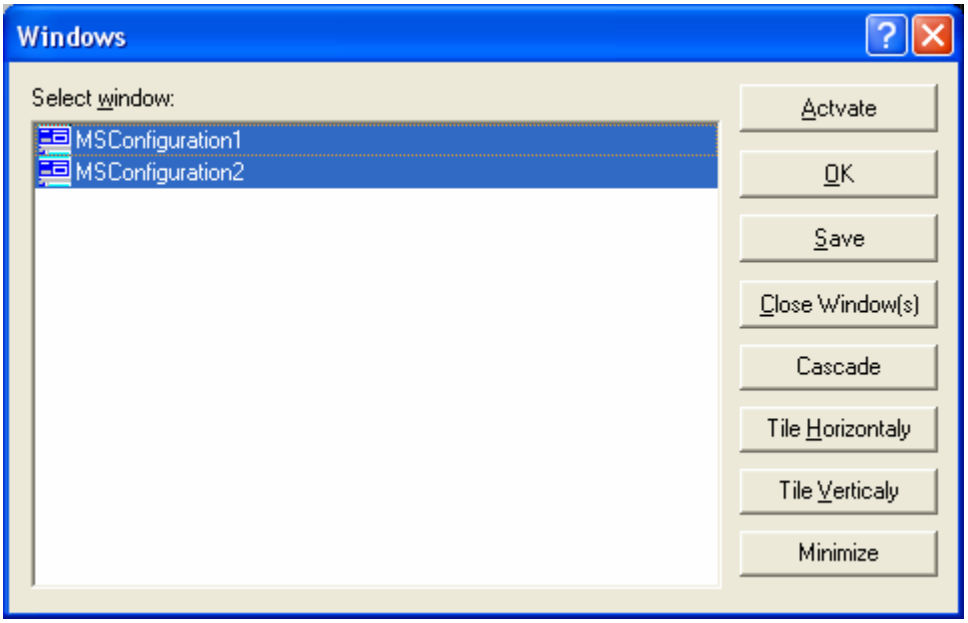
Close All – close all configuration presentation windows

Save All - save changes in all configuration presentation windows

Windows - management the arrangement of windows on the screen. To change the location of windows, first choose the windows that you wish to change the location for from the list, and secondly, specify their arrangement on the screen.

A window is selected by clicking on its name. The name of the selected window is highlighted in blue. To select two or more windows, hold the “Ctrl” button and click the on the names of those windows

in the list. You can select several consecutive windows from the list by clicking the first window, and then while holding down the “Shift” button, use “Up” and “Down” keys to expand the selection area.



Activate - available if only one window is selected. Makes the window active and puts it on top of other windows.

Save - saves selected configurations.

Close Window(s) – closes selected windows.

Cascade - available if you select several windows, arranges windows in cascade, diagonally, with partial overlap.

Title Horizontally - available if you select several windows, arranges windows one by one from left to right.

Title Vertically - available if you select several windows, arranges windows one by one from top to bottom.

3.3.2.8 Help menu

About - brings up a window of information about the program

3.3.3 Toolbars

3.3.3.1 Standard toolbar

In addition to the standard working with files options, common to all Windows-based applications, the panel features **View**-> **Zoom** menu functions (see Section 3.3.2.3).

3.3.3.2 Controls toolbar

This panel has four buttons that allow you to show / hide the following elements of the main window:

- **1 – Objects** workspace panel
- **2 – Properties** workspace panel
- **3 – Sources** workspace panel
- **4 –** Show / hide templates

3.3.3.3 Objects toolbar

This toolbar contains the components of the **Objects** menu (see Section 3.3.2.4).

3.3.3.4 Status Bar

Status Bar is located at the bottom of the main window and it contains information about current operations in the program window. This is an informational panel, it has no buttons or other active fields.

3.3.3.5 Server Bar

This toolbar displays the contents of the **Servers** menu (see Section 3.3.2.4).

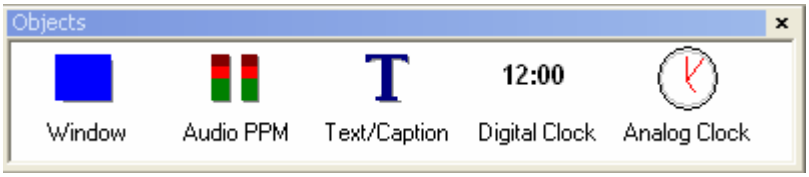
3.3.3.6 Window Tabs

Window Tabs panel displays open configurations, as well as various implementations of the same configuration in the form of tabs.

3.4 Working with Configuration Manager Module

3.4.1 Configuration elements

To display video, audio and service information, the system uses the following objects (their icons are located in **Objects** window):



Window - video source display

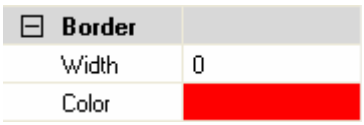
PPM - audio source indication

Text/Caption - source caption and other text fields

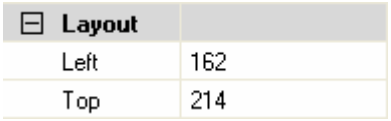
Digital Clock – digital clock display

Analog Clock – analog clock display

Object properties:



Border – frame around the object. You can adjust its parameters: **Width** (thickness) and **Color**. If **Width** equals 0, the border is invisible.



Layout - location of the object (arbitrary) within the configuration resolution. Has **Left** (indent from the left edge, in pixels) and **Top** (offset from the upper edge, in pixels) parameters.

