USER MANUAL

Hypermotion

Version 15.3 - December 2017

Multicam.LSM

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Table of Contents

What's New?

The Hypermotion Cameras manual has not been subject to changes related to new features for release 15.3.

1. Introduction

1.1. General Information

Definition

The Hypermotion mode allows the server to control a hypermotion camera. Such cameras record images at a frame rate much higher than standard cameras.

They record a buffer of images in an internal memory. This buffer can then be ingested into an EVS server via the standard SDI connection. In doing so, a hypermotion camera is considered as a standard camera by the server.

When the EVS server works in hypermotion mode, it must run a Multicam LSM configuration.

The aim of the hypermotion mode is to enable the use of a standard EVS Remote to control the hypermotion camera. Though most commands are identical for such cameras, the last part of this chapter lists some of the supported cameras model along with their specific features.

Principles

The hypermotion cameras can be controlled by the LSM Remote Panel. The camera is linked via a RS422 or LAN PC connector to the same XT3 server as the controlling Remote Panel.

In setups including a hypermotion camera, the following principles apply:

- An XT3 server cannot control more than one hypermotion camera.
- The hypermotion camera is used with the classical channel configurations.
- Not all Multicam LSM configurations with several PGMs and several Remotes are supported within the current RS422 and channel configuration constraints.
- If the **Remote Mode** setting in the Hypermotion Controller settings is set to 'Hypermotion only', an additional menu is made available in the main menu of the LSM Remote Panel.

1.2. Wiring Schema

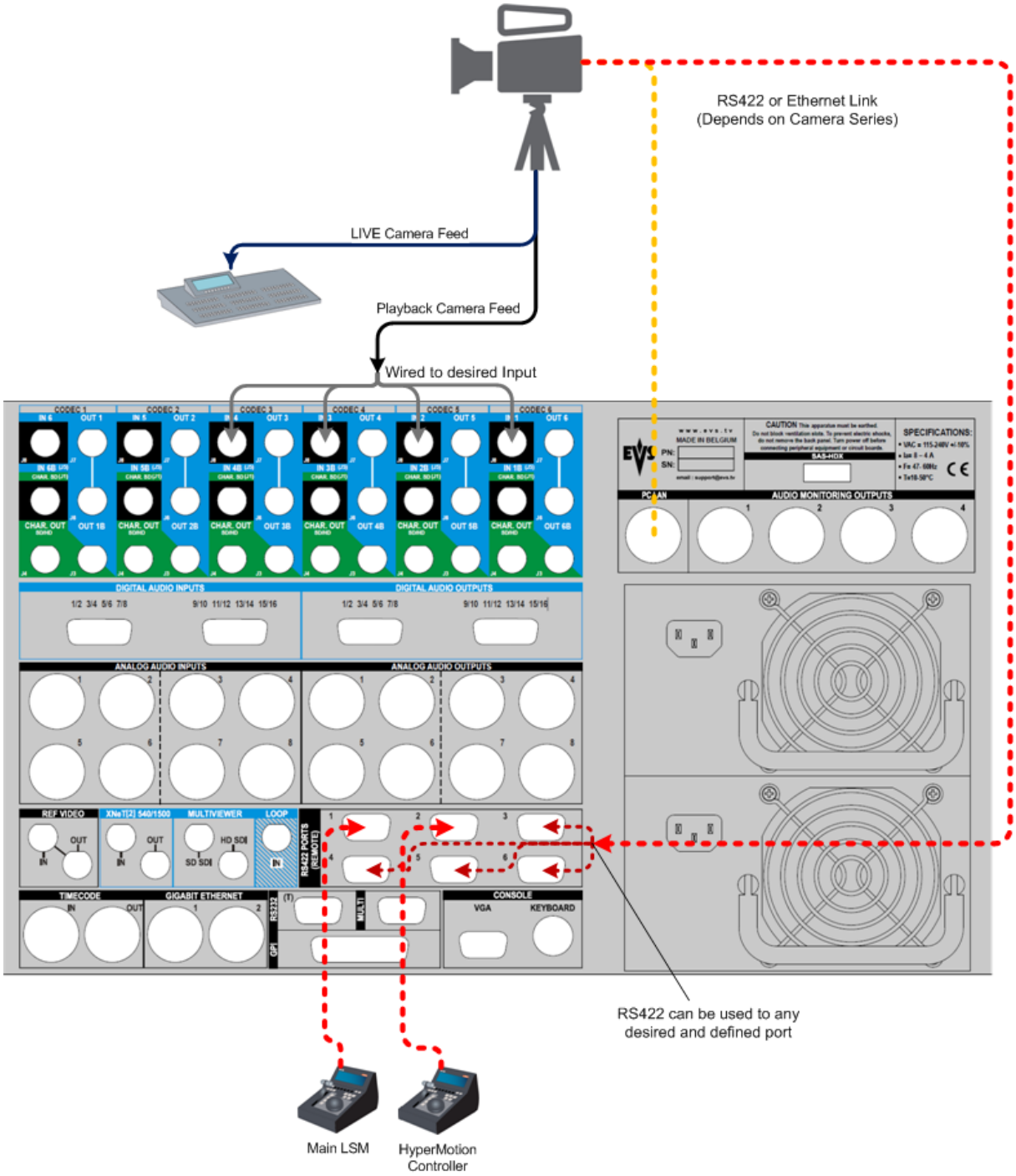
The wiring schema shows that the following connections have to be set up:

