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1. Introduction

In this section:

The FastServe | Ingest Server (UHDVS) on page 8
The FastServe | Ingest Controller (HDVC) on page 14
New Features in FastServe 4.0 on page 20
Conventions Used in this Manual on page 20
The FastServe | Ingest Server (UHDVS)

FastServe | Ingest is a multi channel, slow motion video server, that provides I-Frame ingest, synchronized slow motion replay, and editing tools.

FastServe | Ingest currently supports up to four UHD channels and can be delivered in a 1, 2, 3, or 4 channel configuration.

The FastServe | Ingest server uses a 3U chassis containing sixteen video disks, with quick access to the front panel for disk replacement.

To safeguard system integrity, FastServe | Ingest runs on two system disks, using separate RAID 1 protection, and a dual hot swap power supply. The video storage disks use RAID 60 dual parity protection.
Technical Specifications - Server

Mechanical specifications
- Rack 19" 3U
- Height 130mm
- Width 443mm
- Depth 790mm
- Weight 50kg (approx.)

Power supply
- Redundant power supply, 2X 1500W (max) 100-240V 47-63hz

Video CODECs
- UHD HQX (1456 Mbps)

Recording capacity - 16x2TB
- DNxHR HQX (1456 Mbps) - 25 h

Available I/O configurations
- 1 channel, 2 channels, 3 channel, 4 channels,

Channel configurations
- Fully Flexible
- 4in / 0out 3in / 1out
- 2in / 2out
- 1in / 3out 0in / 4out

Audio
- Embedded audio - PCM, Dolby E, ancillary data fully preserved
- Up to 8 Uncompressed stereo audio tracks per video input channel
- 20bit or 24-bit / 48kHz

Video inputs
- 1 X SDI / HD-SDI per Video input
- Loop 2 X SDI / HD-SDI per input - clean
- Monitoring 2 X SDI / HD-SDI per input with OSD
Video outputs
2 X SDI / HD-SDI per Video output - clean
Monitoring 2 X SDI / HD-SDI per output

Genlock
Analog Black Burst / Tri level
Auto detect

Time code input
Internal free run
LTC - XLR

Time code output

Data interfaces
2x Serial
4x USB (2 front / 2 back)
1x SATA
2 x Ethernet (1Gb)
2 x Ethernet (10Gb)
1x VGA maintenance
1x XLR LTC input

CPU
Intel Xeon E5-2620 v4 @ 2.10Ghz (32 cores)

Operating system
Linux

RAM
64 GB

System hard drive
2X 500GB mirrored

Internal disk storage
16x 3” 1/2 1TB SATA 2
or
16x 3” 1/2 2TB SATA 2

Hard Disk Redundancy
Raid 6 striped disks with dual parity

Environmental conditions
Operating temperature: 5c - 40C
Storage temperature: -40c - 70c
Humidity: 90% max
Unit Installation

Step 1: Mounting the Server on a rack

- Mount the Server on the rack using sliders and four rack screws. Verify that the screws are secure, and that the workstation does not move.

**CAUTION:**
*It is important to use all four screws, and not to overlook the back (inner) screws.*

Ventilation is handled through the sides of the unit; incoming air from the left, and cooling fans on the right.

If the Server is installed in a closed or multi-unit rack assembly, the operation’s ambient temperature of the rack may be greater than room ambient. Verify that the temperature in the rack always stays within the 10°C to 35°C range.

**CAUTION:**
*To prevent overheating, ensure there is enough room for ventilation.*

Step 2: Connecting the Power

- The Server has two power supplies. Connect two power cables, one for each power supply.

**DANGER:**
*To avoid the risk of electrical shock and fire, inspect the system power cord and plug routinely. Ensure they are not damaged in any way.*

**CAUTION:**
*Make sure power connection includes reliable grounding.*

After the Server is mounted and secured, connect both power supply cables to the power supply tray. Two power supplies give a back-up power source in case one incurs a problem.

**NOTE:**
*When one of the power sources ceases to function, an alarm sounds to alert you that only one power source is in use. Press MUTE on the front panel to silence the alarm.*

Step 3: Connecting the Video

The Server must receive a valid reference (Genlock) signal.

When using an Analog GENLOCK source, you can connect one ANALOG REF plug as the input and the other ANALOG REF plug will automatically serve as the output (Loop).

When using Analog GENLOCK, always put a 75-Ohm termination on the REF out.

Do not use a chained signal from other devices. Connect the video cables according to your configuration.
Step 4: Connecting the Network

- The network (Ethernet) interface is used for communication between the Server, the server controllers, and other network devices.
  
The Server includes four network interface cards (NIC) for communication with the control host and general network.

Step 5: Powering Up

When all necessary connections have been completed and configured, switch on the Server by pressing the POWER button on the front panel.

Maintenance and Service Information

**DANGER:**
This unit has two connections to the main supply. For protection against electric shock, disconnect both electric cords before service.

**CAUTION:**
Do not remove the power module without gloves. The cover of the power module serves as a heat-sink for cooling. Temperature can reach 60°C under full load condition. If removed, put aside the power module until cool, and prevent anyone from touching it until it is cooled.

**CAUTION:**
Risk of explosion if lithium battery on motherboard is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Connections

The back panel of the FastServe | Ingest server is where all input and output connections are made. For information on the various possible wiring configurations, see Appendix on page 114.
1. Introduction

The FastServe | Ingest Controller (HDVC) provides a full set of tools for instant replay and fast highlight editing. The Controller’s main components are as follows:

- Touchscreen display
- T-Bar on page 15
- Jog on page 15
- Programmable LCD Keys on page 15
- Keypads on page 16
- Back Panel - Connections on page 19
Touchscreen Display

The controller is equipped with 5.7" (approx. 15 cm) color touch screen, with 640X480 pixel resolution. The touch screen capabilities eliminate the need for an external keyboard or mouse.

T-Bar

The T-bar is used to play instant replays, clips, and playlists with smooth control over the play speed. The T-bar provides four different operation ranges, and can switch instantly between two of the four options:

- 0% to 100%
- -100% to 100%
- -100% to 200%
- -200% to 200%

Primary and secondary ranges are set in the controller settings. Switching from primary to secondary is done using SHIFT+T-bar.

Jog

The Jog dial allows you to search through the recorded video, field by field. The number of fields per jog cycle is configurable. In fast jog mode, cycle speed is multiplied according to the parameter selected during setup. The Jog is also used to navigate playlists and clip lists.

Programmable LCD Keys

Six programmable LCD keys provide different functionalities, and display the current function name on the key as programmed, in the appropriate modes. Pressing SHIFT provides up to six additional functions.

For an easier work flow, you can set an Event for each saved clip; during the pre-game setup you will need to define Event types (see Events on page 31). Then, during the game, you have the option to select an Event when saving a clip, as a label (see To set an Event for the clip: on page 64).

Later in the game, pressing one of the Event keys will sort only the clips related to the selected Event, for easy sorting and access.

When the QuickKeys mode is enabled, the LCD buttons can be customized to the most relevant shortcuts for the production, and provide up to 12 options. For more information, see Configuring QuickKeys on page 106.
Keypads

The FastServe | Ingest Controller has five different keypad areas, each dedicated to its own purpose.

- The four Select Input/Recording Channel keys (marked A, B, C, D) are used for switching between live or recorded input from different cameras. If more than four inputs are configured, use SHIFT, A to access input 5, SHIFT, B to access input 6, etc.

- The numeric keypad is used to save manually numbered clips, and load them, using either clip numbers or timecode values, for creating and reloading playlists, and for deleting clips and playlists.

- The cue management keys are used to play and navigate cues defined during the game.

- The Status Control keys (LIVE, PVW, ENTER):
  
  LIVE - when first pressed, LIVE starts recording all inputs configured to record that have a valid input signal. When the system is recording the key turns red. Pressing LIVE during recording shows the current selected live input on the active output.
  
  In replay mode, after setting an In or Out point, press SHIFT, LIVE to return to the live input without deleting the marked points.
  
  When a clip is loaded, press SHIFT, LIVE to switch from the clip to the recording, at the same time stamp.
  
  When the Server is not recording, press SHIFT, LIVE to switch back to live without starting a recording.

  PVW - Switch control to the preview channel, or to the second PGM channel, according to your configuration. Blinks red as long as the selection is active.

  ENTER - generally used for saving marked In- and Out-points as clips, and to confirm clip and playlist loading.

- The clip and playlist management keys are used to mark and store clips, and to create and edit playlists.
Technical Specifications - Controller

Data interfaces
- 1 Serial
- 2 USB
- 2 Ethernet (1Gb)
- 1 VGA

Chassis
- Height - 180mm
- Width - 280mm
- Depth - 285mm
- Weight - 4.8kg (approx.)

Power supply
60W (max) 100-240V 47-63hz

Environmental conditions
Operating temperature: 5c - 40C
Storage temperature: -40c - 70c
Humidity: 90% max

Other
CPU: Atom N270
Operating system: Linux
RAM: 1GB
System hard drive: 8GB solid state drive
LCD: 5.7" 640X480 TFT color touch screen
Push buttons: Illuminated, 3 million operations minimum
Input devices: Support for external USB keyboard & USB mouse
Controller Installation

Step 1: Connecting the Power

- Connect the power cable.

**DANGER:**

To avoid the risk of electrical shock and fire, inspect the system power cord and plug routinely. Ensure they are not damaged in any way.

**CAUTION:**

Make sure power connection includes reliable grounding.

Step 2: Connecting the Network

- The network (Ethernet) interface is used for communication with the Server. Connect the network cable to right LAN port.

Step 3: Powering Up

When all necessary connections have been completed and configured, switch on the Controller by switching on the POWER button at the back.

Maintenance and Service Information

**CAUTION**

DOUBLE POLE/NEUTRAL FUSING

**DANGER:**

This unit has two connections to the main supply. For protection against electric shock, disconnect both electric cords before service.

**CAUTION:**

Do not remove the power module without gloves. The cover of the power module serves as a heat-sink for cooling. Temperature can reach 60°C under full load condition. If removed, put aside the power module until cool, and prevent anyone from touching it until it is cooled.

**CAUTION:**

Risk of explosion if lithium battery on motherboard is replaced by an incorrect type. Dispose of used batteries according to the instructions.
Back Panel - Connections

The necessary Controller connections are made via the Controller’s back panel (two models exist, both are shown below); a network connection, external VGA connection, and the power cable. All other inputs (second network connection, USB X2, serial port) are optional.
Conventions Used in this Manual

- Menu options and other on-screen items appear in bold lettering. For example, “Tap the Video Standards option”.
- Keyboard keys appear in capital letters. For example, “Press SHIFT, MENU to access the main screen.”
- LCD key options appear in capital letters and in italics. For example, “Press SHIFT, LOOP to loop the clip when played.”
- “Tap” is used for interaction with the touch-screen.
- “Press” is used for regular controller keys and LCD keys.
- NA = not applicable.

**DANGER:**
This symbol warns of the presence of dangerous high voltage.

**CAUTION**
This symbol cautions the user about improper handling, which might cause damage to the hardware or software system. Data loss might result.
2. Basics

In this section:

*The Main Screen* on page 22
*Events* on page 31
*Shutdown* on page 45
*RAID Disk Replacement* on page 46
*License Installation* on page 47
*Software Upgrades* on page 47
*Working in Studio Mode* on page 48
*Managing Recordings* on page 48
The Main Screen

Once the system is started, the main application screen is displayed. This screen displays system information and serves as a portal to all Controller operations.