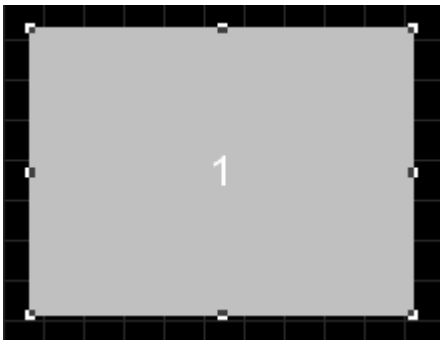
Size	
Width	192
Height	144
Aspect	4:3

Size - size of the object (random) within the configuration resolution.

Adding an object to the configuration is performed by dragging its icon from the **Objects** panel into the workspace. When you select an object in the workspace, the panel of its properties appears on the left side of the screen. Let us look at some accessible configuration objects and their properties in more detail.

3.4.1.1 Window object

When you add the Window object to the configuration editing area, it is displayed as a gray square:

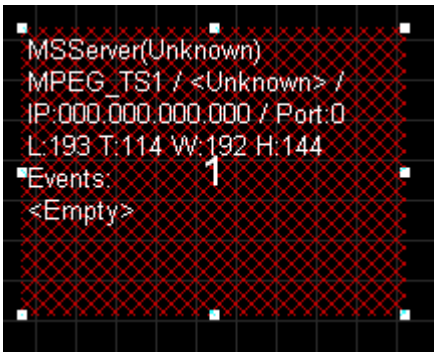


The size and position of the window change just as the size of the windows in Windows environment – by stretching from the edge and from the corner and moving to a new position with the mouse.

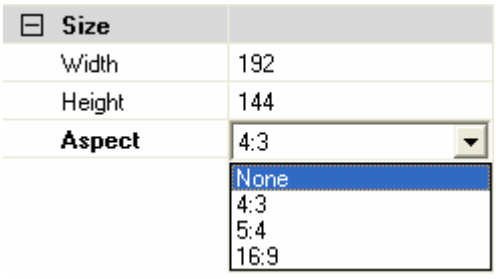
After the window has been assigned a signal source, it becomes a blue square in which a summary of the video source is displayed:

In addition to assigning the signal source fields manually, the program provides automatic assignment of a signal source to a window by dragging the signal source icon from the **Sources** panel into the object window area.

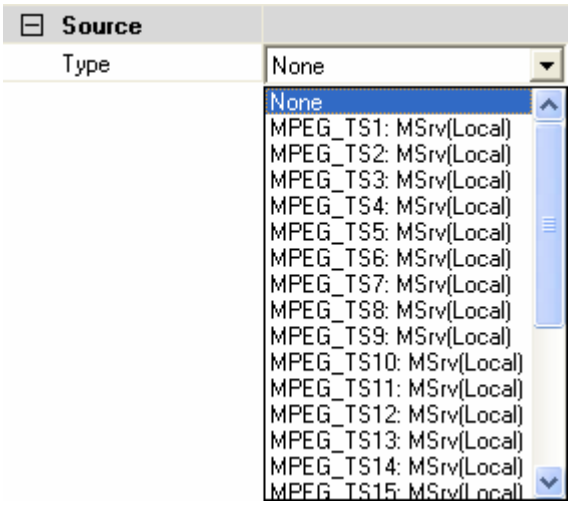
If the video server which is related to the window signal source stops operation, the window is displayed as a rectangle with red grid, indicating that you must restart the server, so that configuration performance can be restored.



Window object properties:

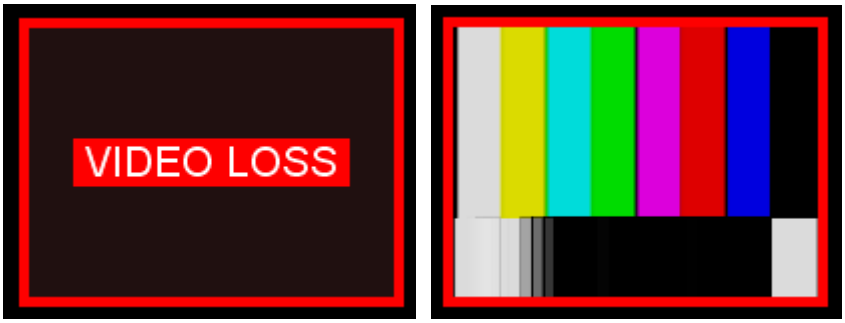


Aspect - indication of window size proportions. Possible options: **None** – no proportions, **4:3**, **5:4**, **16:9** – 4:3, 5:4, 16:9 proportions respectively.



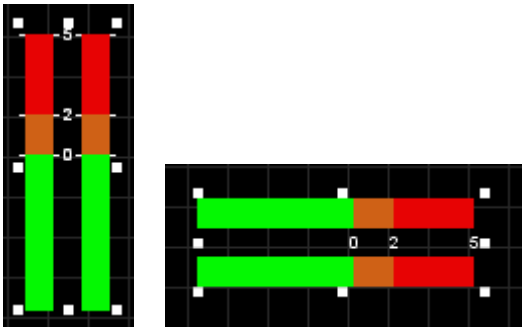
Source - list of available for editing video source properties assigned to the object (see Section 7.3.). If **Window** object does not have any source assigned to it, this list will feature only one item – **Type** with "None" value.

<Video Loss> picture - choice of **Window** object display in case of video signal loss. Possible options: **<Video Loss> on Black Screen** - «Video Loss» inscription on a black background, or **Bars** - standard image with colored rectangles.