- A connection from the camera to the switcher for the LIVE camera feed.
- A connection from the camera to the recorder channels (from 1 to 4 channels) for ingesting the AV material to the EVS server.
- A connection to the Ethernet (PC LAN) or to one of the RS 422 ports (from 3 to 6).

  The type of connection depends on the camera series.

The Remote Panels need to be connected as follows:

- The main LSM Remote Panel is connected to the RS422 port 1.
- The Remote Panel that controls the Hypermotion camera is connected to the RS 422 port 2.



2. Configuration

2.1. Hypermotion Management

Remote Panel Assignment

In setups where several LSM Remote Panels and a hypermotion camera are defined, the assignment of the various PGMs and hypermotion camera to the LSM Remote Panels is automatically performed as shown in the table below depending on:

- the number of PGMs in the selected channel configuration
- the selected Remote Mode (Hypermotion only or Hypermotion + LSM)
- the number of Remote Panels available

The following table presents the possible configurations:

# of Remotes	1		2		3		4	
Hypermotion Mode	**Hyperm. Only**	**Hyperm. + LSM**	**Hyperm. Only**	**Hyperm. + LSM**	**Hyperm. Only**	**Hyperm. + LSM**	**Hyperm. Only**	**Hyperm. + LSM**
1 OUT	NA	R1: PGM1 +hyperm.	R1: PGM1 R2: hyperm.	NA	NA	NA	NA	NA
2 OUT	NA	R1: PGM1 +PGM2 +hyperm.	R1: PGM1 +PGM2 R2: hyperm.	R1: PGM1 R2: PGM2 +hyperm.	R1: PGM1 R2: PGM2 R3: hyperm.	NA	NA	NA
3 OUT	NA	R1: PGM1 +PGM2 +PGM3 +hyperm.	R1: PGM1 +PGM2 +PGM3 R2: hyperm.	R1: PGM1 +PGM2 R2: PGM3 +hyperm.	R1: PGM1 +PGM2 R2: PGM3 R3: hyperm.	R1: PGM1 R2: PGM2 R3: PGM3 +hyperm.	R1: PGM1 R2: PGM2 R3: PGM3 R4: hyperm.	NA
4 OUT	NA	R1: PGM1 +PGM2 +PGM3 +hyperm.	R1: PGM1 +PGM2 +PGM3 R2: hyperm.	R1: PGM1 +PGM2 +PGM3 R2: PGM4 +hyperm. OR R1: PGM1 +PGM2 R2: PGM3 +PGM4 +hyperm.	R1: PGM1 +PGM2 R2: PGM3 +PGM4 R3: hyperm.	R1: PGM1 +PGM2 R2: PGM3 R3: PGM4 +hyperm.	R1: PGM1 +PGM2 R2: PGM3 R3: PGM4 R4: hyperm.	R1: PGM1 R2: PGM2 R3: PGM3 R4: PGM4 +hyperm.