Application version and network information is displayed at the top left. Tapping this data provides a quick view of the information, as follows:

| Set 1 | Controller IP, Server IP, Server group. |
| Set 2 | **Server name** - server name with correlation to server serial number. For example, HDVS-233.  
**Work mode** - available modes are: **PGMS_INDI** (1 program output), **2PGM_SPLIT** (2 program output).  
**Video standard** - current video format.  
**Video CODEC** - encoding/decoding compression format.  
**Video bit rate** - current bit rate for the current video format.  
**Remaining recording time** - total remaining time; before recording begins, this shows the total available recording time. During recording, this shows the total remaining recording time, divided by the number of recording channels. |
| Set 3 | **TC source** - current time code source. Available options are: **Live** (free run, created internally by server), **LTC** (by XLR), **VITC** (embedded on video input).  
**Genlock** - current genlock type. Available options are: **Bi-level** (analog black burst), **TRI level**.  
**Reference** - reference status indication (**OK/No signal**).  
**LTC** - LTC status indication (**OK/No signal**).  
**Audio groups** - the mapped audio channels for video inputs. Each group has four audio channels, only selected groups are recorded. Selecting a group all of its channels on each video input. It is recommended to record required groups only to save disk space, and to avoid unneeded audio channels when exporting. |
| Set 4 | **USB mount** - displays the connection status of the USB storage (import and export) mounted to the Server.  
**Shared Folder** - displays the connection status of the shared folders (import and export) mounted to the Server. |
| Set 5 | **Software version**  
**Server** - Server software version  
**API** - communication protocol version  
**Controller** - Controller software version  
**GUI** - user interface version  
**LIB** - version of server middleware  
**Firmware** - firmware version of the video board. |
To access the main screen from any other point:

- Press SHIFT, MENU.

The following setup menus are displayed in the main screen.

- **Video Settings** on page 23
- **Audio Settings** on page 25
- **Controller Settings** on page 26
- **In/Out** on page 27
- **Maintenance** on page 28
- **Data** on page 30
- **Events** on page 31
- **Import/Export** on page 36

Changes made in the menu take effect after you return to the main screen and tap **Apply & Start** to confirm your changes. Some changes require the server application to restart, which causes ongoing recordings to stop. In this case, the message on button will be **Restart to Apply Changes**. To cancel changes, press **Cancel**.

**NOTE:**
If a connection to the server has not been established, only **Controller** and **Maintenance** are available. All other options are disabled.

### Video Settings

To access the Video settings:

- In the Main screen, tap **Video**.

<p>| Video Standard | FastServe | Ingest can switch between video formats, without losing existing footage. Switching between formats does not require any change in server wiring. However, the system must stop recording and reload different firmware. This process is automated, and takes approximately 30 seconds. To switch, select the required video format: |
|---------------|-----------|--------------------------------------------------------------------------------|----------------------------------|
|               | HQX (10bit) 50Hz | 30Hz, 60Hz, 59.94 Hz | <strong>Video Format</strong> | Set the required video format, and its options: |
|               | DNxHR video format is only supported in the UHD mode. Each CODEC will allow you to select a video format from the relevant formats. When changing video format, the appropriate firmware is installed by the system. Therefore, switching video formats is a process that lasts approximately 10 minutes. |</p>
<table>
<thead>
<tr>
<th><strong>Genlock</strong></th>
<th>Select the genlock sync type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Black burst</td>
<td></td>
</tr>
<tr>
<td>• Tri level (HD and UHD)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Phase</strong></th>
<th>Use the arrow touch keys to set synchronization of the horizontal and vertical signal phases of the server output. Vertical phase range is +/- 540 lines, in 1 line intervals. Horizontal phase can be adjusted by 1 line, in 1 pixel intervals. (Default = 0).</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Record TC</strong></th>
<th>Select timecode input source. This defines the timecode that is used to manage recordings. (LTC is recommended, if available).</th>
</tr>
</thead>
<tbody>
<tr>
<td>• LTC - requires linear timecode input (XLR connector is available on the server back panel).</td>
<td></td>
</tr>
<tr>
<td>• Free run (internal system timecode)</td>
<td></td>
</tr>
<tr>
<td>If your TC source fails, the system automatically continuous from the last known TC, and checks the source every five seconds to resume usage.</td>
<td></td>
</tr>
</tbody>
</table>
## Audio Settings

To access the Audio settings:

In the Main screen, tap **Audio**

<table>
<thead>
<tr>
<th>Embedded Inputs Distribution</th>
<th>Each input has the following options:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Router</td>
<td>uses the internal audio router to mix the AES and the master embedded input.</td>
</tr>
<tr>
<td>Preserve</td>
<td>uses the original embedded input.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Audio Settings</th>
<th>Audio on Slow/Fast Motion - Set audio to play whenever video is played (On) or to play only when the video is played at its normal speed (Off, default). Monitor - audio on audio monitor only.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio Scrub on Jog - Toggle between: On- audio scrub on audio output and audio monitor. Monitor- audio scrub on audio monitor only. Off- no audio scrub.</td>
<td></td>
</tr>
<tr>
<td>Audio Meters - Toggle this option to display audio meters superimposed on the output (On) or to hide the audio meters (Off).</td>
<td></td>
</tr>
<tr>
<td>Audio Monitor - Set audio monitoring for operator on: Controller or none (Off).</td>
<td></td>
</tr>
<tr>
<td>Audio Monitor Channels - Define which audio channels will be monitored. Default for monitor left is channel 1 and for monitor right, channel 2.</td>
<td></td>
</tr>
<tr>
<td>Audio Monitor on Controller - Set which audio output to hear when using audio monitoring; PGM, PVW, Active (current). Default is Active.</td>
<td></td>
</tr>
</tbody>
</table>

| Audio Levels | Adjust the volume of each input, as required; select the input at the bottom, and use the arrows to adjust the level. |

| Recorded Audio Groups | Set the required audio groups to be recorded. There are four groups defined in the audio router; channels 1-4, 5-8, 9-12, 13, 16. Any audio channel not defined in this group or groups is not recorded by the PlayMaker Server. |
Controller Settings

To access the Controller settings:

- In the Main screen, tap **Controller**.

<table>
<thead>
<tr>
<th>Jog &amp; T-Bar</th>
<th>See <em>Configuring the Jog</em> on page 101 and <em>Configuring the T-Bar</em> on page 104.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cues</td>
<td>See * Cue Setup* on page 56.</td>
</tr>
<tr>
<td>Clips</td>
<td>See <em>Clip Setup</em> on page 74.</td>
</tr>
<tr>
<td>Playlists</td>
<td>See <em>Playlist Setup</em> on page 89.</td>
</tr>
</tbody>
</table>

### Jog & T-Bar

See *Configuring the Jog* on page 101 and *Configuring the T-Bar* on page 104.

### Cues

See *Cue Setup* on page 56.

### Clips

See *Clip Setup* on page 74.

### Playlists

See *Playlist Setup* on page 89.

### Control mode

Set the way the Controller uses the PGM/PGM channels.

*Note:*

You must set the Server’s *Output Work Mode* settings before you can set the Controller’s work mode settings. (see page 28)

If you set PGM/PGM mode in the *In/Out* settings, you can set if you want the Controller to control one output or both outputs (if you choose 2 outputs you can map which controls PGM 1, and which controls PGM 2.

- **Gang** - when working in a 4in/4out setup, each input is mapped to its corresponding output, and the Controller controls all channels synchronously.

### Keypad Fire mode

- **Keypad fire mode** - fire mode **On** allows quick numbering of clips with a single keystroke (within the preset range) when saving or loading a clip. Turn **Off** to require full numbering of each saved clip.

- **Save/Load pages** - set PlayMaker to use the same specified number range for saving and loading clips (**Common**) or to use any number range for saving or loading clips (**Separate**).

### Studio mode

Set this mode to **On** when each camera is recording different footage. For more information, see *Working in Studio Mode* on page 48.

When you select Studio mode, the Studio settings are displayed. Set **Clip list** to Show All or Show by Input, set **Derived clips** to be created (**Yes**) or not (**No**), and set **Unify Events** to display the same Events on LCD keys for all channels (**Yes**) or to display different Events for each channel (**No**), each event group is displayed on an LCD key.

### Network

Settings for Controller and Server addresses.

- **Controller Address** - set the IP address, IP mask, or whether to enable/disable DHCP.

- **Server to Connect** - set IP Address/Port (of the server to connect) or Auto Detect Server, Controller ID, Server Group IP Address/Port.
Auto Detect Servers

To auto detect a server:

- From the Controller’s main screen, navigate to **Controller > Network and System > Server to Connect > Auto Detect Servers.**

![Auto Detect Servers Screen]

When this option is enabled, there is no necessity to manually enter the IP Address, IP Port, Group IP nor Group IP port of the server to connect. The PLC automatically detects all servers in the network.

The list of available servers is displayed on LCD keys:

![Server List]

Press on the key of the chosen server to switch to it.

In/Out

To access the Input/Output settings:

- In the Main screen, tap **In/Out.**

<table>
<thead>
<tr>
<th>Start/Stop Record</th>
<th>Opens a screen to start or stop recording for selected or all configured input cameras. A red background indicates that the channel is recording, a blue background indicates that the channel will not be recorded, a green background indicates that the channel is not recording but will record when you next press LIVE. A green spot indicates that the input signal is available and locked, and a red spot indicates that there is no signal. You can start or stop recording by tapping the CAM names.</th>
</tr>
</thead>
</table>

## Maintenance

### Record Inputs As

Opens a screen to select a recording mode.

**Sync Recording** - all recorded channels are started simultaneously and can be stopped separately. When you mark a clip on one channel, it is marked on all channels (default).

**Independent Recording** - recording can be started and stopped separately for each channel. When you mark a clip it is only marked on the current channel.

### I/O Setup

The following settings relate to the common 8-channel configuration:

Define how many inputs and outputs are used, and how they are configured (regular, SSM, 3D, 4K/4sync).

**Single Recorders** -
- 4in/0out
- 3in/1out
- 2in/2out
- 1in/3out
- 0in/4out

### Rename Inputs and Outputs

**Rename Inputs** - opens a screen to select an input camera for renaming. Tap the option to open a virtual keyboard and enter the required name. The new name is reflected in the camera name on touch screen.

**Rename Outputs** - Open a virtual keyboard to set the name of the output channel.

### Output Work Mode

Set the output mode to separate PGMs, or Gang mode.

**Two PGM** mode allows you to have independent outputs. When you choose this option you must configure the primary and secondary output. For more information, see [Output](#) on page 52.

When working in **Gang** mode, each input is mapped to its corresponding output, and the Controller controls all channels synchronously.

### Diagnostic

**Export Diagnostics Log** - export the diagnostics log to a USB device connected to the Controller. This log contains data on the current system status.

**Export Automatic Log** - export the automatic log to a USB device connected to the Controller. This log is created automatically if a crash occurs.

### Storage

**Clean Video Disks** - Use this option to erase all existing data from the disks (in all formats). This removes all cues, clips, playlists, and actual video recordings from the disks. After this command is started, video will no longer be accessible. This option also deletes lock and protected clips and playlists.

**RAID Status & Info** - RAID board status.

**RAID Disk Status** - Reflects the status of each disk; Green for fully operational, Yellow for disk problems, Red for disk failure, Blue for replaced disk (until recovery). For more information, see [RAID Disk Replacement](#) on page 46.

**RAID Alarm** - enable or disable the audio alarm for RAID failure.
| Network          | Set Server IP - set the IP address of the Server.  
                           Server Group IP Address - set the group IP address. This must be identical for all servers in the network.  
                           Server Group IP Port - This must be identical for all servers in the network. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>License</td>
<td>View the status of the licenses required for the various components of your system. From this screen you can renew licenses using license files provided by Orad. For more information, see License Installation on page 47.</td>
</tr>
<tr>
<td>Version Control</td>
<td>Displays information about the current hardware and software versions of the server, controller, and other system components. For more information, see Software Upgrades on page 47.</td>
</tr>
</tbody>
</table>
| Date and Time    | Set system time (24 hour format), date (DD-MM-YY). Changes made here must be applied when finished.  
                           **Note:**  
                           A free run TC can be set to the current time. Whenever the time is being set, an option to synchronize free run with the current time appears. To apply the change, the recording must be stopped. |
| Database         | Clean DB - delete and rebuild a database  
                           Repair DB - repair a broken database |
Data

To access the Data settings:
- In the Main screen, tap Data.

