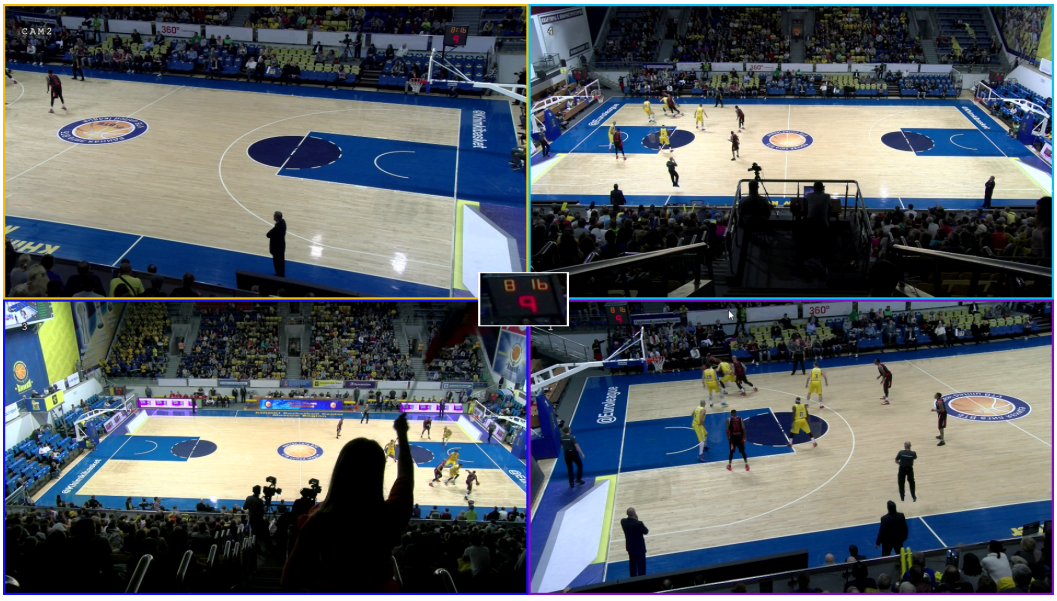
videoReferee®

Video Referee's guide



Important information

Users should be familiar with safe operation of computers and know the basics of Microsoft Windows.

Insert the connectors gently into the ports. Do not use force.
When connecting, make sure that:
– no other objects are obstructing the connection to the port;
– the connection is made to the corresponding port;
– the connector is correctly positioned relative to the port.

videoReferee® application overview

The *videoReferee®* system is used for video recording of the entire contest, as well as for analyzing controversial moments. At any time, the referee can find a controversial moment in the video to analyze it and make a decision. This significantly simplifies the referee's work and prevents the distraction from the key moments of the contest.
The system allows to export marked events to a hard drive in ***.mpeg** format, as well as export the entire match in ***.mpeg2** or ***.mpeg4** formats from all cameras or from cameras specially marked for export.

The recording of marked events contains the entire chronology of events that occurred during the competition and basic game information: time, period, score, fouls[1].
In the *videoReferee®* system, creating event tags is possible both during the observation of the game and during the viewing and analyzing of a controversial moment.
The system has two interfaces – engineering and referee. The engineering interface is designed to manage the recording and monitor the system's operation. The referee interface is designed to view and search through the video. The referee interface can be represented by one or four video channels. There is also an opportunity of connecting additional monitors to display the Multiviewer or duplicate the referee's interface.

Getting Started

The "*videoReferee® operation check*" section contains a list of tasks to be performed during a pre-match check of system performance. You can use this section as a reminder before each match.
The "*videoReferee® operation*" section provides an overview of the main actions a referee must take when working during a match.
The section "Referee's workspace" contains a detailed description of the *videoReferee®* functions, the Control-VR keys and the information displayed on the monitor
Please take time to carefully read this section – the absence of the desired response from the system is not always due to malfunction of the remote control or the software errors. Sometimes the controller keys may "not work" simply because you have previously worked with *videoReferee®* in other configurations; in fact, they do work correctly, but not in the way you expect.

videoReferee® operation check

We recommend that during the pre-match check of the system, as required by league technical regulations, you pay special attention to the points given below.

Video signal from cameras

Make sure there is an incoming image from all video cameras, check the correspondence of the viewing angles and the image coming from the cameras.
Find out which of the **Ch...** keys the video cameras are set to and whether switching between them is provided.
Don't forget to revise both the live video viewing mode and the video recording modes.

1. The set of parameters depends on the type of sport for which the system is used and can be changed by contacting technical support.

Camera names

Check whether the titles assigned to the cameras correspond to their actual position and purpose. In the *videoReferee®* system, the cameras can be named freely, and if the "right" camera can be mistakenly named as "left", it does not change its real location.

Errors and inaccuracies in the names of cameras can lead to misunderstandings when reviewing the video recording of controversial moment or video report.
Sometimes it may happen that cameras are connected incorrectly, for example, the right and left camera groups are swapped or right and left cameras are mixed up with each other. This is not an error of the *videoReferee®* system, and if there is no time to fix it, you should study the camera display scheme even more carefully and take it into account when generating a video report.