'PGM1+PGM2' can represent the 2PGMs mode as well as the PGM/PRV mode.

WARNING

The cells with 'NA' correspond to impossible configurations taking into account the existing constraints. In this case, the Hypermotion option is not available in the operational menu even if the Hypermotion setting is set to 'Yes'.

Dual LSM Mode and Hypermotion Cameras

An hypermotion camera can be used in Dual LSM mode taking the following information into account:

- The hypermotion camera is associated to the LSM operator #2.
- Only the LSM operator #2 can control the hypermotion camera.

  The operator can use a dedicated LSM Remote Panel to control solely the hypermotion camera, or use **SHIFT+ D** to control both the hypermotion camera and the EVS servers with one (of his) LSM Remote Panel(s).

2.2. Hypermotion Controller Settings

User Interface

The Hypermotion controller settings allow specifying the settings related to the control of a hypermotion camera from an LSM Remote Panel.

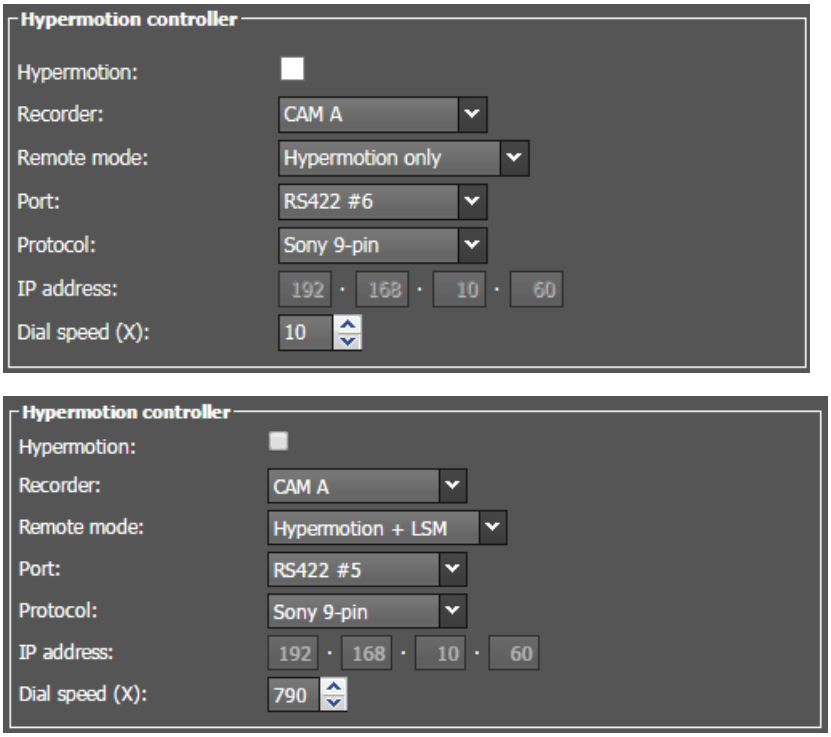
These fields are available in the following interfaces:

- in the Multicam Configuration window, Operation tab
- in the Operational setup menu of the Remote Control Panel (pages 11.X)

WARNING

The hypermotion feature and settings are only available with a valid license code 20. This license code allows controlling a hypermotion camera from the remote panel.

The following screenshot displays the Hypermotion Controller settings on the Operation tab in the web-based interface:



Hypermotion

Description	Enables or disables the hypermotion camera control feature. When this setting is enabled, you can access and use the hypermotion menu on the LSM Remote Panel via the **SHIFT+D** key combination in the operational menu.
Values	Yes / No
Default value	No

Recorder

Description	Selects the record channel to which the A/V material from the hypermotion camera will be sent.
Values	CAM A to CAM L
Default value	The default value is the last CAM defined in the channel configuration (for ex. CAM C in a 3 IN 3 OUT configuration).