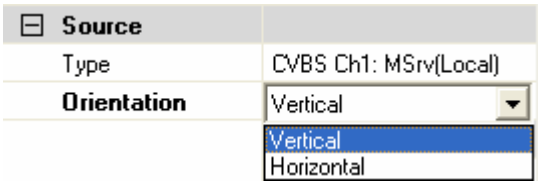
3.4.1.2 Audio PPM object

Audio PPM object is an indicator of audio source operation. When added to the workspace, it is displayed in the following way:

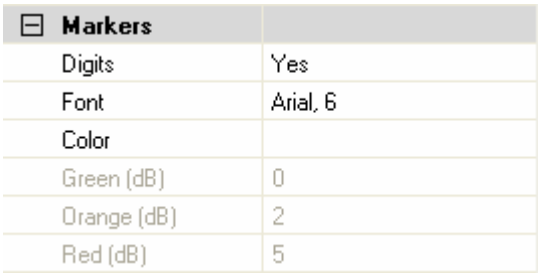


PPM object properties:

Source - list of available for editing audio source properties assigned to the object. If **Audio PPM** object does not have any source assigned to it, this list will feature only one item – **Type** with "None" value.



Orientation - you can select the type of scale display - vertical or horizontal.



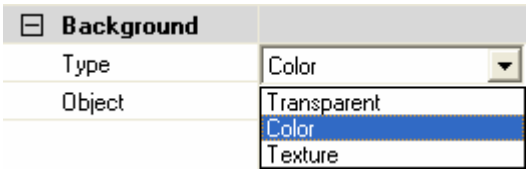
Markers - object band indication setting. Properties available for editing:

Audio PPM object scale is divided into three areas: for analog audio: up to 0 dB ("green" zone), 0 – 2 dB ("orange" zone), 2 - 5 dB ("red" zone); for digital audio: up to -14 dB ("green" zone), -14 –12 dB ("orange" zone), -12 - -9 dB ("red" zone);

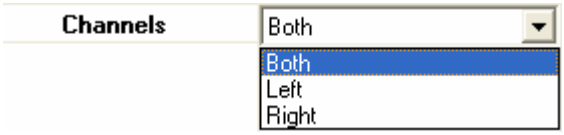
- **Digits** - display the values of each zone in dB (decibels) or not.

- **Font** - font used to display **Digits**

- **Color** - color of the font used to display **Digits**



Background - choose the object backing type (background design). Possible variations: **Transparent** - transparent; **Color** - monochrome; **Texture** – use embedded image. If you select **Color**, you will be able to choose a color from the palette in the **Object** item. In **Transparent** and **Texture** modes the **Object** item is disabled.



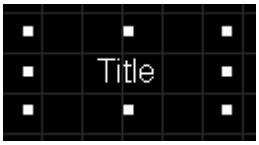
Channels - indication of both (stereo), or only the left or only right (mono) audio channels.

Play audio - simultaneous playback of audio through the sound card.

Attached to - group **Audio PPM** object with **Window** type object. The object must be selected from the list. If there are no Window type objects in the current configuration, the list will be empty.

3.4.1.3 Caption/Text object

Text/Caption object serves as a field for creating channel captures and adding text messages in the configuration. When added to the workspace, it is displayed in the following way:



Caption/Text object properties:

Caption – object text. Depending on the configuration of the **Source Dependent** and **Attached to:** properties (see below), this item is filled either manually or automatically (when specifying the relation or assignment to the signal source). In this case, the **Caption** field automatically receives the name of the signal source assigned to the **Window** object. The default field value is “Title”.

Source Dependent – choose automatic / manual object text fill. “Yes” position designates automatic fill, “No” means manual.

Font – font used to display text.

Color – color of the font used to display text.

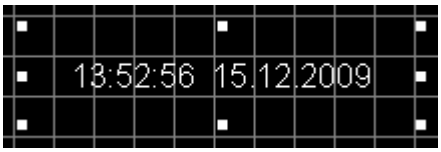
Alignment – align text horizontally (Horizontal): “Left” - to the left, “Center” - to the center, “Right” - by the right edge and vertically (Vertical): “Top” - on the upper edge, “Center” - the center, “Bottom” - on the bottom edge within the object.

Background – choose the object backing type (see description of **Audio PPM** object properties).

Attached to – group with **Window** type object (see description of **Audio PPM** object properties).

3.4.1.4 Digital Clock object

Digital Clock object is a system time display panel in the form of a digital clock. When added to the workspace, **Digital Clock** object takes the following form.



Digital Clock object properties:

Format	
Display Mode	Time<SEP>Date
Time Format	11:46:49
Date Format	05.10.2009
<SEP>Char	[SPACE]
<SEP>Count	2

Format – adjust date/time display mode.

- **Display Mode** – choose date/time display. “Time <Sep> Date” - time < separator> date; “Date <Sep> Time” - date < separator > time; “Time” - time only; “Date” - date only.

- **Time Format** – choose time display format.

- **Date Format** – choose date display format.

- **<Sep> Char** – choose date/time separator symbol ([SPACE]/[ENTER]).

- **<Sep> Count** – amount of date/time separator symbols.

Font – font used to display digital clock capture.

Color – color of the font used to display digital clock capture.

Alignment – alignment parameter (see description of **Audio PPM** object properties).

Background – choose the object backing type (see description of **Audio PPM** object properties).

Time Zone – time zone selection (Time Zone Information), local time which will be displayed in the object.

Attached to – group with **Window** type object (see description of **Audio PPM** object properties).