<table>
<thead>
<tr>
<th>Clear all unlocked data</th>
<th>Delete all unlocked cues, clips, and playlists.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear all cues</td>
<td>Delete all cues.</td>
</tr>
<tr>
<td>Clear all clips</td>
<td>Delete all unlocked clips (that are not used in a playlist).</td>
</tr>
<tr>
<td>Clear all playlists</td>
<td>Delete all playlists.</td>
</tr>
<tr>
<td>Lock all clips</td>
<td>Lock all clips to protect them from deletion.</td>
</tr>
<tr>
<td>Unlock all clips</td>
<td>Unlock all clips to allow them to be deleted.</td>
</tr>
</tbody>
</table>

Strip Recordings

Set the following strip recording options (for more information, see Stripping a Recording on page 41):
- **Keep Derived** - set Yes to save the primary clip and all of its derived angles. Set No to save the primary clip only. For more information, see About Clips on page 60.
- **Keep Safety Clip Zone** - set Yes to save the clip’s safety zone. Set No to discard the safety zone. For more information, see About Clips on page 60.
- **Strip Ongoing Recording** - select Yes to strip ongoing recording. Set No to disable stripping.
- **Recording Safety Tail** - define the number of hours from the end of the recording that is not stripped.

**Note:**
Safety tail is valid for ongoing recordings only.

Record Mode

Set what happens when there is no empty disk space for recording;
- **Standard recording** - the recording is stopped. Remaining recording time indication in the OSD blinks if the remaining recording time is less than 30 minutes.
- **Cyclic recording** - the server overwrites the earliest possible materials. Areas in previous recordings which are within any of the saved clip boundaries are protected and will not be overwritten. See Loop Recording on page 40.
- **Auto Start** - When auto restart is OFF, after 24 hours, the server automatically stops recording. (Recording must be restarted manually.) When auto restart is ON, after 24 hours of recording, the server stops the current recording and will start a new recording. For more information, see Round the Clock Recording on page 40.
Events

The Events option is used for tagging a clip according to meta-data keywords that you set. Some of these tags appear on the LCD keys in Live/Replay mode (after setting an in-point), and the tag that is displayed alongside the clip number, in the clip list view. For example, you can tag a clip as a goal, or by player, or both. Only one Event group can be active. You can set keywords prior to or during the production.

Choose one of three Event modes to use for marking clips:

- **6 pages X 25 Multi Events** - set multiple Events for a clip from the 150 options displayed in the touch screen (six active pages with 25 options, each).

- **6 pages X 25 Single Events** - set a single Event for a clip from the 150 options displayed in the touch screen (six active pages with 25 options, each).

- **12 Single Events** - set a single Event for a clip from the 12 options displayed on the LCD keys. (Not controller dependent.)

**NOTE:**

Each controller can create and run different groups, and different Events, even if they are running on the same server, but the Events are saved in the server Database, not on the controller.

PlayMaker can manage up to six groups, each group can manage up to six active pages, each page can manage an unlimited number of Events, but only 25 of them can be displayed to the operator at once.
Groups, Pages, and Events

By tapping a group or page name (that is, when it is marked green), it becomes the active group/page.

To set group names:
1. In the Main screen, tap Events.
   The Event options are displayed.

2. Tap Select and Edit Groups.
   The Event groups are displayed.

3. Select a group and tap Rename.
   The Virtual keyboard is displayed.

4. Type in the group name, and then tap Enter.
   For more information, see Using the Virtual Keyboard on page 41.
   The group now displays the new name.
   To open a group and edit its pages and Events, tap the required group twice.
To set page names:

1. In the Main screen, tap **Events > Select and Edit Groups**, then tap the required group twice to open it.
   The pages are displayed.
2. Select a page and tap **Change**.
   The Edit Pages screen is displayed.
3. Tap **Add New**.
   The Virtual keyboard is displayed.
4. Type in the page name, and then tap **Enter**.
   The name is added to the list of names.
5. Tap **Apply**.
   The page is renamed.

To open a page and edit its Events, tap the required page twice.
You can create an unlimited number of pages (in the list of names), but only six can be active at once.

To set Event names:

1. In the Main screen, tap **Events > Select and Edit Groups**, then open the required group and page.
2. Tap an Event to rename it.
   The Events screen is displayed.
3. Tap **Add New**.
   The Virtual keyboard is displayed.
4. Type in the Event name, and then tap **Enter**.
   The name is added to the list of names.
5. Tap **Apply**.
   The Event is renamed.

You can create an unlimited number of Events (in the list of names), but only 25 can be active at once.
Importing and Exporting Events

You can import Events that were created on other servers, or export Events for use on other Servers with their group/page hierarchy.

Group files are saved with the .SEG extension.
Page files are saved with the .SEP extension.

To import Events:
1. In the Main screen, tap Events > Import Events Database.
   The available options are displayed with a blue background.
2. Tap the required source to import from.
3. Select the required file using the Jog or the PREV or NEXT LCD keys.
4. Press ENTER.

To export Events:
1. With a USB device connected, in the Main screen, tap Events > Export Events Database.
2. Tap Export to USB Storage.
   The Events are exported to the device.
## Event Options

**To access the Event settings:**

In the Main screen, tap **Events**.

| Event Work Mode | Set the required Event work mode;  
| 6 Pages X 25 Multi Events | set multiple Events for each clip from the touch screen, from any active page.  
| 6 Pages X 25 Single Events | set a single Event for each clip from the touch screen.  
| 12 Single Events | set a single Event for each clip from the 12 options displayed on the LCD keys.  

| Select and Edit Groups | Set names of the different groups, pages, and Events, select the active group/name, import and export Events.  

| Import Events Database | Import Events from a USB device or a remote server (.SEG or .SEP extension).  
| Export Events Database | Export events to USB device.  

| Events Settings | On New In/Out Point - Set the Events to be displayed when adding a new clip. **Open top left** - open the first LCD key page, **Open last** - open the last LCD key page, **Only by user** - you must select by LCD key to open an event page.  
| Names Over Events | select **Yes** to allow displaying a manually input name instead of the event, or **No** to prevent renaming once an event has been assigned.  

| Clear Events | Clear all groups, pages, and Events from the Server database, including Events which have been used to tag existing clips.  

## Import/Export

<table>
<thead>
<tr>
<th>To access the Import/Export settings:</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the Main screen, tap <strong>Import/Export</strong>.</td>
</tr>
</tbody>
</table>

### Set Export

<table>
<thead>
<tr>
<th>Shared Folder</th>
<th>Enable Mount - enable connecting to the shared directory’s export folder.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol</td>
<td>set the communication protocol to use when retrieving clips from the shared directory (Avid FOS, CIFS, SMBFS, NFS, AFS/AFP).</td>
</tr>
<tr>
<td>Shared Folder</td>
<td>open the virtual keyboard to enter the name of the shared directory for exporting clips. A folder with this name must exist on the remote computer with permissions for the relevant user name.</td>
</tr>
<tr>
<td>Remote Computer</td>
<td>open the virtual keyboard to enter the remote computer IP address where the shared directory Export folder is located.</td>
</tr>
<tr>
<td>User Name</td>
<td>open the virtual keyboard to enter the user name for the computer where the shared directory Export folder is located.</td>
</tr>
<tr>
<td>Password</td>
<td>open the virtual keyboard to enter a password for the computer where the shared directory Export folder is located.</td>
</tr>
<tr>
<td>Domain</td>
<td>open the virtual keyboard to enter the domain name, when there is a domain name in use.</td>
</tr>
</tbody>
</table>

### Set Import

<table>
<thead>
<tr>
<th>Shared Folder</th>
<th>Enable Mount - enable connection to the shared directory’s import folder.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol</td>
<td>set the Windows/Mac-Linux communication protocol to use when copying clips to the shared directory (Avid FOS, CIFS, SMBFS, NFS/AFS, AFP).</td>
</tr>
<tr>
<td>Shared Folder</td>
<td>open the virtual keyboard to enter the name of the shared directory for importing clips.</td>
</tr>
<tr>
<td>Watch folder</td>
<td>configure watch folder (auto import) options. For more information, see <strong>Recording</strong> on page 40.</td>
</tr>
<tr>
<td>Remote Computer</td>
<td>open the virtual keyboard to enter the remote computer IP address where the shared directory Import folder is located.</td>
</tr>
<tr>
<td>User Name</td>
<td>open the virtual keyboard to enter the user name for the computer where the shared directory Import folder is located.</td>
</tr>
<tr>
<td>Password</td>
<td>open the virtual keyboard to enter a password for the computer where the shared directory Import folder is located.</td>
</tr>
<tr>
<td>Domain</td>
<td>open the virtual keyboard to enter the domain name, when there is a domain name in use.</td>
</tr>
</tbody>
</table>

**Note:**

In the UHD mode, import of video clips is not supported.
**Auto Export**

- **Auto Export** - when *Active* the server will export every new clip into the shared folder or USB device.
- **Auto Export To** - define USB device or a network location as shared directory.
- **Export Margin** - auto export according the clip number. When set to *All* all new clips are automatically exported.
- **Under Margin** - exports only clips which are numbered lower than the selected margin. **Above Margin** exports only clips which are numbered lower than the selected margin. The default margin point is 500. When above Margin or below margin are selected, tap **Margin** to change the margin number.
- **Re-export on changes** - export (an already exported) clip to the shared directory if its In or Out-points are changed or if the default input (master) for displaying the clip is changed.
- **Overwrite** - set *Yes* to overwrite clips of the same name, or *No* to save a new clip with the same name.

**Export Settings**

- **Derived Angles** - set *Yes* to export all selected derived angles (clips) when exporting a clip to the shared directory, or *No* to export only the master clip.
- **Safety zone** - set *Yes* to export safety zones when exporting a clip to the shared directory, or *No* to export only the clip.
- **Export Name** - Set the naming options for exported clips.
- **Include Metadata** - set *Yes* to export clips with all metadata, or *No* to export clips without metadata.
- **Overwrite** - set *Yes* to overwrite clips of the same name, or *No* to save a new clip with the same name.
- **Export Playlist** - set how a playlist is exported. Playlists can be exported **As Clips** (as separate clips), as **List to Clip** to export all clips in the playlist as a single clip, or using **Clips to Folder** to export all clips in the playlist to a new folder using the playlist name. Select **Ask Me** to display these options on the LCD keys for selection each time you export a playlist. For more information, see *Exporting a Playlist* on page 88.
- **Enable Growing Files** - enable or disable the possibility to register clips in PAM or load them to MediaComposer right after the start of the export.

**Group to Export**

- **Start Clip** - open the virtual keyboard to enter the number of the first clip in the group for export.
- **End Clip** - open the virtual keyboard to enter the number of the last clip in the group for export.

There is a limit of 200 clips per group.
### Interplay Settings

<table>
<thead>
<tr>
<th><strong>URI Path</strong></th>
<th>enter the Uniform Resource Identifier in Interplay (e.g. <strong>Interplay://AvidWG/Projects/New</strong>).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Service URL</strong></td>
<td>enter the Interplay service Uniform Resource Locator (e.g. <strong><a href="http://10.0.0.1:80/services/Assets">http://10.0.0.1:80/services/Assets</a></strong>).</td>
</tr>
<tr>
<td><strong>User Name</strong></td>
<td>enter the user AVID Interplay name.</td>
</tr>
<tr>
<td><strong>Password</strong></td>
<td>enter the AVID Interplay password.</td>
</tr>
<tr>
<td><strong>Enable Check-in</strong></td>
<td>allows the user to enable or disable clip registration in Interplay PAM</td>
</tr>
<tr>
<td><strong>AAF File Action</strong></td>
<td>after the check-in to Interplay PAM, the AAF file can be deleted to prevent overloading of files in the share folder, or it can be kept for an additional use.</td>
</tr>
<tr>
<td><strong>Thumbnail File Action</strong></td>
<td>after check-in to Interplay PAM, thumbnails can be deleted to prevent overloading of files in the share folder, or they can be kept for an additional use.</td>
</tr>
<tr>
<td><strong>AAF Share Folder</strong></td>
<td>set up a shared folder where the AAF files should be stored.</td>
</tr>
</tbody>
</table>

**Note:**
The thumbnail file will be located in the same place as the AAF file.

---

**Tap** **Go to Settings** to see additional options

<table>
<thead>
<tr>
<th><strong>USB 1 and USB2</strong></th>
<th>Displays the connection status of the USB storage mounted to the Server.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Not connected</strong></td>
<td>USB ports are not used,</td>
</tr>
<tr>
<td><strong>Press to Safely Remove</strong></td>
<td>and the amount of Free Space is displayed when storage is connected.</td>
</tr>
</tbody>
</table>
2. Basics
Recording

To start recording:
1. After booting the Server, press **Start** in the main screen.
2. Press **LIVE**.