Other cameras

If there are additional cameras (blue line cameras, corner cameras, TV broadcast camera) also check the video signal from them, and find out which **Ch...** keys corresponds to which camera.
Be sure to test in both live and recorded video modes.

Scoreboard controller connection[1]

Check that the scoreboard controller (match-controller) and the referee's workplace are connected. Information about score, period and time of the match (and countdown to the start of the match) from the scoreboard controller must be displayed correctly on the referee monitor.
Make sure that in the recorded video mode, the recorded information from the scoreboard controller is displayed correctly.
Make sure that the engineering workplace operator is aware of the actions to be taken in case the connection between the scoreboard controller is interrupted – stopping and starting the match time[2] in the *videoReferee®* system by the whistle, updating the score and period.

If there is no connection with the Scoreboard controller

In the situation when the match controller is installed on the arena, but for some reason it is impossible to obtain data from it using a direct connection, there is possibility of using the "*Scoreboard video input and recording*" function, which allows to record the scoreboard and add its image to the video channels.
To use the "*Scoreboard video input and recording*" function, it is required to have a separate video input with a camera aimed at the scoreboard. If there is no free video input, it is possible to use the "USB to SDI/HDMI™" option to connect an additional camera aimed at the scoreboard.

1. If available and in use.
2. In this case, the time data cannot be considered official.

Playback modes of recorded video

Make sure that the **Play [►]**, **Forward [►►]**, **Backward [◄◄]**, **Stop [■]**, **Jog** and **Shuttle** allow you to navigate through the recorded video (marks – fast pass, **Jog** – smooth) and view it at normal speed and in slow motion (**Shuttle**).

Transfer of control between referees' workplaces

If more than one referee workplace is installed, it is necessary to check whether the transfer of control between the workplaces is supported and how it is implemented – this feature is configured in different ways according to the customer's instructions.

Creation of a video report

Make sure that the video report recording to the hard disk is working properly. This is checked at the engineer's workplace. You can ask an engineer to generate and record a test video report containing the test marks on the hard drive and view it at the *videoReferee®* engineer's workplace to check whether the desired clips (and from the correct cameras (right/left half)) are included in the video report.
We also recommend checking with a technician the settings of the video report recording. In video report, the standard recording of each marked moment is preceded by a 1 second pause, during which the first frame of the recorded video is displayed on the screen, followed by the 15 second recording of the moment itself: 10 seconds before the mark and 5 seconds after it. A one second pause, during which the last frame of the moment is displayed, ends the recording of the marked moment. The actual settings may be different, so it is advisable to check them in advance.

Additionally

Check which cameras are displayed on the monitor and their position in the **Quad** view mode.
Make sure that the correct camera groups are included in left and right half of the field when switching between them and switching back to single camera view is working properly.
Be sure to test in both live and recorded video modes.

videoReferee® operation

The Referee's work with v*ideoReferee®* includes:

- before the match: checking the system's performance;
- during the match: watching live video and, when necessary (controversial moment, potential goal, goal, etc.), switching to playback mode and reviewing the action for making a decision;

- after the match: viewing the marked moments, selecting the ones that must be included in the video report, and receiving a video report and recording from the panoramic camera from the video engineer.

If the connection between the *videoReferee®* server and the scoreboard controller is lost during the match, or if the malfunction is discovered during the pre-match check, the referee must instruct the video engineer to enter the data, which under normal conditions are received from the match controller: match time, score and period. However, the data entered in this way will have no official status.

In case of problems with the referee's control panel, the referee can ask the video engineer for help with reviewing the game moment. All the tools the referee has using the control panel (search, playback) are also available using the engineering interface.

In case of technical issues, the referee can contact the *videoReferee®* system video engineer.

Live viewing mode (Live)

The video referee has a monitor and the remote control. Many referees prefer to follow the match directly on the monitor rather than in the arena. The **Ch...** buttons allow you to switch between any cameras – in-the-goal, behind-the-goal, above-the-goal, panoramic and additional cameras (if installed). The **Quad** key allows you to go to the split screen mode for viewing four cameras simultaneously and back to *Single camera mode*. If **Last** is not enabled, the "quad" will include the cameras of the "right" or "left" half of the ice rink[1].
The **Active** button switches between the engineering / referee interfaces and vice versa. When only one monitor in the system is used – MultiSkin mode.
While viewing live signals, any game moment can be marked with the **Mark** button on the remote control. This creates and saves a point in time on the recorded video.
The marks allow you to quickly find the game moments you are interested in when working with the recorded video. The marking will also be made automatically if the **Jog** is activated.
If *videoReferee®* installation has two or more referee workplaces, marks can be made from any of them. Marks can also be made at the engineering workplace.

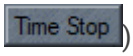
All marks are basically the same. They are nothing more than points in time designed to navigate through the recorded video.