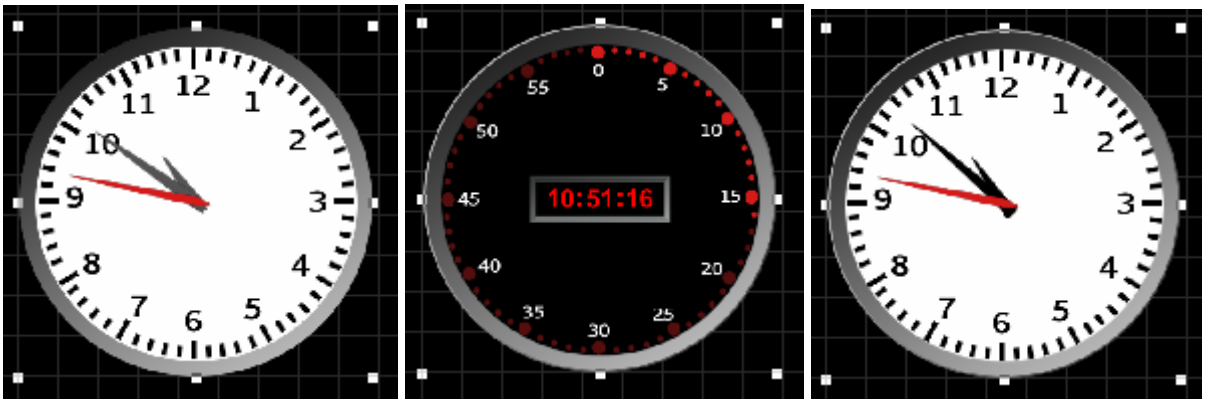
3.4.1.5 Analog Clock object

Analog Clock object is a system time display panel in the form of an analog clock. When added to the workspace, **Analog Clock** object takes the following form.

Analog Clock object properties:

Analog Clock object is added to the configuration by dragging its icon from the Objects window into the configuration editing area.

Type – choose one of the built-in analog clock samples.



The system has 3 types of analog clocks in total, however the user can also create a clock with customized design. To do this, contact Stream Labs technical support (see Introduction).

Time Zone – as in **Digital Clock** object (see description of **Digital Clock** object properties above).

Attached to – as in **Digital Clock** object (see description of **Digital Clock** object properties above).

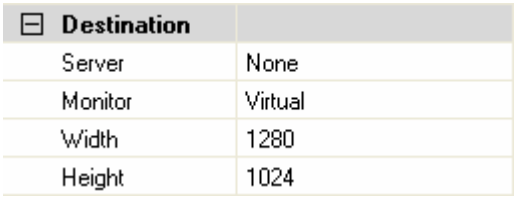
3.4.2 Creating active configuration

3.4.2.1 Workspace configuration

To create a new workspace configuration it is necessary to:

1. Create a new blank document (menu **File** => **New**) or switch to a new configuration window created when opening the module.

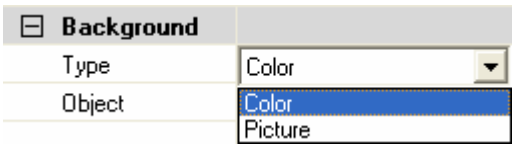
2. Update the list of available servers (Menu **Servers** -> **Update Servers** / **Sources** or  icon).



3. In the **Properties** window, in the **Destination** field select one of the currently available **Video Server** modules (Server item).

4. In the same window, choose from one of the server monitors from the list. The size of the workspace will change to the size of the selected monitor.

Note: if you do not choose a server (None), you can specify an arbitrary size for a "virtual" monitor.



5. In the **Properties** window, in the **Background** field select the type of backing (monochrome fill or a picture from a file). **Object** item allows you to select a color or an image for a fill.

6. From the **Objects** window drag (drag-and-drop) the objects used in the configuration (windows, PPM indicators, text labels, digital or analog clocks, etc.).

*Note: For correct use of **Window** object and **Audio PPM** object, the controlled source must be specified.*

7. From the **Objects** window drag all the necessary objects into the configuration editing area.

8. From the **Sources** window drag (drag-and-drop) (onto **Window** and **Audio PPM** objects) the signal sources from the server, for which for the current configuration is being prepared.

Note: The list of selected server sources opens by double-clicking on the server name. Transport streams are indicated by  *icon, and signals coming from video cards inputs are marked*  .

9. By clicking on **Window** and **Audio PPM** objects in the **Properties** window, you can edit the properties of the source assigned to the object (see Section 3.3.2.2).

3.4.2.2 Editing the properties of signal sources

Stream Multiscreen allows working with video and audio sources of the following types:

Video sources:

- composite CVBS video signal from the card input (FS-6, MS-8),
- digital SD-SDI signal from the card input (MS-8)
- transport stream MPEG_TS (MPEG2 format, ISO/IEC 13818-1 with Mpeg2/H.264 compression codec)

Audio sources:

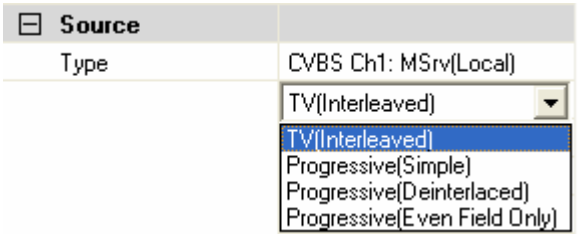
- analog audio
- SDI Embedded audio
- MPEG_TS (MPEG2 format, ISO/IEC 13818-1 with Mpeg1 Layer II compression codec)

General properties of video sources:

Source	
Type	CVBS Ch1: MSrv(Local)
Display Mode	TV(Interleaved)
Quality	Normal
System	PAL
Brightness	128
Contrast	68
Saturation	64
Hue	0

Type – source type (video server name + video source name, for example, MPEG_TS<n>:MSrv(Local) –MPEG_TS<n> source from local server), assigned to the **Window** object.

Display Mode - Choice of video information display mode. Possible variants:



- **TV(Interleaved)** - field-sequential display mode, which applies only to interlaced sources (CVBS, SD-SDI). In this mode the video information is updated according to the readiness of each field and the rendering is carried out synchronously with the scanning of the monitor (on which the video information is displayed). In addition, the data in even and odd fields is cross-interpolated to create “as on the TV” effect.

- **Progressive(Simple)** - frame-sequential display mode, which applies to any type of video source. In this mode the video information is refreshed according to the readiness of the frame. The data in even and odd fields is displayed without any interpolation.