Recording begins, for the configured cameras and runs until it is stopped, or there is no more space left to record, or unless you make a change to the system configuration that requires the Server to restart. Pressing the **LIVE** key during routine operation does not affect the recording.

To stop recording:
- See **Start/ Stop Record** on page 27.

Loop Recording

You can loop the recording to automatically strip the earliest possible footage, when the server runs out of space (leaving any marked clips) by working in Cyclic recording mode.

To set cyclic recording:
1. From the Main screen, tap **Data > Record mode**.
2. Tap **Cyclic Recording**.

Round the Clock Recording

PlayMaker recordings have a 24 hour recording limit. Auto restart allows you to set the server to start a new recording when the previous one has reached its 24 hour limit. The time gap between the recordings will be less that 1 second. This can be used in Standard and Cyclic recording modes.

To set auto restart:
- From the Main screen, tap **Data > Record mode** and tap **Auto Restart** to set to **ON**.
Using the Virtual Keyboard

At various times during the workflow and during setup, a virtual keyboard is available for naming or renaming purposes.

Tap the letters in the QWERTY keyboard to type them. The number of remaining characters is displayed next to the text line.

The CAPS key functions as a SHIFT/CAPS LOCK key in a standard keyboard; tap once for a single capital letter, or twice for Caps Lock.

To display digits and other special characters, tap ?#! .

When you’ve entered the required text, tap ENTER to return to the previous screen.

**NOTE:**
Connecting an external USB keyboard to the controller allows you to perform the same action from both keyboards.

Stripping a Recording

Stripping a recording allows you to delete recorded footage while preserving any clips that you have marked, freeing additional storage space. The recording is still displayed in the list of recordings as disabled (gray). If you delete this disabled recording, the clips will no longer be available.

Set stripping preferences in the *Data* menu on page 30.

> To strip a recording:

1. Press MENU three times to display the list of recordings.
2. Use the Jog to select a recording.
3. Press the *STRIP REC* LCD key.
   A confirmation message is displayed.

**Note**
Once you strip a recording, the action cannot be undone and the stripped footage is no longer accessible.
4. Press ENTER to confirm stripping the recording, or CLR to abort the action.

PlayMaker strips the recording, keeping all marked clips. The clips keep their
original number and name, original time code, and all added metadata. Each clip
will be available from all recorded angles (if so specified). The stripping process will
not affect prepared playlists.
Go To Timecode

Jump to any point on the video quickly, using the timecode.

To jump to a point:

1. Press SHIFT, TC.
2. Enter the required timestamp (HH:MM:SS) using the numeric keypad.
3. Press ENTER.

The selected timestamp on the recording is displayed.

**NOTE:**

> If multiple recordings exist with the same timestamps, the latest recording is loaded.

When you press SHIFT, TC, the LCD keys display the following options:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+5 minutes</td>
<td>Forward the replay five minutes from current timestamp.</td>
</tr>
<tr>
<td>-5 minutes</td>
<td>Rewind the replay five minutes from current timestamp.</td>
</tr>
<tr>
<td>+1 hour</td>
<td>Forward the replay one hour from current timestamp.</td>
</tr>
<tr>
<td>-1 hour</td>
<td>Rewind the replay one hour from current timestamp.</td>
</tr>
<tr>
<td>Start of Recording</td>
<td>Go to the start of the current recording.</td>
</tr>
<tr>
<td>End of Recording</td>
<td>Go to the end of the current recording (to the last current frame).</td>
</tr>
</tbody>
</table>

The CLR Key

The CLR key in the numeric keypad has a number of functions. Use it for the following:

- To clear the Seven Segment display.

To delete a clip:

1. Press MENU to display the list of clips.
2. Press CLR and type in the clip number.
3. Press ENTER.
   - or
   1. Press MENU to display the list of clips.
   2. Using the jog, mark the clip to be deleted.
   3. Press CLR.
   - or
   1. Press CLR at any point.
   2. Type in the number of the clip.
   3. Press ENTER.
To delete a playlist:

1. Press CLR, LIST.
2. Type in the playlist number.
3. Press ENTER.

   OR

1. Press MENU twice to display the list of playlists.
2. Select the playlist.
3. Press CLR.
4. Press ENTER.

The MENU Key

- Pressing MENU once displays the list of clips. (If you load a clip from the list, the list closes.) Alternatively, you can press CLIPS.

- Pressing MENU twice displays the list of playlists. (If you load a playlist, the list closes; If you press MENU when a playlist is loaded, the list of playlists opens directly.) Alternatively, you can press PLAYLISTS.

- Pressing MENU three times (or three times on a single Server) displays a list of recordings. Alternatively, you can press RECS LIST.

**NOTE:**
If "My Clips Filter" from the clip setting options is enabled, pressing MENU twice only shows the clips created on that specific controller. Pressing MENU three times, changes the view to the list of playlists. When pressing MENU four times, the view switches to the list of recordings.
Shutdown

System shutdown options are available on the controller, for the server and the controller.

To access shutdown options:

- In the Main screen, tap **SHUTDOWN**.

The following options are displayed:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restart Server</td>
<td>Restart the server application.</td>
</tr>
<tr>
<td>Reboot Server</td>
<td>Reboot the server unit.</td>
</tr>
<tr>
<td>Shutdown Server</td>
<td>Power off the server.</td>
</tr>
<tr>
<td>Restart Controller</td>
<td>Restart the controller application.</td>
</tr>
<tr>
<td>Reboot Controller</td>
<td>Reboot the controller unit.</td>
</tr>
<tr>
<td>Reboot All</td>
<td>Reboot the server and the controller.</td>
</tr>
</tbody>
</table>

**NOTE:**

To switch the Controller On or Off, use the power button on the back of the Controller.
RAID Disk Replacement

RAID disk replacement is done from the Server’s front panel, following the instructions displayed on the Controller.

To replace a RAID disk:

1. In the main screen, tap **Maintenance > Storage > RAID Disk Status**. Status for each disk is displayed.
2. Tap the disk to be replaced. The status screen is displayed.
3. Tap **Disk Replacement**, and follow the on-screen instructions.
4. When you get to the Start Disk Recovery screen, choose one of the following options:
   Full Disk Recovery - will recover all previous recordings that were on the old RAID disk, and make the disk status ready for recording. Full recovery lasts approximately five hours, and cannot be done while Server is recording. Only one disk at a time can be recovered.
   Fast Recovery - will rebuild the disk’s RAID, while deleting all existing recordings, in all formats, including all protected data. After starting the process, it is not reversible, and all footage will be lost. Fast recovery lasts approximately two minutes.
License Installation

The PlayMaker system is shipped with the licenses that you ordered, already installed. If your license has expired, or you have upgraded your license, you will need to reinstall the license provided by Orad.

- **To install a license:**
  1. From the main screen, tap **Maintenance > License**.
     The License status is displayed.
  2. Choose the upgrade method; **Upgrade from USB** or **Upgrade from Network**.
  3. Follow the on-screen instructions to complete the installation.

Software Upgrades

The PlayMaker system is shipped with the latest software version for each system component. Periodically newer software versions are released, and must be installed on the system. Before installation, verify that the new version is compatible with the versions on all other system components.

Software installation is done from a USB device, which contains the upgrade files provided by Orad. For both Server and Controller upgrades, the USB device must be connected to the Controller USB port.

- **To upgrade software:**
  1. From the main screen, tap **Maintenance > Version Control**.
  2. Follow the on-screen instructions to complete the installation.
Working in Studio Mode

Studio mode is used for situations when each channel is recording a different game. When working in Studio mode, a number of changes occur in the way the system operates:

- Each input has its own active playlist. When switching between the different inputs, in live or replay mode, the active playlist automatically switches to the correct playlist. A channel indicator (letter) is displayed with the playlist number.
- Unless otherwise defined in the settings, clips are created separately, with no derived clips. These clips are marked with a lower case letters, indicating that there are no derived clips.
- Unless otherwise defined in the settings, the list of clips shows only clips created from the current input.
- When switching between inputs, the system automatically saves the last position on each channel, so if you switch between inputs, change position, or perform any other action, when changing to a different input, the system re-cues the last position (timecode stamp) on the selected input.

For more information, see Control mode on page 26.

Managing Recordings

To access the list of recordings:

- Press MENU three times.

Each recording is displayed as a tree, with its recorded channels. You can rename, lock (protect from deletion) or delete each recording, as required, using the respective LCD keys. Recordings that are locked display an indicator.

To load a recording:

1. Use the Jog to highlight the required recording.
2. Press ENTER.
3. Replay

FastServe | Ingest’s replay capabilities can be utilized during an event, while recording the entire time. Press LIVE at any time to view the live inputs.

As soon as you use the Jog to roll back, you are no longer in live mode. Access any recorded video, including video recorded prior to the current recording session.

In this section:

Replaying Video on page 50
Synchronized and Non-Synchronized Modes on page 51
Output on page 52
Setting up Multiple Controllers on page 54
Replaying Video

In replay, you can search through the recordings, run a replay, or define a cue, clip or playlist.

» To replay the video;

- Roll back to the required point, and then use the T-Bar to play.
- After rolling back to the required point, mark the In-point (press IN).

A marked In-point gives you a point of return, even if you have not yet saved a clip, allowing you to play different camera angles, starting at the same In-point.

**NOTE:**

*It is possible to freeze the replay on the Out point.*

In an offside replay, for example, find the relevant offside frame, mark an Out point, roll back, and start replay; when the recording reaches the Out point, it will automatically pause on the offside frame. Moving the t-bar will start playing the video from the Out point.

You can also use the key combinations SHIFT, >IN or SHIFT, >OUT, to jump to the In or Out points, as required.

Switching Between Channels

The Recording Channel keys are used for instantaneous switching between input channels. In PGM mode, when a channel is being played to the PGM1 output, the respective key is red. When a channel is being played to the PGM2 output, the respective key is green.
Synchronized and Non-Synchronized Modes

By default, the system works in non-synchronized mode; when you change camera angles, replay is always re-cued from the marked In-point.

However, you can choose to work in synchronized mode; this causes replay to continue from the same time stamp when switching channels.

To switch between non-synchronized and synchronized modes:

- Press SHIFT, D.

  The input buttons blink as long as the system is in synchronized mode.
Output

Configuring Your Output

When working with two outputs, you must configure which output to use for the second PGM channel.

➤ To configure the outputs:

1. In the Main screen, tap In/Out. The In/Out options are displayed.
2. Tap Output Work Mode. The available output mode options are displayed.

Working in 2 PGM Mode

2 PGM mode provides two separate, independent outputs. In this mode, you can use two controllers for the same server, if required. The the PVW key toggles control between PGM1 and PGM2. The PVW key flashes red, as long as the control is on PGM2.

Although the outputs are independent, both outputs can use the same inputs, in Live mode, or load clips created on PGM1 to PGM2.