Remote Mode

Description	Specifies the camera elements controlled by the server.
Values	• **Hypermotion only**: The server controls only the hypermotion camera. An additional remote is made available in the main menu of the remote panel, since the hypermotion camera is considered as an additional external camera. • **Hypermotion + LSM**: The server controls the hypermotion camera and one PGM in exclusive mode.
Default value	Hypermotion only

Port

Description	Specifies on which port (RS422 or Lan PC) the commands must be sent to the hypermotion camera, and possibly to the PGM if you have selected 'Hypermotion + LSM" in the **Remote Mode** parameter.
Values	The following values are possible: • RS422 #2 to RS422 #6 • Lan PC The port value is specific to the camera. See the camera-specific section in the operational chapter .
Default value	RS422 #6

Protocol

Description	Specifies the protocol type used for data transfer on the selected port.
Values	The following values are possible: • TCP / UDP (when **Port** is set to **Lan PC**). • ASCII / Sony 9-pin (when **Port** is set to one of the **RS422**). The protocol value is specific to the camera. See the camera-specific section in the operational chapter .
Default values	• TCP (when **Port** is set to **Lan PC**). • Sony 9-pin (when **Port** is set to one of the **RS422**).

IP Address

Availability	This setting is only available if the **Port** setting is set to **Lan PC**.
Description	Specifies the IP address of the PC LA N.
Values	xxx.xxx.xxx.xxx
Default value	192.168.10.60

Dial Speed

Description	Defines the multiplication factor applied to the jog value.
Values	Range of values: 10x to 1000x (multiple of 10x)
Default value	10x

3. Operation

3.1. Activating and Accessing the Hypermotion Mode

Activating the Hypermotion Mode

To access the hypermotion mode, you should ensure that:

- The license code 20 required for the hypermotion mode is activated. For more information on this required license key, contact the Support or Sales team.
- The **Hypermotion** parameter is activated in the Operational Setup menu of the remote (p.11.1 F1), or see the EVS Server Configuration manual.
- You have correctly selected the number of remotes in the main menu according to the **Remote mode** parameter defined in the Operational Setup menu of the remote (p.11.1 F3), or see the EVS Server Configuration manual.

  Depending on the selected **Remote mode**, you will control the hypermotion camera only or the hypermotion camera and a PGM of the server.

Accessing and Leaving the Hypermotion Mode

To access the hypermotion menu, press **SHIFT+D** (**HyperMo**) in your Remote Panel menu.

To leave the hypermotion menu or switch to the PGM control, press again **SHIFT+D** in the operational menu.

Note
In hypermotion+LSM mode, the **SHIFT+D** key displays LSM Mode.

3.2. Controlling the Hypermotion Camera

3.2.1. Key Commands on the Remote Panel

Introduction

This section presents the various commands you can use on the Remote Panel to control the hypermotion camera. When available, the corresponding key on the hypermotion camera is mentioned.

The standard behavior, applicable to all cameras, is explained in this table. When a given camera has a specific behavior, this is specified in the section dedicated to the camera itself.

PLAY

This key corresponds to the 'Play' command on the hypermotion camera.

Pressing this key initiates a replay from the first available frame on the current memory block.

The corresponding **CAM** key flashes green to indicate the playback status.

During the playback, the material played on the hypermotion camera is recorded into the server via the SDI connection.

SHIFT + PLAY

There is no corresponding command on hypermotion cameras.

Pressing this key combination initiates a replay on the current memory block at the speed defined in the **PGMSpeed** parameter.

Pressing again **PLAY**, **SHIFT+PLAY**, or **PRV CTL** returns to the normal playing speed.

The corresponding **CAM** key flashes green to indicate the playback status.

Mark

This key corresponds to the ‘Mark Cue Point’ command on the hypermotion camera.

Pressing this key marks a cue point on the current block. You can mark up to 255 cue points on a memory block.

This function is not available on all cameras with multiple-block memory.

Last Cue

This key corresponds to the 'Search' command on the hypermotion camera.