The decision whether or not to include a marked moment in the video report is made in the course of its operative review – see "Recorded video mode (Recorded, Playback)", less often at the end of the match. This will be described in more detail later.

Recorded video mode (Recorded, Playback)

If there are moments that are subject to video analysis, at the request of the main referee or another member of the officiating team (if not prohibited by the Regulations), it is necessary to switch to the recorded video mode and quickly review the recording of the game moment.
There are two modes of working with video recording – Search (Recorded) and Playback.

1. This is the default layout. It can be changed by contacting slomo.tv technical support.

The Search mode is used to search for a game moment, while the Playback mode is used to play back the recording at normal speed or in slow motion.
As already mentioned, any game moment can be marked by the referee using the **Mark** button on the console. The marks are also placed automatically when the scoreboard controller registers an event[1] and when the referee activates the **Jog** in order to rewind the moment. When the **Jog** is activated, the system marks the game moment and immediately enters the Search mode. Another way to enter the Search mode is to press the **Rec | Live** button (to go back to the live video, you must press the button again).
You can navigate through the recorded video step-by-step using the marks or smoothly and precisely by rotating the **Jog**.
Check with the video engineer of the *videoReferee®* system whether the **Mark event by Time Stop** button of the video engineer user interface activated. If the button is pressed, a mark will be automatically created in the event window when a signal is received from the match controller to stop the game time or when the **Time Stop** (

) button is pressed in the program interface. It should be taken into account that the mark is created only when the timer state is changed – i.e. pressing **Time Stop** generates a mark only if the timer was started before. Pressing the button repeatedly without starting the timer will not generate new events.
If the **Mark event by Time Stop** button is not activated, the automatic mark creation occurs only when the timer is stopped.

Tags are useful for quickly positioning on the right episode. Marks created during a match with the **Mark** button or automatically, based on the event registered by scoreboard controller, are usually not quite accurate. Once you have entered the Search mode and have found the mark with the **Backward** [◄◄] button, rotate the **Jog** clockwise or counterclockwise to precisely position on the desired moment, e.g., when the puck crosses the goal line. Press the **Mark** button again to mark the moment as accurately as possible. This will be useful for proper compilation of the video report and for quick positioning to the moment in the Search mode with the **Forward** [►►] and **Backward** [◄◄] buttons.
Step-by-step navigation between marks is done with the **Forward** [►►] and **Backward** [◄◄] buttons. The **Jog** allows navigating through the recorded video where there are no marks.
The desired game moment can be reviewed either in the Search mode by rotating the **Jog** clockwise or counterclockwise, or by switching to the Playback mode by pressing **Play** [►].

The **Shuttle** is used to control the playback speed in Playback mode.
When the playback is stopped, you can magnify individual frames to view them in detail using the **Pan | Zoom** joystick. By pressing it and shifting it in different directions, you will zoom in on the frame and move around it.

The camera selection buttons **Ch...**, as well as the **Quad** will work exactly the same way in both Recorded and Live modes.
When reviewing the moment, **Quad** is used less often than in Live mode because of the small scale of the image. However, it can be useful for selecting the camera that gives the best angle and then switching to that camera in normal full-screen or Pan mode.
Thus, *videoReferee®* provides enough tools and information to make the right decision about a controversial game moment.

---

1. Should the connection between the scoreboard controller and videoReferee® be lost due to the technical failures, the video engineer marks these events.

Video report compilation

A video report must be created at the end of the match. It is compiled from the marked game moments. This does not mean that the video report includes data from all the cameras for each marked moment. If the goal occurred on the left half of the ice rink, the video from the right-side cameras is usually not needed – unnecessary information will only complicate the video report.
Therefore, for each marked game moment it is necessary to specify whether it should be included in the report, and which camera group should be included. In most cases, the video referee decides whether or not to include a game moment in the video report. However, if necessary, the video referee may also review all marked moments with the video engineer and include or exclude them from the report.
Remember that as standard, 10 seconds preceding the mark and 5 seconds after the mark are included in the report. The mark should be set so that the 15-second video is evidentiary. If it is not, you should place a new mark, more precisely, as described above.
To create marks for export, use the **S1** and **S2** keys. By default[1], they are set to mark the following cameras for inclusion in the report:

- **S1** – the active camera of the selected moment is included in the report;
- **S2** – all cameras of the selected moment are included in the report.

To select all cameras for export in the needed event use the **S2** key on the remote control. A single press of the key selects all cameras of this event for export. Pressing the key again removes export camera selection mark.
If only certain cameras are needed to include in the report, use the **S1** key on the remote control. To create an export mark, find and select the needed event, make the camera from which you want to export active and press the **S1** key. To select several cameras for an event, make the next camera active and press **S1** again. Repeat for all cameras and moments that are needed to be exported.
To exclude a camera from the report, select the event, make the camera active and press the **S1** key again – the mark for inclusion in the video report will be removed.
The video engineer of the *videoReferee®* system should then be instructed to generate a video report and, if necessary, to export additional videos. All created materials can then be recorded on removable media or sent over the Internet.