Working with two Controllers, offers a number of possibilities:

- Set each Controller to have control of a single output.
- Set each Controller to control both outputs (with the same primary and secondary settings).
• Set each Controller to control both outputs with different primary and secondary outputs, so that each Controller acts as a backup Controller for the other (with opposite primary and secondary settings).
Setting up Multiple Controllers

The communication protocol allows you to connect several Controllers to one Server, and to set each Controller to handle specific outputs, or to set several Controllers to control the same output.

All devices must be connected to one network, using a standard 1GigaBit Ethernet hub.

In order to work with several Controllers, each controller must have a unique Controller ID (See *Network* on page 26).

**To set the output configuration:**

1. Set the *Control mode* (see page 26) to **1PGM** or **2PGM** as required. (The number of outputs controlled by the Controller).
   - When **1PGM** is selected, tap **Select First Output**, and set the server output to assign to the Controller PGM1.
   - When **2PGM** is selected, you can set both server outputs to their required PGM channels.

   **NOTE:**
   - Several Controllers can control the same Server output, but any action made by one Controller overrides any action made by other Controllers.
4. Cues

A cue is a point on the video that the system can return to when required, as long as the recording is still available. PlayMaker can store up to 999 cues; if more than 999 cues are marked, the latest cues overwrite the first cues in the list.

In this section:

Marking Cues on page 56
Cue Setup on page 56
Cue Sorting on page 58
Loading a Cue on page 58
Marking Cues

To add a cue point:
- Press CUE.
  The cue point is set.

Cue Setup

During setup, define different preferences for cues.

To access cue settings:
1. Press SHIFT, MENU to display the main screen.
2. Tap Controller to display the Controller settings.
3. Tap Cues to display the Cue settings.
The following options are available:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cues on</strong></td>
<td>Toggle to set if cues are set on the live input timecode (<strong>Live</strong>), or the</td>
</tr>
<tr>
<td></td>
<td>actual output position (<strong>Replay</strong>).</td>
</tr>
<tr>
<td><strong>Freeze on Cue Point</strong></td>
<td>Toggle (<strong>On</strong>) to set the replay to stop when a cue point is reached. Use</td>
</tr>
<tr>
<td></td>
<td>the T-Bar to play from cue. When set to <strong>Off</strong>, replay continues when a cue</td>
</tr>
<tr>
<td></td>
<td>is reached.</td>
</tr>
<tr>
<td><strong>NOTE:</strong> This feature is useful for offside replay in football games. Set</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the cue on the offside frame, roll back and start replay. FastServe</td>
</tr>
<tr>
<td><strong>Live Timeshift</strong></td>
<td>When cues are set on the live input, open a slider to define the pre-roll</td>
</tr>
<tr>
<td></td>
<td>time shift. The time shift can be set between 0 to 5 seconds, in one-second</td>
</tr>
<tr>
<td></td>
<td>intervals. This feature allows you to compensate for the time between</td>
</tr>
<tr>
<td></td>
<td>recognizing the action and the pressing CUE.</td>
</tr>
<tr>
<td></td>
<td>For example, if the time shift is 2 seconds (and <strong>Cues on</strong> is set to Live),</td>
</tr>
<tr>
<td></td>
<td>and a cue is placed on timecode 08:12:47:12, then when recalled, it will</td>
</tr>
<tr>
<td></td>
<td>load 08:12:45:12.</td>
</tr>
<tr>
<td><strong>Auto create clip</strong></td>
<td>Toggle (<strong>On</strong>) activate <strong>Duration Before/After</strong> Cue parameters in seconds.</td>
</tr>
<tr>
<td></td>
<td>Use the F.JOG/CUE button to create clip with length <strong>Duration Before/After</strong></td>
</tr>
<tr>
<td></td>
<td>Cue sum parameters.</td>
</tr>
</tbody>
</table>
Cue Sorting

Cues are assigned three-digit numbers that do not reflect the timecode, just the order in which they were set.

Generally, in live or replay, the last created cue number is displayed. When jumping between cues, the currently displayed cue is displayed.

Loading a Cue

To load a cue:

- Use one of the following keys:
  - PREV - loads the latest cue set in the game (that is, the cue with the most advanced timecode, not the last cue created).
  - NEXT - loads the next cue in the game. If you are at the last cue in the game, NEXT jumps to the first cue.
In this section:

*About Clips* on page 60

*Creating a Clip* on page 61

*Playing a Clip* on page 70

*Searching for Clips* on page 73

*Clip Setup* on page 74
About Clips

A PlayMaker clip is a recorded portion of a game for which you determine the start (In) and end (Out) points, number, name, and tags, in either the live display or the playback. By default, a clip is saved with a few seconds added before its start point and after its end point (safety zone).

Clip Numbering

The clip number is a unique identifier comprised of a three-digit number and a letter (A/B/C/D) indicating the input channel on which the clip was created.

If more than one input is recorded, each clip is saved for all recorded inputs. The input for which the clip’s Out-point was defined is the master input. Other clips are derived from the master clip’s in and out points. The derived clips use the same clip numbers, with different input indicators. The system can save up to 1000 master clips and 7000 derived clips. In- and Out-points of the derived clips can be changed later, within the safety zone limit.

PlayMaker gives you the option of creating clips that are numbered automatically, using the first available number slot, or lets you assign a clip number manually.

Clip Naming

Each clip can be given an alpha-numeric name for easy identification, that always appears with the clip number, in the list of clips, if a name is assigned. The maximum number of characters in a clip name is 31.

Clip Tags

You can set an Event tag or label for a clip. For example, for a soccer game, set a “goal” tag. Applying a tag makes it easier to access other clips with the same tag. When creating a clip, these tags are displayed on the LCD keys.

If a clip has only a number assigned, and is unnamed, the tag is displayed in the list of clips, with the clip number.
Creating a Clip

To create a clip with the default duration:

1. Press LIVE to reset all operations.
2. Press IN or OUT to set the start or end frame of the clip.
3. Press ENTER.

The clip is created with an auto number, and the default duration set in Clips on page 26.
To create an auto numbered clip with In and Out points:

1. Press LIVE to reset all operations.
2. Use the Jog to roll to the required spot.
3. Press IN to set the starting frame of the clip.
4. If required, assign a name for the clip. (Tap the keyboard icon to open a virtual keyboard).
   
   **NOTE:**
   *This can be done at any point, before the clip is saved.*

5. Use the Jog to roll to the required spot.
6. Press OUT to set the end frame of the clip.

7. Press ENTER.
   The clip is created with automatic numbering, using the first available number slot.
   For example, clip 001A is the first clip with auto-numbering saved by the system.
   The “A” specifies that the clip was marked for input A, and this will be the input that is cued and played when you load the clip.

PlayMaker allows the following options when setting a clip:
- Set the Out point before rolling back and setting the In point.
- If you only set one point, the system uses the default duration setting to create a clip. (See Clips on page 26.)

To set a number for a clip:
1. Execute steps 1-6, above.
2. Type in a three-digit number using the numeric keypad.
   If working in Fire mode, you can set a numbering range by typing in a three or two-digit range before marking the clip, and then adding the final digit to number the clip within the set range. For example, if you type in 52_ in advance, and then type 3 before the next step, the clip is saved as 523, provided the number is available. See Keypad Fire mode on page 26.
   For information on using the numeric keypad, see Using the Numeric Keypad on page 76.
3. Press ENTER.
To set an Event for the clip:

1. Execute steps 1-6, above.
   If required, set the clip number manually, but do not press ENTER.
2. When working in LCD key single event mode, press an LCD key to select the Event.
   The clip is marked.
   Or-
   When working in touchscreen multi-event mode or in touchscreen single-event mode, tap the appropriate LCD key to open the Event page.
   To set the active Event group (whose pages are displayed), see Groups, Pages, and Events on page 32.
3. Tap to select the required Event (or Events when working in multi-event mode).
4. Press ENTER.
   The clip is numbered, marked, and saved.

For more information on defining Events, see Events on page 31.

NOTE:
If you tap a touchscreen Event that has already been selected, it is displayed with a red background. All subsequently created clips will be tagged with this Event, until you clear the Event (by tapping it).

To save a clip directly to a playlist:

1. Execute steps 1-6, above.
2. Press STORE
   The clip is stored in the current playlist.
List of Clips

From the list of clips you can perform a number of actions.

To open the list of clips:

1. Press LIVE to reset all operations.
2. Press MENU.

Once the list of clips is displayed, choose a clip to load (see Loading a Clip on page 67), or sort the list by Event.

Each row in the list represents a clip. Each column displays clip data, and each color of the clip number indicates various states as follows:

- **Clip** - clip number. Tap the column heading to sort the list by clip number.
- **Tag/Name** - the name or Event assigned to the clip. Tap the column heading to sort the list by names or events.
- **Duration** - clip duration
- **In-point** - the time stamp of the clips In-point.

- The clip is used in a playlist.
- The clip is locked (cannot be deleted).
- The clip is both locked and used in a playlist.
Sorting Clips by Event

When a list of clips is open, the LCD keys show available pages. The selected page is red and available Events are displayed on the touchscreen. Only Events which are already assigned to clips will be available. Select an Event to display the clips tagged with the Event. You can select additional pages and Events to filter the list further.

**TIP:**
When “sort by event” is enabled, pressing the prev / next LCD buttons allows to view the filtered event clips one by one.
Loading a Clip

To load the last created clip:
- Press SHIFT, CLIP.
  The clip is loaded.

There are two ways to load any clip for playing; from the numeric keypad, or from the list of clips.

To load a clip with a known number from the numeric keypad:
1. Press LIVE to reset all operations.
2. Enter the clip number in the numeric keypad.
   For more information, see Using the Numeric Keypad on page 76.
3. Press ENTER.
   The clip is loaded at its first frame.

To load a clip from the list of clips:
1. Open the list of clips. See List of Clips on page 65.
2. Using the Jog, or the PREV or NEXT keys to select a clip from the list of clips.
3. Press ENTER.
   The clip is loaded at its first frame.

Once a clip is loaded, the functions of the LCD keys change, together with the text displayed on the keys.

The following functions are available when a clip is loaded:

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ABC) RENAME</td>
<td>Open a virtual keyboard or use an external keyboard to name or rename the current clip.</td>
</tr>
<tr>
<td>SET SMART-EVENT</td>
<td>Switch LCD keys to available Events to select an Event tag for the current clip. You can replace the current clip tag or set a new one.</td>
</tr>
<tr>
<td>Send to</td>
<td>Copy the current clip to a remote server or a shared directory. For more information, see Copying Clips from Local Server to Remote Server on page 119 and Exporting Clips to a Shared Directory or External Device on page 120.</td>
</tr>
<tr>
<td>DELETE</td>
<td>Delete the current clip. (The key is red if the clip is protected).</td>
</tr>
<tr>
<td>&lt; PREV</td>
<td>Load the previous clip.</td>
</tr>
<tr>
<td>&gt; NEXT</td>
<td>Load the next clip.</td>
</tr>
</tbody>
</table>

Press SHIFT to access additional options

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOOP</td>
<td>Set the current clip to play in a loop. See Looping Clips on page 71.</td>
</tr>
<tr>
<td>PLAY ALL</td>
<td>Set all clips to be played, starting with the first clip. See Playing All Clips on page 70.</td>
</tr>
</tbody>
</table>
While a clip is loaded (even after it has been played), you can jump to its In- or Out-point quickly.

⋙ To jump to the In/Out point:
  ■ Press SHIFT, >IN or SHIFT, >OUT, as required.

<table>
<thead>
<tr>
<th>SET MASTER</th>
<th>Set the default input for displaying the current clip. (Select the input key, and press SET MASTER.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCK</td>
<td>Protect the clip from deletion. See Protecting a Clip on page 72.</td>
</tr>
<tr>
<td>COPY</td>
<td>Copy the current clip with a different clip number and/or tag to the next available slot. (Press ENTER to save the clip or type a three digit number and press ENTER.)</td>
</tr>
</tbody>
</table>
Changing Clips

After creating a clip, you might want to change the In/Out points of the clip or of one of the derived clips within the limits of the clip and safety zone. (Derived clips can have different In- and Out-points.)