The Last Cue key can have several behaviors:

- If the Cues parameter is set to **Off**, the cue points are not managed. In this case, the **Last Cue** button allows users to perform one of the following actions:
  - launching a play command at the speed defined in the **Last Cue** parameter
  - launching a play command in **Ramp up** mode, when this mode is defined in the **Last Cue** parameter.
- If the Cues parameter is set to **On**, the cue points are managed. In this case, the **Last Cue** button allows users to perform one of the following actions:
  - going to the previous cue point of the current memory block when cue points have been defined on the current block.
  - stopping the recording and going back to the first recorded frame of the current memory block when no cue points have been defined on the current block.

  The frame is loaded, but the camera does not start playing.

See section "Managing Cue Points" on page 14

RECORD

This key corresponds to the 'ARM' or 'REC' commands on hypermotion cameras.

The different behaviors are possible, depending on various conditions:

- In single-block memory, pressing this key deletes the material recorded on the camera and starts the recording process on the camera.
- In multiple-block memory:
  - When you press **RECORD** after selecting the block number you want to work with, all A/V material recorded on the memory block(s) of the camera is deleted, and the camera starts recording on the first block.
  - When you press **RECORD** subsequently and a memory block is selected, the recording starts on the currently selected memory block, and its content is deleted.
  - When you press **RECORD** subsequently and no memory block is selected, all A/V material recorded on the memory block(s) of the camera is deleted, and the camera starts recording on the first block.
  - When you press **RECORD** subsequently and the selected memory block is recording, the behavior differs from one camera to the other. Refer to the chapter dedicated to the camera itself.

TAKE

This key corresponds to the 'Trig/Stop Rec' command on hypermotion cameras.

With a single-block memory or when the last block is reached, press **TAKE** to stop the recording.

With a multiple-block memory, pressing **TAKE** induces the following actions:

- The recording stops on the current block.
- The material on the current block is loaded on the camera in play mode.
- The recording starts on the next empty block, if available. If no empty block is left, the recording stops.

Lever

There is no corresponding command on hypermotion cameras.

Press the **Lever** key to shift to the secondary lever range (defined in the **2nd Lever** parameter in the hypermotion secondary menu) for material played out using the hypermotion feature.

CAM Keys

When you press a **CAM** key corresponding to a recorded block, this loads the last recorded frame of the selected block in play mode.

When you press a **CAM** key corresponding to a block in REC, this loads the last recorded frame of the selected block in play mode, and the recording starts on the next empty block, if available.

When you press a **CAM** key corresponding to an empty block, the remote beeps.

CLEAR

Press the **CLEAR** key to clear the recorded material on a block. It can be used in the following ways:

- To clear the record on a given block that is not in PLAY mode, press **CLEAR** and the **CAM** key corresponding to the requested block.
- To clear the record on a block when the block is in PLAY mode, press **CLEAR**. The PLAY is stopped, the recorded material is deleted from the block, and the camera automatically starts recording again in this block if it is not recording on any other block yet.

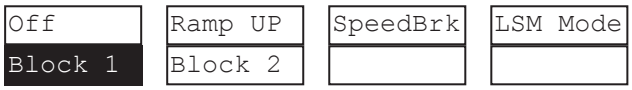
Note
The **CLEAR** button is only active on some cameras.

3.2.2. LCD Menu on the Remote Panel

Hypermotion Main Menu

The hypermotion main menu displays the memory blocks that have been selected in the **# Blocks** parameter of the hypermotion secondary menu. The memory blocks use is described later in this chapter.

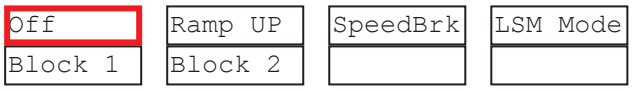
Only the activated blocks will be displayed and the highlighted block is the one the operator is currently working on.



Cues Parameter

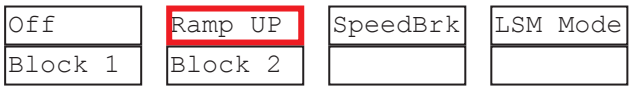
This parameter allows you to activate the cue management in hypermotion mode.