Referee's workplace

Description and functions

This section describes the features and functions available at the referee's workplace of the *videoReferee®* system and the information displayed on the referee's monitor.

1. When contacting technical support, the combination of selected cameras may be changed.

Ch1 ... Ch16

	**Ch.1 ... Ch.16** – active channel selection / preset selection / tags assignment / input of numeric values. Pressing any button makes the corresponding channel active. All available in the system channel buttons are backlit. The active camera button is brighter. Depending on the mode selected by the function key, some buttons have multiple functions.
Ch.N	Channel selection from 1 to 16 (buttons are green).
Shift + Ch.N	Channel selection from 17 to 32 (buttons are blue).
Alt + Ch.N	Tags assignment to the events (buttons are blue).
Ctrl + Ch.N **Ctrl + Shift + Ch.N**	Select preset (buttons are purple). In presets mode (**Mode**): – select an active channel from 1 to 16; – select an active channel from 17 to 32.

↑ **Left field camera**

↑ **Right field camera**

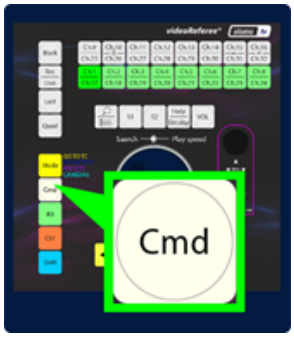
↑ **Central camera on the left**

↑ **Central camera on the right**

Alt, Ctrl, Shift

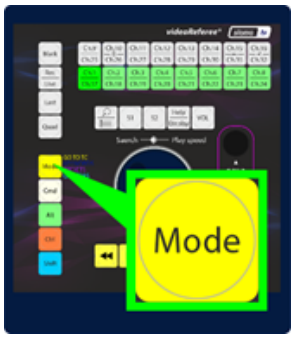
Modifier keys – change the behavior of other buttons of the control panel when pressed together with them. They do not perform any functions by themselves. For proper operation, modifiers have to be held down first.

Cmd



Direct access by time code (yellow backlight). Available in the Recorded video mode (see “Rec | Live”). The channel keys are used for quick positioning by time code:
– numeric keys from 0 to 9 – enter the time code in HH:MM format;
– **15 [⇤]** – correction of entered value (erase entered values);
– **16 [↲]** – **ENTER** – confirmation of the entered value.
Press the **Cmd** key and keep it pressed while entering the time code value with the numeric keys. Confirm by pressing the **ENTER** – key **16 [↲]**.

Mode



Allows you to toggle the operation modes of the direct access buttons.
The color of the **Mode** key and the direct access buttons changes depending on the selected mode.
The **Mode** key enables/disables the mode and does not need to be held down for further operation in the selected mode.

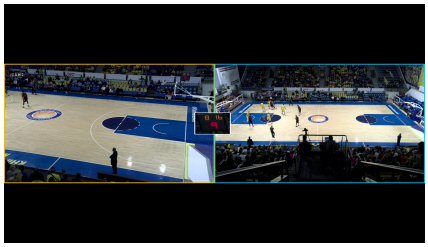
Mode	green	Direct access to the cameras from1 to 16. All buttons corresponding to the available in the system cameras backlit. The active camera button has a brighter backlight.
Mode	light blue	Direct access to cameras from 17 to 32. The button corresponding to the active camera has a brighter backlight.
Mode	yellow	Direct access by the time code (available in Recorded video mode) – see “Cmd”.
Mode	dark blue	Tags assignment to the events. Direct access buttons are used to assigntags[1] to marked events. For example, for soccer the following tags may be used: 1 – Home; 3 – Red; 5 – Goal; 7 – Hand 2 – Guest; 4 – Yellow; 6 – Offside; 8 – Set Foul To assign a tag: – select the event in the event list; – press the button with the tag that matches the selected event. Previously used buttons will have a brighter backlighting. The tags can be used for search. Later on, you can use the tags when searching for events (see "Search").
Mode	purple	Work with presets – see the "Presets" section of this manual for details.

1. Tags vary by sport.

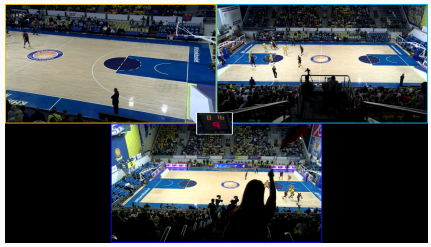
Last

Display of the last 2 cameras used. Pressing **Last** (blue lighting) takes the user to the **Quad** view, which shows the last 2 direct accessed cameras. It is possible to change these cameras by pressing other buttons of direct access. They will be changed from the bottom right corner of the **Quad**.
The subsequent pressing of the Last button changes the number of displayed cameras – 2, 3 or 4. (similar to the key combination Shift **+ Quad**).
When you press Last, the **Quad** key will automatically glow light blue, because Last activates the **Quad** view mode.