To change In/Out point:
1. Load your clip (see Loading a Clip on page 67).
   Use the Recording Channel (A/B/C/D) keys to select the angle.
2. Roll to the required In- or Out-point, and press IN or OUT, as required.
   The In- or Out-point is changed for the selected angle.
   For more information, see Creating a Clip on page 61.

To set an In-point prior to the existing In-point:
1. Load your clip (see Loading a Clip on page 67).
2. Roll back to the required In-point.
3. Press IN.
   The new In-point is set.

To set an Out point after the existing Out-point:
1. Load your clip (see Loading a Clip on page 67).
2. Roll to the required Out-point.
3. Press OUT.
   The new Out-point is set.

NOTE: Previously set In/Out points need to be cleared if the required change involves marking an In-point that is later than the original Out-point, or marking an Out-point that is earlier than the original In-point.
Playing a Clip

To play a loaded clip:

- Press PLAY, or use the T-Bar to play the clip at the required speed. (You can also use the Jog for a frame-by-frame display.)
  If you want to review the clips in the list visually, press the PREV or NEXT LCD key to load the previous or next clip.

When a clip is loaded, you can only view the loaded clip, and its set safety zone. However, you can switch from the clip, back to the recording at the same time stamp, as follows:

To return to the recorded footage (at the same time stamp):

- Press SHIFT, LIVE.
  The clip is unloaded; view any part of your recording.

Playing All Clips

Play all master and derived clips starting with the first clip. This allows you to play all clips sequentially for backup, melt (play to VTR), export or any other purpose.

To play all clips in the list of clips:

1. Load any clip (see Loading a Clip on page 67).
   The LCD keys display options relevant for clips.
2. Press SHIFT, PLAY ALL.
   PLAY ALL turns blue.
3. Select the channels/angles to play.
4. Press PLAY ALL.
   A message is displayed while clips are playing, and all keyboard keys, Jog, and T-Bar are disabled.
   To exit this mode, press SHIFT, LIVE.
Looping Clips

You can set the current clip to play in a loop.

**NOTE:**
This setting remains activated for the clip, each time the clip is loaded, until cancelled.

To set a clip to be played in a loop:

1. Load the clip to be looped (see Loading a Clip on page 67).
   The LCD keys display options relevant for clips.
2. Press **SHIFT, LOOP**.
   A Loop indication is displayed with the clip info.

To cancel, press **SHIFT, LOOP** (while clip is loaded).
5. Clips

Protecting a Clip

When a clip is loaded, lock it to prevent it from being deleted, if required.

**NOTE:**
If the recording is deleted, or if the clean disk option is used, protected clips are deleted, as well.

**To lock a clip:**

- Press `SHIFT`, `LOCK`.

A lock indication is displayed with the clip info. `DELETE` is disabled.
Searching for Clips

When working with an attached keyboard, the CTRL+F keyboard combination opens a search field that allows you to search/filter clips by Event name.

**To search for clips:**

1. On the attached keyboard, press CTRL+F.
   
   The search area is displayed.

2. Type in any string of alpha-numeric characters to search for.
   
   Relevant matches are displayed as characters are added.

3. Press ESC once to clear the search field, or twice to close the search field.

**To add search results to the active playlist:**

1. Find the required clips using the keyboard, as described above.

2. On the Controller, press SHIFT, STORE.
   
   The clips are added to the active playlist.
Clip Setup

During setup, you can define different preferences for clips.

To access clip settings:
1. Press SHIFT, MENU to display the main screen.
2. Tap Controller to display the Controller settings.
3. Tap Clips to display the clip settings.

The following options are available:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Zone</td>
<td>Open a slider to set the number of seconds saved with the clip before the in-point and after the out-point of the clip. Default time: 10 seconds. (Possible range is 1-59 seconds.)</td>
</tr>
<tr>
<td>Default duration</td>
<td>Open a slider to set the default duration of a clip (used if only the In- or Out-point is marked). Default time: 5 seconds. (Possible range is 1 second - 24 hours.)</td>
</tr>
<tr>
<td>Post Roll</td>
<td>Open a slider to set for how many seconds the clip will continue playing after the out-point (relevant only if the &quot;on out point&quot; parameter is set to &quot;play through&quot;). Default time: 5 seconds.</td>
</tr>
<tr>
<td>Confirm Delete</td>
<td>Toggle Yes to require confirmation before a clip is deleted (default) or No to allow instant deletion of clips.</td>
</tr>
<tr>
<td>T-Bar On Out-point</td>
<td>Toggle to set clip behavior, when played using the T-Bar, when it reaches the out-point; either it will stop playing (Freeze), or play until the post roll point (Play Through). Default is Freeze.</td>
</tr>
<tr>
<td>Play Button On Out-point</td>
<td>Toggle to set clip behavior, when played using PLAY, when it reaches the out-point; either it will stop playing (Freeze), or play until the post roll point (Play Through). Default is Freeze.</td>
</tr>
<tr>
<td><strong>Next/Prev by Sort</strong></td>
<td>Select <strong>Yes</strong> to load the next clip sorted by events when you press NEXT. Select <strong>No</strong> to load the next clip according to clip number when you press NEXT.</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Tap Go to Settings page</strong></td>
<td>to see additional options</td>
</tr>
<tr>
<td><strong>Auto Number Method</strong></td>
<td>Set the method by which clips are automatically numbered; <strong>Continues</strong> - sequential clip numbering. <strong>Above last</strong> - sequential numbering from last given number. <strong>Fill gaps</strong> - number clips from lowest unassigned clip number.</td>
</tr>
<tr>
<td><strong>My Clips Filter</strong></td>
<td>When working with multiple Controllers (see <strong>Setting up Multiple Controllers</strong> on page 54), you can enable this option to display only clips saved by the current Controller in the clip list, or disable this option to view all clips saved on the Server.</td>
</tr>
<tr>
<td><strong>Load Next on Clip Delete</strong></td>
<td>When a clip loaded to the output is deleted, the output automatically changes to the next available clip, as opposed to going back to the live video.</td>
</tr>
<tr>
<td><strong>Mute on Out Point</strong></td>
<td>Mute unwanted audio while still playing the video.</td>
</tr>
</tbody>
</table>
Using the Numeric Keypad

The main function of the numeric keypad is for manually numbering and loading clips. When numbering or loading, the key colors change to indicate available number slots or existing clips.

Upon first use, when creating a clip, all keys are green, to indicate their availability. Once clip 001 (for example) exists, the 1 key will turn orange after you type in “00” to indicate that slot 001 is assigned. As the clip number slots fill up, you will see more keys turn orange when typing in clip numbers.

For example, if you have 99 clips stored (with sequential numbering), the next time you add a clip, the 0 key will be orange, indicating that all new clips must start with a different digit.

When loading a clip, the opposite logic applies; the green keys indicate assigned clip number options. If you have 99 clips stored (with sequential numbering), only the 0 key will be green as the first digit.
Playlists are used to group clips for playing later as a sequence. The same clips can be added to multiple playlists.

PlayMaker allows you to create up to 99 playlists. By default, the active playlist is List 01. When adding a clip to a playlist, it is always added to the active playlist.

When you add a clip to a playlist, the clip in and out points are copied to the playlist in order to create a derived clip. The derived clip can be edited within a playlist to change it’s In- and Out-points (without affecting the original clip) within the limits of the clip duration and safety zone.

Clips in a playlist are locked, and cannot be deleted unless removed from the playlist.

In this section:

*Setting the Active Playlist* on page 78
*Loading the Current Playlist* on page 80
*Adding Clips to the Playlist* on page 81
*Changing Clips Within a Playlist* on page 85
*Exporting a Playlist* on page 88
*Playlist Setup* on page 89
Setting the Active Playlist

To set a playlist as the active playlist:

1. Press LIVE to reset.
2. Press LIST.
   LST is displayed in the Seven-Digit display.
3. Using the Numeric keypad, enter the number of the playlist that you want to make active. For more information, see Using the Numeric Keypad on page 76.

   **NOTE:**
   If you enter a playlist number that does not exist, a new playlist is created.

4. Press ENTER.
   The selected playlist is now the active playlist, as indicated in the Playlist Line.

Parameters displayed in the Playlist line:

- Playlist number
- Duration of playlist
- Number of clips in playlist
- Last clip added to the playlist
- Duration of last clip
To select a playlist from the list of playlists:

1. Press MENU twice.
   A list of all populated playlists are displayed.
2. Use the Jog, or the PREV or NEXT keys, to select the required playlist.
3. Press ENTER to make the selected playlist active.
Loading the Current Playlist

To load the active playlist:

- Press LIST three times to open the active playlist.
  The playlist opens with the first clip in the playlist selected.
  To play the clips in the list, press PLAY or use the T-Bar to play at the required speed, or the Jog dial for field-by-field.

If you want to load the playlist from the last position, press LIST twice. When the playlist is loaded, the LCD keys change to display options relevant to the playlist.

To browse the playlist:

- After loading the playlist, press BROWSE.
  Use the Jog to display the first frame of any clip in the list. (Press BROWSE again to cancel the browsing function and use the Jog to play frame-by-frame.)
Adding Clips to the Playlist

Clips can be added to the end of the playlist or inserted at any point in the playlist.

**To append a clip to a playlist:**
1. Press LIVE to reset.
2. Load the clip (see *Loading a Clip* on page 67).
3. Press STORE to add the clip to the end of the playlist.
   A playlist icon is displayed with the clip.

**To insert a loaded clip in a playlist:**
1. Press LIVE to reset.
2. Press LIST twice to open the required playlist.
3. Press BROWSE, and select a clip.
4. Press MENU to open the list of clips.
5. Load the required clip (see *Loading the Current Playlist* on page 80).
6. Press SHIFT, INSERT.
   The list of clips is displayed. The clip is added to the playlist before the currently selected clip.
   Once a clip is loaded, you can select an additional clip angle (camera) that you want to add to the playlist.

**To add another clip angle to the playlist:**
1. Load the clip (see *Loading a Clip* on page 67).
2. Select the first camera, using the Recording Channel (A/B/C/D) keys.
3. Press STORE.
4. Select the second camera, using the Recording Channel (A/B/C/D) keys.
5. Press STORE.

**To delete a clip from a playlist:**
1. Open the required playlist.
2. Select the required clip using the Jog.
3. Press the DELETE (CLIP).
To add clips from a different playlist to the current playlist:

1. Open the playlist to which you want to add on to.
2. Use the Jog to select the insert position.
3. Press SHIFT, ADD LIST.
   All populated playlists are displayed.
4. Use the Jog to select the playlist to add.
5. Press ENTER.
   The clips from the selected playlist are appended.

   NOTE:
   Try this: load your first clip, store it, and then use the next/prev LCD keys to quickly run through all clips by number. Press STORE for each clip you want to add to the playlist.

Reorganizing the Playlist

Once all required clips are in the playlist, you can change the order of the clips.

To reorder clips in the playlist (cut and paste):

1. In the Playlist, select the clip you want to move.
2. Press CUT.
3. Using the Jog, highlight the new position.
4. Press PASTE to paste the last deleted clip.

   NOTE:
   The last removed clip is stored in memory only until another clip is removed from the playlist, or you close the playlist screen.

Fast Playlist: Adding Clips by Events

For quick playlist creation you can add all clips with an assigned Event to the current playlist.

To add clips:

1. Press MENU to open the list of clips.
2. Using the LCD keys, select an Event whose clips you want in the playlist.
   Only clips with the selected Event are displayed.
3. Press SHIFT, STORE.
   All clips of the selected Event are added to the current playlist.

Adding Clips to Multiple Playlists

When Multiple Playlist is ON, you can add a clip to all active playlists in one action. Playlists must be assigned to the LCD keys for selection.