The default value of the Cues parameter is **On**.



Last Cue Parameter

The Last Cue parameter defines the **Last Cue** button function when the **Cues**parameter is **Off**.



- The Last cue parameter can be set to Ramp Up (the default value):
  - The first time the **Last Cue** button is pressed, the speed is increased starting from the PGMSpeed until the maximum speed is reached. This maximum speed depends on the camera model.
  - Whenever the **Last Cue** button is pressed again, the speed is increased starting from the last speed used until the maximum speed is reached.
- The **Last Cue** parameter can be set to an individual speed (the available values depends on the camera model).

Note

- When Cues is set to **Off**, the cam key is displayed in black and the **Mark** button is inactive.
- When Cues is set to **Off** and Last Cue is set to **Ramp Up**, press **Clear+Last Cue** to reset the speed to PGMSpeed.

Speedbreak Parameter

When the Speedbreak functionality is available, it will be displayed as illustrated.

Press the corresponding key to activate (highlighted) or deactivate it (normal display).

Off	Ramp UP	SpeedBrk	LSM Mode
Block 1	Block 2		

See section "Using Speedbreak" on page 18

Note
Currently, the Speedbreak functionality is available only for Vision Research and NAC Hi-Motion II cameras.

Hypermotion Secondary Menu

From the hypermotion main menu, press the **MENU** key to open the hypermotion secondary menu illustrated hereunder.

# Blocks	Pre-Roll	PGMSpeed	2ndLever
2	00s10fr	50%	+- 1000

This secondary menu includes the hypermotion settings described in the table below. To modify a setting, press the corresponding softkey and jog to select the requested value.

The default setting value is specified in the table. As the value range often vary from one to the other camera, the available values are listed in the camera-specific chapter. See section "Specific Camera Features" on page 20.

Setting	Description
# Blocks	Number of memory blocks of the hypermotion camera to be used, if the connected camera supports this feature. The number of blocks displayed in the main menu depends on the number of blocks specified in this parameter. 1 to 4 memory blocks can be used (default: 1).
Pre-Roll	Length of the preroll for the cue points defined on the material recorded from the hypermotion camera. The **Last Cue** command will go to the desired TC - preroll if the material is available. If not, the preroll is not applied.
PGMSpeed	PGM speed that is to be applied for playing back material recorded on the hypermotion camera using the **SHIFT+PLAY** keys.
2ndLever	Secondary lever range to be applied for playing back material recorded on the hypermotion camera.

3.2.3. Creating a Clip from a Hypermotion Camera

When the camera is replaying its content into the EVS server, you can clip it automatically directly from the remote controlling the camera.

Use the **IN** and **OUT** keys and the **F_ keys** to clip the record train corresponding to the hypermotion camera and to store it at a clip position. So you can clip the hypermotion camera without having the control on a PGM, and without having to wait for all the content to be recorded on the server.

Once you have played back the material recorded in the hypermotion camera, it is available in the record train of the camera as defined in the **Recorder** setting (p6.4, F2). You can now create clips with this material.

To do this, proceed as follows:

1. Come back to the LSM mode with **SHIFT+D** (with remote in hypermotion+LSM mode) or use another remote (with remote in hypermotion only mode).
2. Load the relevant record train on the PGM.
3. Jog in the material and add a MARK IN, MARK OUT as usual to create the requested clip.

3.2.4. Managing Cue Points

When the controller controls the camera, press **Mark** to define and set up to 255 cue points. You can add the cue points on the current block in record mode.

When the **Cues** parameter is set to **On**, you can press the **Last Cue** key to call back the cue points. As cue points are managed by block, select first the requested block to be able to recall the cue points defined in this block.

Refer to the following topics for more information on cue point management:

- "LCD Menu on the Remote Panel" on page 12
- "Key Commands on the Remote Panel" on page 9
- Specific features of each camera model for more information on cue point management.

3.2.5. Managing Memory Blocks

Defining the Number of Memory Blocks

Some cameras allow the users to split the memory into several blocks of the same size. Before recording material on the hypermotion camera, you should specify how many memory blocks you are going to use (1, 2, 3, or 4 blocks). By default, only one memory block is defined.