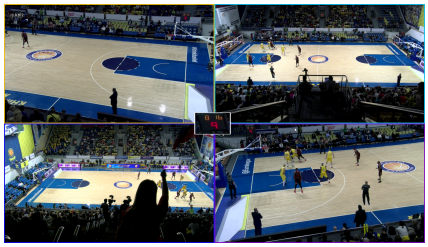
Different number of channels displayed when **Last** is pressed:



↑ **2 channels**

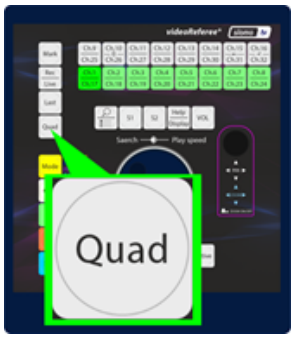


↑ **3 channels**



↑ **4 channels**

Quad



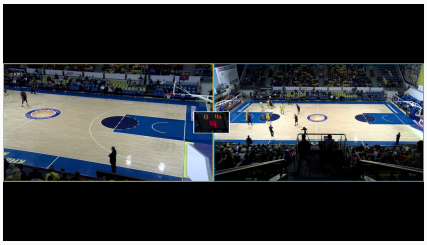
Switches the display mode on the referee monitor: single camera / four cameras simultaneously.
Works both when viewing live and recorded video.
In **Quad** mode, the referee screen is split into four equal windows, each displaying video from one of the four cameras.
When **Quad** view is activated, the button is highlighted in blue. If Last is not active, the **Quad** will display the right-side or left-side cameras[1].

If there are less than four cameras on the right or left sides, the **Quad** can be completed with panoramic camera channel, other general cameras or "antagonist cameras" (the right ones for the left group and vice versa). It all depends on the particular stadium, which is why you need to pay attention to this during the pre-match performance check, especially if you are working in this stadium for the first time.
You can also return to a *Single view mode* by pressing the **Ch...** button, which activates the panoramic camera channel.
When the panoramic or one of the general cameras (e.g., TV cameras) is active, the **Quad** key will not function. You need to switch to any other camera than the general camera beforehand.
The active channel in the **Quad** has a yellow frame.

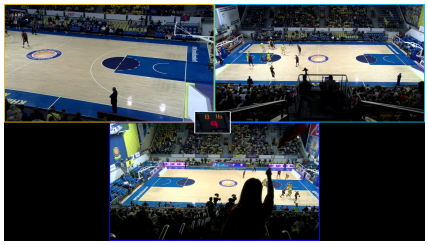
1. This layout is created when the system is delivered and can be changed by contacting technical support.

Shift + Quad – switches the number of channels displayed – 2, 3 or 4.

↑ **Quad**



↑ **2 channels**



↑ **3 channels**

Mark

Manual creation of a mark in the event list[1].
Marks can be placed both in the Live and in the Recorded modes. In the first case, the real-time moment will be marked, and when working with a recorded video, the moment corresponding to the one being played back will be marked.
Marks are used to register and record necessary moments of the game. When the video report is generated and recorded to the hard drive, only the marked moments of the match are included into it.

In video report, the standard recording of each marked moment is preceded by a 1 second pause, during which the first frame of the recorded video is displayed on the screen, followed by the 15 second recording of the moment itself: 10 seconds before the mark and 5 seconds after it. A one second pause, during which the last frame of the moment is displayed, ends the recording of the marked moment.
Marks allow you to navigate through the recorded video, "jumping" from one mark to another, and to quickly position to the desired previously marked moment – see “Forward”, “Backward”.

Mark + Ch.15 – Delete a previously created mark.