To turn Multiple Playlist ON, see Multiple Playlist on page 90.
To assign a playlist to an LCD key:
1. Press LIVE.
2. Press MENU twice to open the list of Playlists.
   Assigned playlists show on the LCD keys, as Playlist name and Number. If no playlist is assigned to an LCD key, it will read ASSIGN PL.
3. Select the required playlist by using the Jog or PREV/NEXT.
4. Press any of the unassigned LCD keys to assign the selected playlist to the key.
5. Type in the list number.

To clear a playlist from an LCD key:
1. Press LIVE.
2. Press MENU twice to open the list of Playlists.
3. Press CLR.
   The Key flashes.
4. Press the LCD key that you want to clear.

Note:
Detaching a playlist from an LCD key does not delete the playlist, it will still be available with all its content.

To add an existing clip to multiple playlists:
1. Load the clip to the active output.
2. Press STORE.
   All assigned playlists are displayed on their LCD keys.
3. Select one or more playlists.
   The selected keys turn red. (Press the key again to clear it.)
4. Press STORE to confirm.
   The clip is added to all selected playlists.

To add new in and out points to playlist (during clip creation):
1. Press LIVE.
2. Set in- and out-points.
3. Press STORE.
   All assigned playlists are displayed on their LCD keys.
4. Select one or more playlists.
   The selected keys turn red. (Press the key again to clear it.)
5. Press STORE to confirm.
   The clip is created and added to all selected playlists.

Note:
When adding a second clip, the last selected playlists are selected on the LCD keys (shown in red). You can either press STORE, to save the clip to those playlists, or select and clear playlists as required, and then press STORE.
Sorting Clips by Timecode

You can sort the clips in a playlist according to their timecode.

**Note:**
Sorting cannot be undone.

To sort playlist clips by timecode:

1. Open the playlist (see *To load the active playlist:* on page 80).
2. Press SHIFT.
   
   *SORT BY TC* is displayed on an LCD key.
3. Press *SORT BY TC*.
   
   A confirmation message is displayed.
4. Press ENTER to confirm sorting or CLR to cancel.
Changing Clips Within a Playlist

To change a clip’s In/Out points within a playlist:
1. Select the required clip in the playlist.
   For more information, see To browse the playlist: on page 80.
2. Press IN or OUT to mark new points, as required, within the clip limits (not including
   the safety zone).
3. If you need to set In- and Out-points from the safety zone, press CLR, IN or CLR,
   OUT as required.
   The In- or Out-point is cleared, and the first frame in the safety zone becomes the
   In-point or the last frame in the safety zone becomes the Out-point.
4. Roll to the required frame, and set the points.
   For more information, see Creating a Clip on page 61 and Loading a Clip on page 67.

To change clip angle within a playlist:
1. Select the required clip in the playlist.
   For more information, see To browse the playlist: on page 80.
2. Press the required Recording Channel key twice.
   The clip angle/channel is changed accordingly in the list.

To add a clip angle to the playlist:
1. Select the required clip in the playlist.
   For more information, see To browse the playlist: on page 80.
2. Press the required Recording Channel key (once).
3. Press ADD BEFORE or ADD AFTER.
   The clip angle/channel is added to the playlist as specified.

To split a clip into two sequential angles (cut in action):
1. Select the required clip in the playlist.
   For more information, see To browse the playlist: on page 80.
2. Press the required Recording Channel key (once).
3. Using the Jog dial, roll to the point in the clip when you want to change angles.
4. Press CUT IN ACTION.
   The playlist now contains two derived clips, with the total clip duration.
Playing a Playlist

There are a number of options for playing a playlist.

➤ To play a playlist by number:

1. Press LIST.
2. Using the numeric keypad, enter the required playlist number.
3. Press ENTER. (This loads the playlist to the output at the first frame. If the server was playing a recording, the new playlist starts playing, according to T-Bar position or Play status.)
4. If required, press PLAY, or use the Jog or T-Bar to play the playlist.

➤ To play the current playlist:

1. Press LIST three times to open the current playlist, and press PLAY or use the T-Bar to play at the required speed.

➤ To select a playlist from the list of playlists:

1. Press MENU twice.
   All playlists are displayed.
2. Use the Jog dial to select a playlist.
3. Press ENTER to load the playlist. (This loads the playlist to the output at the first frame. If the server was playing a recording, the new playlist starts playing, according to T-Bar position or Play status.)
   Or-
   Press BROWSE to display the clips in the playlist without loading.
Additional Options

When a playlist is open, and displays the derived clips it contains, the functions of the LCD keys change, together with the text displayed on the keys.

The following functions are available when a playlist is open:

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDIT</td>
<td>BACK - return to the main playlist LCD key options.</td>
</tr>
<tr>
<td></td>
<td>EDIT ALL - press EDIT ALL before making a change in the edit options, to apply the change to all clips in the list.</td>
</tr>
<tr>
<td></td>
<td>SPEED - set the speed of clips when played from the playlist. For more information, see Setting Clip Speed on page 87.</td>
</tr>
<tr>
<td>CUT</td>
<td>Delete the selected clip from the playlist.</td>
</tr>
<tr>
<td>NEXT</td>
<td>Play the next clip in the playlist immediately.</td>
</tr>
<tr>
<td>SKIP</td>
<td>Finish playing the currently playing clip, skip the next clip, and play the following clip.</td>
</tr>
<tr>
<td>BROWSE</td>
<td>Press Browse to use the Jog to select any clip in the playlist. The first frame of the selected clip is displayed in the active output.</td>
</tr>
</tbody>
</table>

Press SHIFT to access additional options

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOOP LIST</td>
<td>Set the playlist to play in a loop until you load another clip or playlist or until you press LIVE. This setting remains activated for the playlist until cancelled. Loop indication is displayed with the playlist name. To cancel, press SHIFT, LOOP LIST.</td>
</tr>
<tr>
<td>ADD LIST</td>
<td>Add a different playlist to the current playlist as a group of clips. For more information, see To add clips from a different playlist to the current playlist: on page 82.</td>
</tr>
</tbody>
</table>

Setting Clip Speed

Set the speed at which to play each clip in the playlist (or all clips, using EDIT ALL) when played from the playlist. The speed you set here only affects clip speed when you use the PLAY button to play the playlist, disregarding the default speed set for the playlist. Use the Jog or T-Bar to manually control clip speed, even when you have changed the default.

To set clip speed:

1. From the playlist, select the clip to change.
2. Press SPEED.
   The LCD key background turns blue.
3. Adjust the speed using the T-Bar.
   The speed is indicated in the speed column in the playlist.
4. Press SPEED again.
   Clip speed is set.
Exporting a Playlist

You can export a playlist to a configured computer location. Export the playlist as separate clips, a single clip, or to a new folder with the same name as the playlist. For more information on how you want to export your playlist, see Export Settings on page 37.

To export a playlist:

1. Select a playlist (see Setting the Active Playlist on page 78).
2. Press LIST, then press the SEND TO.
3. Select the SHARE-POINT, then press ENTER.

   The playlist is exported to the configured computer.

   If the Ask Me option is selected in the Export settings, the export options are displayed on the LCD keys. Press the required option, and then press ENTER. For more information, see Export Settings on page 37.
Playlist Setup

During setup, you can define different preferences for playlists.

To access playlist settings:
1. Press SHIFT, MENU to display the main screen.
2. Tap Controller to display the Controller settings.
3. Tap Playlists to display the playlist settings.
### Playlist Setup

The following options are available:

<table>
<thead>
<tr>
<th><strong>Default Speed</strong></th>
<th>Open a slider to set the default speed at which the clips in the playlist are played when using the PLAY key. Default is 100%.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multiple Playlist</strong></td>
<td>Turn on to enable multiple active playlists in order to add a clip to multiple playlists in one action. For more information, see <em>Adding Clips to Multiple Playlists</em> on page 82.</td>
</tr>
<tr>
<td><strong>Mix On Playlists</strong></td>
<td>Available only in PGM mode. When set to Yes, PGM2 is tied to PGM1 to create a mix and wipe transition on playlists. (When enabled, playlist loaded to PGM1 will automatically eject any item loaded on PGM2).</td>
</tr>
<tr>
<td><strong>Confirm Playlist delete</strong></td>
<td>Toggle <strong>Yes</strong> to require confirmation before a playlist is deleted (default) or <strong>No</strong> to allow instant deletion of playlists.</td>
</tr>
<tr>
<td><strong>T-Bar On List End</strong></td>
<td>When Playlist is controlled by T-bar, toggle to set playlist behavior when it reaches the out-point of the last clip in the playlist; either it will stop playing (<strong>Freeze</strong>), or play until the post roll point (<strong>Play Through</strong>). Default is Freeze.</td>
</tr>
<tr>
<td><strong>Play Button On List End</strong></td>
<td>When Playlist is controlled by Play button, toggle to set playlist behavior when it reaches the out-point of the last clip in the playlist; either it will stop playing (<strong>Freeze</strong>), or play until the post roll point (<strong>Play Through</strong>). Default is Freeze.</td>
</tr>
<tr>
<td><strong>Flex FX</strong></td>
<td><em>(Option)</em> Turn on to enable FlexFX video and mix effects in playlists.</td>
</tr>
<tr>
<td><strong>Default Transition</strong></td>
<td>Open a list of effects from which to choose the default effect used for transitioning between clips in the playlist. Effect is used on clip Out-point. Default is Mix.</td>
</tr>
<tr>
<td><strong>Default Transition Duration</strong></td>
<td>Open a slider to set the default duration used for the transition effect between clips in the playlist, in frames. Default is 12 frames.</td>
</tr>
<tr>
<td><strong>Audio Transition</strong></td>
<td>Toggle this setting to set how the audio relates to the video: <strong>Follow Video</strong> (default) - the audio plays according to the default effect of the video. <strong>Cut</strong> - audio is cut regardless of the video’s default setting.</td>
</tr>
<tr>
<td><strong>Freeze Timer</strong></td>
<td>When the transition between clips in the playlist is set to Freeze &amp; Play, the duration set here is the freeze time before the next clip is played.</td>
</tr>
<tr>
<td><strong>Mute On List End</strong></td>
<td>Mute unwanted audio while still playing the video.</td>
</tr>
</tbody>
</table>

**NOTE:**

Playlist mix effects are not available in the UHD mode.
This chapter specifies The FastServe | Ingest options which can be configured using a Web Configurator.

In this section:

Setting FastServe | Ingest Preferences on page 92
Setting FastServe | Ingest Preferences

FastServe | Ingest settings can be edited using a Web browser that connects using the unit’s IP address.

To log in to the Web Settings:

1. Open a web browser and enter the FastServe | Ingest unit’s IP address as the URL, with the suffix 8080. For example, 192.0.2.0:8080.

   **NOTE:**
   Use Internet Explorer version 11 or Google Chrome version 51 or higher.

   The Login window is displayed.

2. Type in the username and password and click Login.

   If you don’t know your login information, use the Username: orad and the Password: orad.

   **NOTE:**
   Many changes applied with the WebSettings affect the playout or the ongoing recording. Some can even lead to the removal of all the clips stored on RAID. Thus, access to the WebSettings should be granted carefully.

3. The OVS tab is displayed.

General

The Web Settings allow to restart the OVS directly from a web browser.

The System tab also gives the option to reboot or shut down the machine.
OVS Tab

The **OVS** tab allows to configure parameters related directly to the FastServe | Ingest Server.

![OVS Tab Image]

Under **Status**, the Web Settings display the information about the communication status, version, and clock time.

**Video Settings**

The **Video** section provides means to configure video mode related functions, such as the codec, video standard, or the record TC source.

![Video Settings Image]
Audio Settings

The **Audio** section allows to configure audio related features, such as routing options.
In/Out Settings

The **In/Out** section allows the user to configure the inputs and outputs of the server, set the working mode, name the inputs and outputs.

![In/Out Configuration](Image)
Maintenance

The Maintenance section gives the options to monitor and change the system settings, such as the storage level, the possibility to clean video disks, set network parameters, clean and repair the database etc. Also, diagnostic logs can be downloaded directly from this section.