- **Progressive(Deinterlaced)** - similar to **Progressive (Simple)** mode, except that at display of video information the de-interlacing filter (smoothing of "comb" effect on fast movement) is applied.

- **Progressive(Even Field Only)** - similar to **Progressive (Simple)** mode, except that at video information display the data from only one (even) field is used, which is interpolated over height

("stretched" twice). This mode allows to display video information at small sizes of video window (even with fast movement in the frame) practically without loss of quality – without blurring or "comb" effect.

Quality - choice of quality (definition) of initial video data. Possible variants:

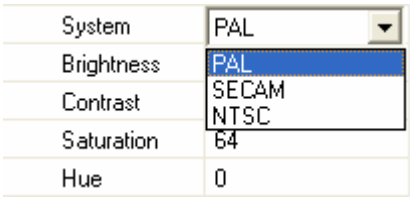
Normal - the definition of the video signal source matches the size of the video window, in which it will be displayed, but does not exceed the maximum size (720x576 pixels).

High - the definition of the video source equals 720x576 pixels (for standard definition sources, SD) *.

***Note:** Currently, for a number of technical reasons, the maximum amount of video sources displayed with **High** quality, may not exceed 8.*

***Note**: **Quality** property affects CVBS and SD-SDI sources only; the original definition of other video sources is not adjusted and is used "as is".*

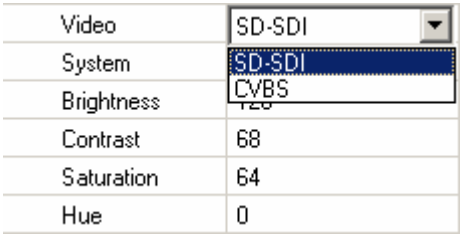
CVBS (composite signal) video source properties:



System - choose video source system (PAL/SECAM/NTSC)

Brightness / Contrast / Saturation / Hue - adjust brightness / contrast / chromaticity / color tone of video source

SD-SDI (SD-SDI/CVBS signal) video source properties:



Video - choose input signal type, SD-SDI or CVBS

Brightness / Contrast / Saturation / Hue - adjust brightness / contrast / chromaticity / color tone of video source

MPEG_TS (MPEG2 Transport Stream) video source properties:

Location – choose the source original data location:

- **DekTec ASI –** transport stream from DekTec device (AS interface).
- **File.** When you choose this source, you must fill in the **File Name** field, which specifies the full path to the file with the MPEG2 stream dump.
- **Multicast Group –** multicast group broadcast. When working with this source the following fields need to be filled:
  - **IP Address –** multicast group address,
  - **Port –** group port,
  - **Interface** – local IP address of the video server where the request to receive data (UDP/RTP) will be sent. It is especially important to fill in this field, when you have multiple network adapters installed on a computer with **Video Server** module.

Source	
Type	MPEG_TS1: MSrv(Local)
Display Mode	Progressive(Simple)
Quality	Normal
Location	Multicast Group
IP Address	224.1.1.2
Port	1234
Interface	10.0.8.26
Program(PID)	RU TV(pid:275)
<Video Loss> picture	<VIDEO LOSS> on Black Screen

When filling / changing **IP Address, Port, Interface** (for **Multicast Group** data source), and **FileName** (for **File** data source) fields, a request to receive service information about the stream is sent to video server. If the operation is completed successfully, an inscription with the name of one of the found programs will appear in the **Program (PID)** field.

CVBS (composite signal) audio source properties:

Default values are used.

SD-SDI (SD-SDI/CVBS signal) audio source properties:

Audio - choose input signal type, **Analog** or **EA_G<N>_Ch[i..i+1]**.

In case **EA_G<N>_Ch[i..i+1]** is selected – you can specify N group for SDI Embedded audio

MPEG_TS (MPEG2 Transport Stream) audio source properties:

Similar to **MPEG_TS** video source properties, except that the information in **Program (PID)** field is filled with the values of audio programs.

3.4.3 Saving active configuration

To save the newly created active configuration, go to **File** menu and select **Save As** option, or click on diskette icon in the standard Windows applications menu. Saving can also be performed by using **Ctrl + S** hot keys. To save a previously created configuration, select **Save** option from the **File** menu, or use other methods listed above. When sending a configuration to **Video Server** module, the program offers to save the configuration changes directly before it is displayed.

3.4.4 Displaying active configuration

To display an active configuration, follow these steps.

1. Update the list of available servers (**Servers -> Update Servers/Sources** menu, or click  icon in the corresponding toolbar).

2. Select **Servers => Send Configuration to Server** menu item, or click  icon in **Servers** toolbar) to transfer active configuration to **Video Server** module. Before displaying, the program prompts you to save the configuration, after which you will see the Preferences window, where you can select the video server module and the corresponding monitor to send the configuration. In addition, the user can set the configuration to the default output at **Video Server** module loading or cancel the automatic output of the previous configuration.

3. In the window that appears, select video server and display monitor (when video server has two or more monitors) from the list. If you wish to display this configuration automatically at **Video Server** component startup, tick **Activate on MSServer StartUp***

4. Press **Send** key to transfer the configuration to the video server.

5. If the operation is successful, the configuration will appear on the selected monitor of the selected video server.

***Note**: To stop the automatic configuration startup, use the built-in registry editing Windows program **regedit**, where you must remove the **Configuration** value from the corresponding monitor folder in the registry branch.*

HKEY_CURRENT_USER\Software\StreamLabs\Multiscreen IP\Multiscreen Server\Startup\Monitor

While displaying, the **Video Server** configuration module allows you to use the following hot keys combinations to control the display process:

Ctrl+I – display signal source information in the channel windows;

Ctrl+M – show / hide configuration display window;

Ctrl+P – show mouse indicator in configuration display window. This makes it possible to switch to a detailed view of the channel. By double clicking the video source window the program goes into a channel detailed view mode with the ¾ screen size in width (the length of the image is determined automatically). If the channel

window is connected with **Audio PPM** object, the channel audio signal will be played automatically. To stop playing the sound, click outside the video display window.