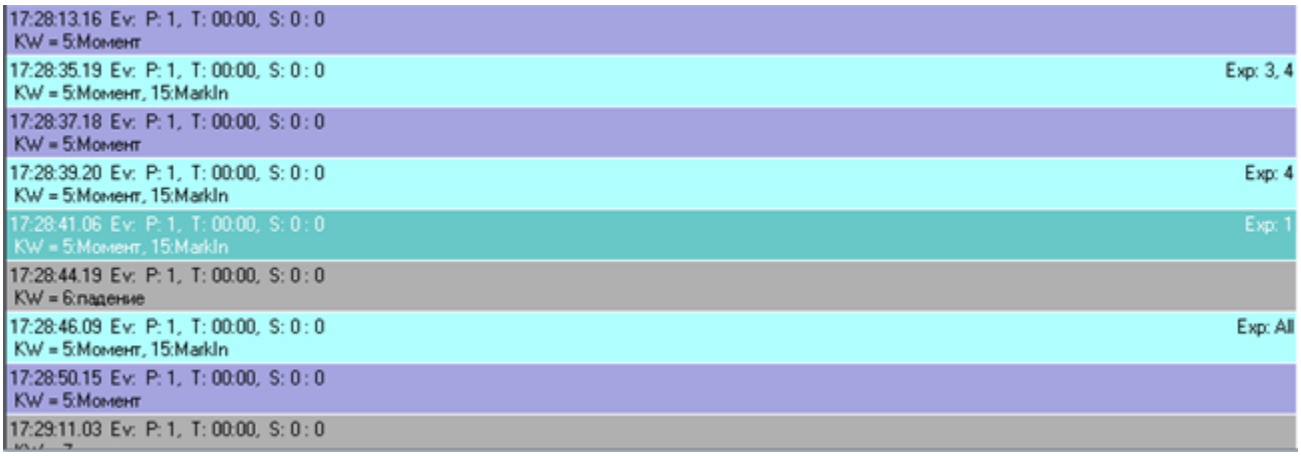
---

1. In addition to the manual marks placed by the referee, a number of events registered by the scoreboard controller generate marks automatically.

S1, S2

Additional buttons. The purpose of these buttons depends on the sport and the operating mode of the system. They are usually used to mark events to be included in the video report[1]:
– **S1** – one active camera. Switching the active camera of the moment and pressing the button again allows you to select several event cameras for export;
– **S2** – all cameras.
Pressing the button again removes the corresponding mark.

The **S1** or/and **S2** marks indicate to the *videoReferee®* system that the marked event and the camera group(s) for it should be included in the video report.
If there are no **S1** and/or **S2** marks, the marked event will not be included in the video report.



↑ **Export marks**

Switching the speed change mode

Alt + S1 – Toggles the speed change mode – smooth / stepped. The button is blue when the stepped mode is selected.

1. The option for basketball is given. For other sports there may be another option for choosing the report.

Rec | Live

Switching between live and recorded video modes:
– **Live** (green),
– **Rec** (yellow)
Used to search for the desired moment of a recorded video, view single frames, or manually rewind forward or backward through the recorded video. The video recording can be played back at normal or slow speed.
The search mode (as well as automatic marking) is triggered automatically if the **Jog** wheel has been activated.

The playback of the recorded video is started by pressing the **Play [►]** button, and stopped by pressing the **Stop [■]** button.
When you enter the Recorded video mode, the video on the monitor stops. You can navigate through the recorded material in one of two ways: by the marked moments using the **Backward [◄◄]** and **Forward [►►]** keys or smoothly using the **Jog**. The direct camera access (**Ch...**) buttons and **Quad** work the same in both modes, the only difference is whether we see live signals or the recording of a match.
Jog, **Shuttle**, **Forward** and **Backward** keys do not work in Live mode.

Shift **+ Rec** | **Live** – Enable/disable video delay in the engineering and referee interfaces[1].

↑ Viewing in Live mode the "live" signal from the central left camera.

↑ Viewing a recorded game moment in Recorded mode – the scoreboard is displayed in the lower right corner. Camera of the right half of the field.

1. The events will also be created considering this delay.

Jog (Wheel)

Jog – smooth scrolling of frames[1]/ precise positioning on the desired frame.
Activation of the **Jog** in Live mode triggers the Search mode (see "Rec | Live").
– Clockwise rotation scrolls frames forward (right indicator lights blue).
– Counter-clockwise rotation scrolls frames backward (left indicator lights blue).

When you stop rotating the **Jog** the image on the monitor will also stop.
If you accidentally activate the **Jog** during playback, don't be alarmed and resume playback.

Shuttle (Ring)

Shuttle – controls the playback speed; stop/start of the video playback.
Available only in Search mode (see "Rec | Live").
Shuttle allows for clockwise and counterclockwise deviation up to 45°.
In the neutral position it is secured with a soft click, both indicators under the **Shuttle** glow green at the same time.
The playback speed in the neutral position is 50%.
– Rotate clockwise to increase speed[2] (right indicator glows green).
– Rotate counter-clockwise to reduce the playback speed[3] (left indicator glows green).

Leftmost position stops the playback (as when you press **Stop**).

Playback

Starts playback of a video recording.
Available only in the Recorded Video mode.
Shift **+ Play [►]** – playback of the moment with a fixed duration of 1 second.

Press **Stop [■]** twice to stop loop playback.

1. If you rotate the wheel quickly, frames may be skipped, unlike in the Playback mode, when all the frames are displayed.
2, 3 If the playback was stopped when you started rotating the Shuttle, it would resume.

Loop playback of the desired moment (flexible duration):

- find the beginning of the moment;
- start playback with the **Play [►]** button;
- play the moment to the desired end and press the **Play [►]** button again[1]. The duration of the replay will be equal to the time between presses of the **Play [►]** button[2].

Stop

Stops playback of a video recording.
Available only in the Recorded Video mode.
Press **Stop (■)** twice to stop loop playback.