Data

The Data section provides the possibility to lock/unlock clips, clear all playlists, set the recording mode, etc.
Import/ Export

The **Import/Export** section allows to define share points details, and Interplay settings in case automatic check-in to Interplay is enabled. Here, you can specify the import destination, WatchFolder configuration or even safely remove a USB stick from the server, when a USB drive is connected as an export destination point.

![Import/Export Section](image)

GPI

In the **GPI** section it is possible to configure the GPI (General Purpose Interface) functions.

![GPI Section](image)
Automation

The Automation section allows to define and configure automation protocols like the VDCP, or specify the connection type (e.g. over serial or tcp/ip interface, port, etc.).

System Tab

The System tab allows to monitor and define system options, that in many cases apply to the whole server's operating system. Here, the CPU/memory usage can be monitored, licenses applied and verified, NTP server defined, IP configuration completed, logs downloaded etc.
Admin Tab

The **Admin** tab gives the option to change the username and password of a user.
8. System Configuration

In this section:

Configuring the Jog on page 101
Configuring the T-Bar on page 104
Configuring QuickKeys on page 106
Configuring the Jog

Configure the standard rate of frame advancement when the Jog is turned, and when you activate fast jog mode.

To configure the Jog:
1. Press SHIFT, MENU to display the main screen.
2. Tap Controller Settings to display the Controller options.
3. Tap Jog & T-Bar to display the Jog and T-Bar options.
4. Tap Jog frames Per Cycle to choose the standard number of frames to forward or rewind when the Jog is turned.
5. Make your selection. (Default is 64 frames per cycle.)

To configure fast jog mode:
1. Press SHIFT, MENU to display the main screen.
2. Tap Controller Settings to display the Controller options.
3. Tap Jog & T-Bar to display the Jog and T-Bar options.
4. Tap Fast Jog to choose the number of frames to forward or rewind when the Jog is turned in fast jog mode.
   The value is a multiplier of the standard speed, therefore, changing the standard speed will change fast jog speed.
5. Make your selection.

To activate Fast Jog mode:

- Press SHIFT, F.JOG.
  
  As long as fast jog is enabled, F.JOG button flashes red.
  
  To disable Fast Jog mode, press SHIFT F.JOG again, or engage the T-bar.
To lock Jog on Play:


When the option is turned off ("No"), then it is possible to use the jog while the playlist or the clip is loaded. The video will be moved backwards or forwards according to jog settings.

When the option is turned on ("Yes"), then it is not possible to jog during the playout via the play button. The jog is locked and by that protects unwanted movement while playing out on air.
Configuring the T-Bar

Configure the default video speed range when the T-Bar is used, or the speed range when you activate secondary T-Bar mode.

Options represent the video speed in percentages. For example, 0 means video is stopped, 100 means that video is playing at live speed.

To configure the T-Bar:

1. Press SHIFT, MENU to display the main screen.
2. Tap **Controller Settings** to display the Controller options.
3. Tap **Jog & T-Bar** to display the Jog and T-Bar options.
4. Tap **T-Bar Primary Range** to choose a predefined range of speeds.
5. Make your selection.

To configure the T-Bar secondary range:

1. Press SHIFT, MENU to display the main screen.
2. Tap **Controller Settings** to display the Controller options.
3. Tap **Jog & T-Bar** to display the Jog and T-Bar options.
4. Tap **T-Bar Secondary Range** to choose a predefined range of speeds.
5. Make your selection.

To activate the secondary T-Bar range:

- Press SHIFT, T-BAR.

The change is in effect the first time the T-Bar is moved.
To lock the T-Bar on Play:

- Navigate to **Controller > Jog & T-Bar > T-Bar > T-Bar Lock on Play**.

When the option is turned on ("Yes"), then it is not possible to use the T-bar during the playout. The T-bar is locked and by that protects any unwanted movement during the playout.
Configuring QuickKeys

To set the QuickKeys mode:

1. Go to Controller Settings, and press on QuickKeys.

2. Choose the appropriate button:

   and assign convenient options to it:
The LCD buttons can be customized and provide up to 12 shortcuts when pressing the SHIFT button. The QuickKeys will either run the assigned action (toggle), or launch the relevant screen. To restore default values, press on **Load Defaults**.

<table>
<thead>
<tr>
<th><strong>Clips</strong></th>
<th>Open the list of clips.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PlayLists</strong></td>
<td>Open the list of playlists.</td>
</tr>
<tr>
<td><strong>Recordings</strong></td>
<td>Open the list of recordings.</td>
</tr>
<tr>
<td><strong>My Clips</strong></td>
<td>Open the list of My Clips.</td>
</tr>
<tr>
<td><strong>SM clips sort by input</strong></td>
<td>Toggle to show “Clips by input“ and “Show all clips“ for Studio Mode.</td>
</tr>
<tr>
<td><strong>Freeze on Cue point</strong></td>
<td>Toggle to turn it <strong>On</strong> or <strong>Off</strong>. For more information, see <strong>Freeze on Cue Point</strong> on page 57.</td>
</tr>
<tr>
<td><strong>Multiple Playlist</strong></td>
<td>Toggle to turn it <strong>On</strong> or <strong>Off</strong>. For more information, see <strong>Multiple Playlist</strong> on page 90.</td>
</tr>
<tr>
<td><strong>Mix on Playlist</strong></td>
<td>Toggle to turn it <strong>On</strong> or <strong>Off</strong>. For more information, see <strong>Mix On Playlists</strong> on page 90.</td>
</tr>
<tr>
<td><strong>Chunk NetStream</strong></td>
<td>Manually mark a recorded chunk. For more information, see <strong>Chunk Stream</strong> on page 121.</td>
</tr>
<tr>
<td><strong>Start Stop Recording</strong></td>
<td>Toggle &quot;Start Rec&quot; to show the <strong>Start Recording</strong> screen. Press &quot;Hide start Rec&quot; to close the window.</td>
</tr>
<tr>
<td><strong>Auto Export</strong></td>
<td>Launch the Auto Export. For more information, see <strong>Auto Export</strong> on page 37.</td>
</tr>
<tr>
<td><strong>Take Effect Type</strong></td>
<td>Toggle between the <strong>PGM</strong> and <strong>PVW</strong> effect type.</td>
</tr>
<tr>
<td><strong>Fast Search</strong></td>
<td>Press to open a search window. Use an external keyboard to enter the search text.</td>
</tr>
<tr>
<td><strong>Net Status</strong></td>
<td>Press to open a list of all FastServe</td>
</tr>
<tr>
<td><strong>Cues On...</strong></td>
<td>Toggle to set if cues are set on the live input timecode (Live), or the actual output position (Replay).</td>
</tr>
<tr>
<td><strong>Start NetStream</strong></td>
<td>Start recording the selected channels to external storage manually.</td>
</tr>
<tr>
<td><strong>Stop NetStream</strong></td>
<td>Stop recording the selected channels to external storage manually.</td>
</tr>
<tr>
<td><strong>Watch Folder On/Off</strong></td>
<td>Activate or disable the WatchFolder application.</td>
</tr>
<tr>
<td><strong>Export Status</strong></td>
<td>Press to open the Export Status window.</td>
</tr>
<tr>
<td><strong>Import Status</strong></td>
<td>Press to open the Import Status window.</td>
</tr>
<tr>
<td><strong>Audio Scrub</strong></td>
<td>Enable or disable the Jog Scrub.</td>
</tr>
</tbody>
</table>
Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this equipment near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other equipment (including amplifiers) that produce heat.
9. Protect power cords from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the equipment.
10. Only use attachments/accessories specified by the manufacturer.
11. For products that are not rack-mountable: Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the equipment. When a cart is used, use caution when moving the cart/equipment combination to avoid injury from tip-over.
12. Unplug this equipment during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the equipment has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the equipment, the equipment has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. For products that are a Mains powered device: The equipment shall not be exposed to dripping or splashing and no objects filled with liquids (such as vases) shall be placed on the equipment.

**CAUTION:**
To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

15. For products containing a lithium battery:

**CAUTION:**
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.

16. For products with a power switch: It should remain accessible after installation.
17. The equipment shall be used at a maximum ambient temperature of 40° C.
18. This unit may be provided with a power supply cord set suitable for 120V AC input only (for U.S.A. and Canada). For other than U.S.A. and Canada, a qualified person must provide for use with this unit, an appropriate, approved power supply cord set which is in compliance with the end use country requirements and has a minimum cross-sectional area of 1.0mm².
19. For products with more than one power cord:

**CAUTION:**
This unit has more than one power supply cord. Disconnect two power supply cords before servicing to avoid electrical shock.

**ATTENTION:**
Cet appareil comporte plus d'un cordon d'alimentation. Afin de prévenir les chocs électriques, débrancher les deux cordons d'alimentation avant de faire le dépannage.

20. For products with an operator-accessible fuse:

**CAUTION**
DOUBLE POLE/NEUTRAL FUSING

**CAUTION:**
For continued protection against risk of fire, replace only with same type and rating of fuse.

**ATTENTION:**
Pour ne pas compromettre la protection contre les risques d'incendie, remplacer par un fusible de même type et de même caractéristiques nominales.
Rack-Mount Requirements

The following rack-mount requirements are listed below:

- Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be greater than room ambient. Therefore, consider installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

- Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

- Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

- Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Earthing - Reliable Earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).

EMC (Electromagnetic Compliance) and Safety

Avid declares that this product complies with the following standards regulating emissions, immunity and product safety:

- FCC Part 15 Class A
- ICES-003 Class A
- EN55032 Class A
- EN55103-1 E4
- EN55024
- EN55103-2 E4
- AS/NZS CISPR 32 Class A
- CISPR32 Class A
- VCCI Class A
- IEC/EN/UL60950-1
- CAN/CSA-C22.2 No. 60950-1-07

This equipment has been tested to comply with USA and Canadian safety certification in accordance with the specifications of UL Standards: IEC/UL60950-1 and Canadian CAN/CSA-C22.2 No. 60950-1-07. Avid Inc. has been authorized to apply the appropriate UL & CUL mark on its compliant equipment.

Avid is authorized to apply the CE (Conformité Européenne) mark on this compliant equipment thereby declaring conformity to EMC Directive 2014/30/EU, Low Voltage Directive 2014/35/EU and RoHS Recast Directive 2011/65/EU.
FCC Notice

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Cables

Connections to Avid hardware must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Canadian ICES-003

Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Australian Compliance

![Australian Compliance Icon]

Korean EMC Compliance

A 급 기기 (업무용 방송통신기기자재) 이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.
Environmental Compliance

Disposal of Waste Equipment by Users in the European Union

This symbol on the product or its packaging indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.

Proposition 65 Warning

This product contains Chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

Perchlorate Notice

This product may contain a lithium coin battery. The State of California requires the following disclosure statement: “Perchlorate Material – special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate.”

Recycling Notice
In this section:

*Video Configurations* on page 115
Video Configurations

This appendix details the back panel connections that must be set up for each available type of video configuration.

**Single Recorders**

4 channels: 2 in > 2 out

<table>
<thead>
<tr>
<th>In 1</th>
<th>In 1 Loop</th>
<th>In 1 Loop</th>
<th>X</th>
<th>In 1 Loop OSD</th>
<th>In 2 Loop</th>
<th>In 2 Loop</th>
<th>X</th>
<th>In 2 Loop OSD</th>
<th>In 2 Loop OSD</th>
<th>X</th>
<th>Out 1</th>
<th>Out 1</th>
<th>X</th>
<th>Out 1 OSD</th>
<th>Out 2</th>
<th>Out 2</th>
<th>Out 2 Loop OSD</th>
<th>Out 2 Loop OSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Out 1</td>
<td>Out 1</td>
<td>X</td>
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4 channels: 3 in > 1 out

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4 channels: 4 in > 0 out

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4 channels: 0 in > 4 out

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