To return to the general configuration view, just double-click.

When using the detailed viewing option, it is recommended to use the highest possible quality. This can be achieved by setting the **Quality** field in the video source properties to **high** value.

Ctrl+Space – Remove alarm events markers in the video signal source windows;

Ctrl+Q – Video Server module forced shutdown;

You can stop the configuration display by interrupting the **Video Server** module operation. **Video Server** module shutdown is performed by pressing **Ctrl + Q** key combination on the computer where the module is running. Shutting down the server in this way is necessary when the configuration is displayed on the screen where it was edited. Also, the server can be stopped by right-clicking on its icon in the tray and selecting the only available option - **Exit**.

To restart the server, click **Start -> Programs -> Stream Multiscreen** and start **Stream Multiscreen (Server)**, or use the shortcut on the desktop.

3.5 System log viewer module

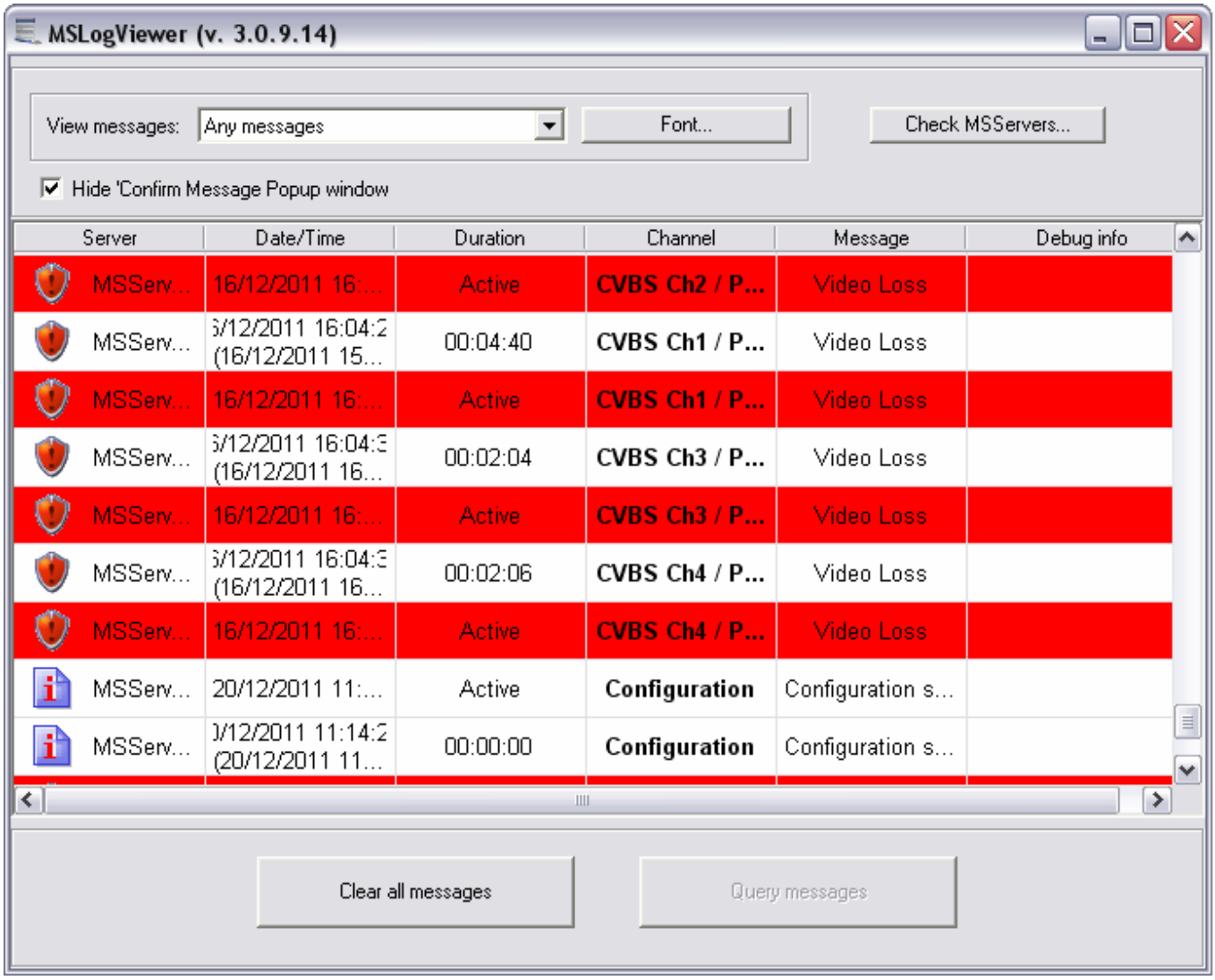
3.5.1 Purpose of module

Executable file **MSLogViewer.exe.**

This module is designed to gather system log information of all available **Video Server** modules.

During the launch of the module (or when you click on **Check MSServers** button) **Video Server** modules search dialog appears (see Section 3.1). After updating the list of video servers, the program automatically receives all system log messages of **Video Server** modules online.

3.5.2 Viewer module main window



System log viewer module main window consists of the following elements:

- **View messages** list - choose the type of system log messages displayed in the module window.