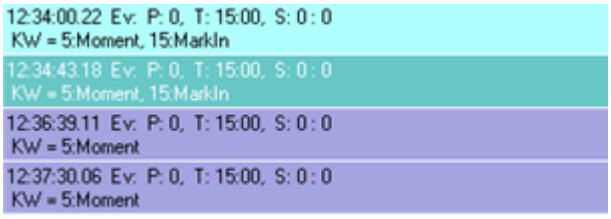
Forward

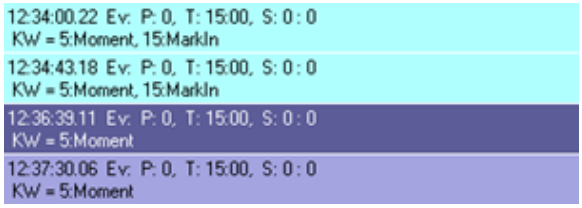
Move to the next mark. If there is no subsequent mark, the system goes to the end of the recording.
Available only in the Recorded Video mode (see "Rec | Live").
Attempting to use [►►] in Live mode will make the system go into the search mode on the recorded video.

↑ While at the marked game moment, press the **Forward** key ...

↑ ... and move to the next marked game moment.

1. There is a software restriction on creating a loop of very short duration. Your loop will automatically be increased to the minimum possible.
2. The indicator in the info bar at the bottom left of the screen (after the time and operating mode) informs you that loop playback is activated.



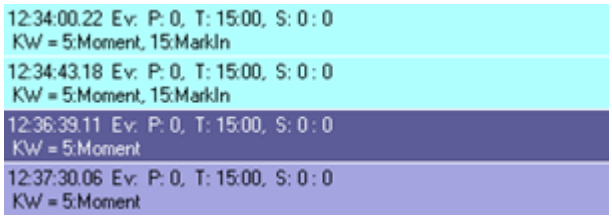


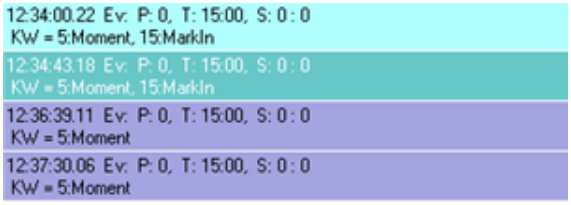
Backward

Move to the previous mark. If there is no preceding mark, the system goes to the beginning of the recording.
Available only in the Recorded video mode (see "Rec | Live").
Attempting to use [◄◄] in Live mode will make the system go into the search mode on the recorded video.

↑ While at the marked game moment, press the **Backward** key ...

↑ ... and move to the previous mark.

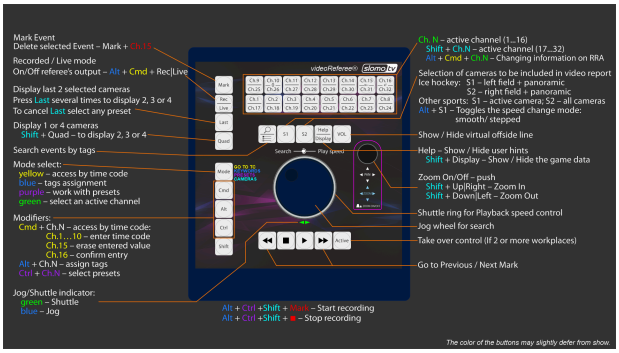




Help | Display

Help – pressing in succession displays on the referee's monitor brief hints on the use of the remote control: an image of the remote control and text explanations on the function of the buttons. When all hints have been shown, pressing again will make the remote control's image disappear and the live video of the match is displayed on the screen again.
To quickly close the hints press – **Shift** + **Help**.

↑ The **Help** button is not pressed – a camera signal is displayed on the referee's monitor



↑ The **Help** button is pressed – a hint is displayed on the referee's monitor

Shift + Display – Enable/disable the output of game and mode information on the referee's monitor.

The displayed information[1] is recorded in the video report as a subtitle track.
During playback, the playback speed (percentage) is displayed in front of the camera name.
Note that in Search mode the ***recorded*** parameters are displayed, i.e., their values at the moment of recording.

---

1. Depends on the current sport the system is configured for.

(Search)

Search for an event by the specified search tags.
When using Control-VR, it is possible to form a list of events with certain names (tags), i.e. the list will not include all events, but only those selected using the tags.
After pressing the button the backlight changes to orange for the , **Mode** and direct access buttons 1...16 (if any tags are assigned to them).

To select an event with a specific tag, press the event button – the backlight becomes brighter. To cancel the selection, press the button again.
The buttons with a dim glow indicate the tags that have been used before. Brightly backlit buttons are the currently selected tags. After pressing the tag button, only the events that correspond to the selected tag will remain in the list of events.
To navigate through the selected events, use the following buttons:

- [◄◄] – backward.
- [►►] – forward.

Pan | Zoom

Zoom control joystick.
Available only in the Recorded video mode (see "Rec | Live").
To use the joystick, you must stop the video playback if it is in progress. **Pan** – view the magnified image on the monitor (2x) and move around it: up, down, left, right.