  Possible types of messages:

  - **Event (Alarm) messages only –** Video Server module alarm messages (Video Frozen, Video Loss, etc.)
  - **Warning messages only** – warning messages (EDH error, etc.)
  - **Info messages only** – module information messages (Configuration started, etc.)
  - **Any messages** – messages of all types

- **Font** button **– choose** font of displayed messages.
- **Hide Confirm Message Popup Window** checkbox **–** forbid to show popup confirmation message windows.
- **Clear all messages** button **– clear** the list of messages window (all messages received by the module are automatically saved in **MSLogViewer.txt** file, located in the same directory as the **MSLogViewer.exe** executable software module).
- **Query messages** button - message query according to certain parameters (Source / type of message / response time / event duration).

4 Stream Multiscreen operation with Kramer matrix

Stream Multiscreen software allows you to interact with Kramer video switchboards, and with products from other manufacturers that support P2000 format. The detailed information on KRAMER switchboards is available on the company official site http://www.kramer.ru/products/.

For interaction with **Stream Multiscreen** software, KRAMER switchboard must be connected to a video server that is running the server component of **Stream Multiscreen** through COM port. When using multiple switchboards, each of them must be configured with a unique ID (in switchboard settings)

After connecting to the video server, the switchboard configuration is performed in **Stream Multiscreen Configuration Manager Module**. To do this, click View-> Server Preferences or click on the computer icon with a red letter i. In the window that appears, all currently available video servers will be shown on the left. When you select the video server, video server option panels will appear on the right side of the **Servers Preferences** window. To perform the KRAMER switchboard connection, push the **Change** button on **Configure Kramer Inputs** panel. The screen will appear, as shown in Figure 4.1.

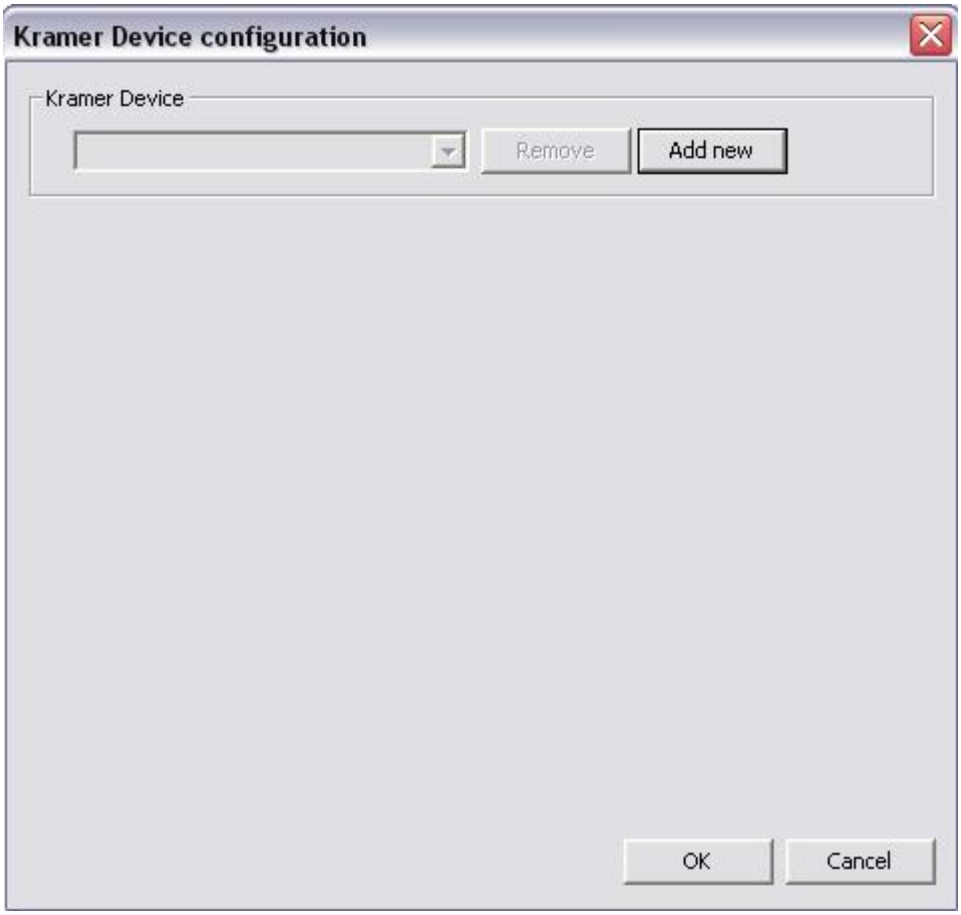


Fig. 4.1 Kramer Device configuration window

If the list does not contain Kramer devices, please click **Add New**.

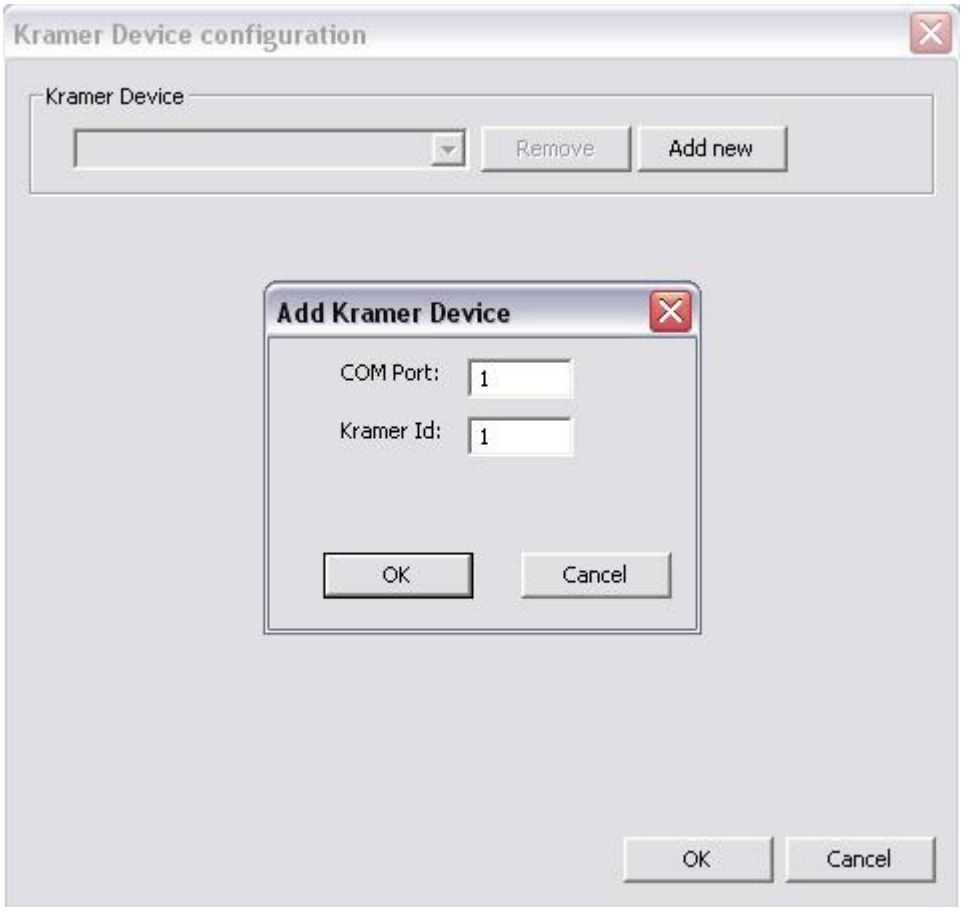


Fig. 4.2 Adding a new KRAMER device

In the window that appears, specify the COM port for the connected device and its unique ID, and then click **OK**. Registered switchboard will appear in the **KRAMER device** dropdown list.

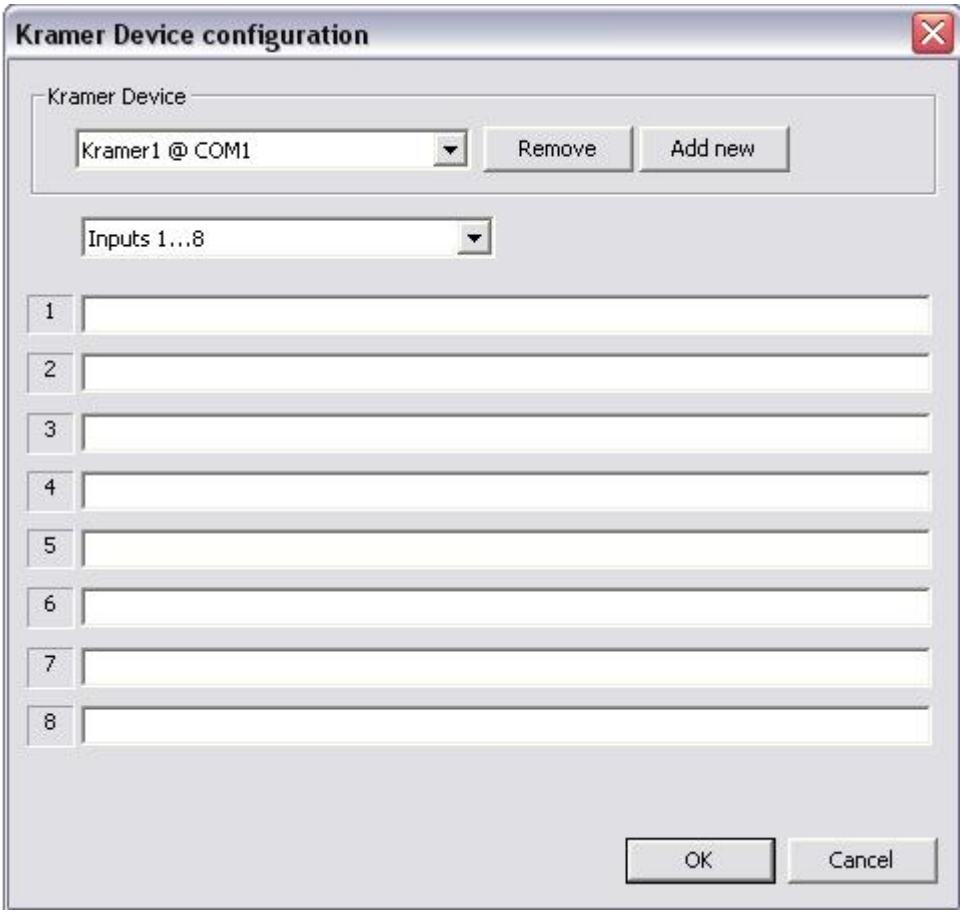


Fig. 4.3 Panel for filling the channel names

When you select a server from the list, the panel for filling the channel names appears in the bottom of the window. After entering the appropriate channel names, click **OK** to save the data. The configuration of **Stream Multiscreen** server component is finished.

To display the name of the switchboard channel indicated in **Video server** settings, create a new object of **Text / Caption** type in the configuration, and set the **Type** field: **Kramer** in the **Source** property of the object. After that, the following special fields will appear in the **Source** property:

Source	
Type	Kramer
COM Port	1
Device id	1
Output	1
Attached to	None

- **COM Port** – KRAMER device COM port number,
- **Device ID** – KRAMER device ID,
- **Output** – KRAMER device output channel number,
- **Attached to** – Possibility of attachment to **Window** object.

Once all fields are filled in, the configuration of KRAMER switchboard interaction with **Stream Multiscreen** is completed. Now when you display the configuration that contains the signature of channels according to the settings given above, Stream Multiscreen will change the signatures of channels at each change of Kramer device switching mode.