Zoom – pressing in the center of the joystick activates the zoom (up to 12x magnification):

- move around the image – up, down, left, right;
- Shift + diagonal upward movement of the joystick to the right – zoom in;
- Shift + diagonal downward movement of the joystick to the left – zoom out.

↑ The image recorded from the camera is in full size.

↑ Move (one step up) across the double-sized image.

Active

Used when there are two or more referee workplaces (control panels) connected to the system. Pressing the **Active** key transfers control to the referee who pressed the **Active** key.

On the inactive remote control, operations will not be available.
Pressing the **Active** key on the other referee console will transfer control to that referee workplace.
– **Green** – the console is active;
– **Red** – the console is inactive.

VOL

Enable / disable Virtual Offside Line mode (for soccer).

Start / stop video recording

Alt + **Ctrl** + **Shift** + **Mark** – Start video recording;
Alt + **Ctrl** + **Shift** + ■ – Stop video recording.

RRA (Referee review area) Option

RRA option – synchronous display of the referee output or preset graphics on a separate video output.
When RRA is activated, the referee output or the preset graphics, if available, will be duplicated on a separate video output.

Alt + Cmd + Rec | Live	Activates the RRA output to duplicate the referee output. When the RRA output is inactive, a background image (screensaver) is displayed on the RRA monitor.
Alt + Cmd + Ch.N	Selects a pre-loaded graphical information to be displayed on the RRA output (up to 16 images). The selected image will disappear automatically after 30 seconds if no next image has been selected, and a screensaver will be displayed instead.

Presets

The *videoReferee®* systems allow creating presets – configurable and saved camera sets (layouts) of 2, 3 or 4 cameras, which can be quickly accessed later by button combinations on the control panel.
Presets are assigned to the channel buttons **Ch.1...Ch.14**. A sequence of up to 16 presets can be assigned to each button.
Presets can only be created from the control panel.

The presets are saved by the program and are transferred from project to project.

The mode of work with presets is activated by the **Mode** button – the button is backlit in purple.
Use **Ctrl + Ch.N** to quickly access the cameras from the preset mode.

Create preset

To create a Preset, perform the following steps sequentially from the control panel:

1. use the **Last** button to select the required number of channels to be displayed on the referee's monitor – 2, 3, or 4;
2. select the channels to be included in the preset using the channel buttons – **Ch.1...Ch.16** (with **Shift** if there are more than 16 channels);
3. go to preset assignment mode – the **Mode** button is purple;
4. select the channel button to which you want to assign the new preset – **Ch.1...Ch.14**, press it and hold it down until the button starts blinking (~ 2-3 seconds)[1];
5. confirm the selection with **Ch.16 (Enter)** – the button of the selected channel will stop blinking and the preset will be saved to the selected channel. To interrupt preset saving, press any functional button (not the channel button).

If any preset has been previously assigned to the selected button, the new preset will be added after the current (last used) preset. If you want to create a preset not after but before the current preset, press **Shift + Ch.16**

1. If no preset(s) have been assigned to the button before, it flashes white-pink. If the button already has a preset(s), it flashes yellow-pink.

(Enter) when confirming (step 5).

Select preset

Preset selection is available from the mode of work with cameras – the **Mode** button is green. Use **Ctrl + Ch.N** (Ch.1...Ch.14) to quickly select a preset.
From the preset mode – the **Mode** button is purple – selection is made directly with the **Ch.N** channel buttons.
If several presets are recorded on one button, press the button / button combination several times until the desired preset is selected.
If more than two presets are saved on the same channel button, you can move backwards through the presets with the **Shift** button while you are in preset mode – the **Mode** button is purple.
When you select a preset, as many channels as have been saved for that preset will be displayed on the monitor.

Also, selecting some presets automatically creates events. By default, it is configured that when a preset assigned to one of the first 4 channel buttons (**Ch.1...Ch.4**) is selected (**Ctrl + Ch.N**), an event is automatically created and added to the event list[1]. There may be no preset assigned to a channel button, but regardless of that if a preset selection shortcut is pressed, an event will be automatically created.

Delete preset

To delete a preset, enter the Preset mode (the **Mode** button in purple):

- select a preset you want to delete – make it active at the moment – with the channel buttons **Ch.1...Ch.14**;
- press and hold down this preset button until it starts blinking (~ 2-3 seconds);
- press **Ch.15 (Backspace)**. Press any other button to abort the deletion of a preset.

If multiple presets are saved on the same channel button, you must repeat the deletion steps as many times as the number of presets you want to delete.

In addition to deletion of a single preset, the program allows quick deletion of all presets in the project. To learn more about deleting all presets, see the videoReferee® Video Engineer's Guide.

The slomo.tv software products are constantly developing. Therefore, there may be discrepancies between the documentation and the implemented functionalities.
Please report any inconsistencies, incompleteness, etc. in this Manual to slomo.tv technical support by email at support@slomo.tv so that we can send you an updated Documentation.

1. You can disable this feature or change the number of preset buttons that create events. Contact technical support to make these changes.