Note
When using more than one memory block, the blocks are considered as independent units. That means that you have to manually shift from one block to the other to continue recording on the next block.

To define the number of memory blocks on a hypermotion camera, proceed as follows:

1. In the hypermotion menu, press **MENU** to open the secondary menu.
2. Press **A** to activate the **# Blocks** field. This field specifies into how many memory blocks the camera memory will be split.
3. Jog to select the number of blocks (1 to 4).
4. Press **MENU** again to validate your choice and come back to the hypermotion main menu.

The camera memory is now split into the requested number of blocks, all with the same size. The **A** to **D** CAM keys now correspond to the 1 to 4 memory blocks respectively.

Color Code for Memory Block Status

The memory blocks status are displayed using a common color code both directly on the corresponding CAM keys on the LSM Remote Panel, and on the OSD monitoring of the recorder corresponding to the hypermotion camera.

On the OSD monitoring, the block system is displayed as a suite of 4 squares, ■■■■, each corresponding to a memory block.

The common color code is as follows:

Color	CAM Key	Block Symbol	Memory Block Status
Steady white	Block 1	1	Empty block
Steady green	Block 1	or 2	Recorded block
Blinking green	Block 1		Block in PLAY
Steady red	Block 1		Block in REC
Steady green	Block 1	<key>	Block in REC
Blinking green	Block 1	<key>	Block in REC

[1] Empty transparent square.

[2] White square for the Hi-Motion I Camera only.

Working with Single-Block Memory

The general recording and playback process when controlling the camera using a single-block memory is the following:

1. Start the recording on the camera by pressing **RECORD** on the remote controlling the hypermotion camera.
2. During the recording, you can set cue points (up to 255) on the recorded material by pressing **Mark**.
3. Stop the recording in one of the following ways:
   - Press **Last cue** to position the camera on the previous cue, taking the preroll into account.
   - Jog the dial to position the camera on the requested image.
   - Press **TAKE** to stop the recording.
4. Press **PLAY** to start the playback.

During the playback, the material played on the hypermotion camera is recorded into the server via the SDI connection.

Working with Multiple-Block Memory

The general recording and playback process when controlling the camera using a multiple-block memory is the following:

1. Press the **A** to **D** CAM key corresponding to the memory block (1 to 4) on which you want to record the material.

2. Start the recording on the camera by pressing **RECORD** on the Remote Panel controlling the hypermotion camera. The material starts recording in loop mode on a memory block.
   - If you press **RECORD** for the first time after selecting the requested block number, all memory blocks are erased and the recording starts on the first one.
   - If you press **RECORD** subsequently and a block is selected, the recording starts on the currently selected memory block.
   - If you press **RECORD** subsequently but no block is selected, the recording starts on the first available block.
3. Press **TAKE** to stop recording on the current block and start recording on the first free block, if available.
4. Stop the recording in one of the following ways:
   - Press **Last cue** to position the camera and cue to the first recorded frame of the block.
   - Jog the dial to position the camera on the requested image.
   - Select another block, to load the first frame recorded on this block in play mode.
5. Press **PLAY** to start the playback.

During the playback, the material played on the hypermotion camera is recorded into the server via the SDI connection.

Example

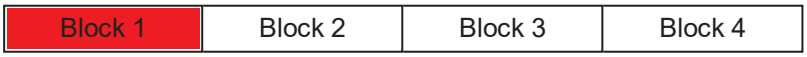
The following steps provide an example for a typical use of the LSM Remote commands with a hypermotion camera:

NOTE

As the general behavior of some keys differs with the FOR-A FT-One camera, a specific example has been added to the section dedicated to this camera. See section " FOR-A FT-One Camera" on page 23

1. Initially, the blocks are recorded or empty

2. Press RECORD on the remote to delete any recorded material on the blocks and start the recording in loop mode on block 1 (first use of this key).



3. Press TAKE to stop recording on the current block, and start recording on the next available one (block 2). At the same time, the playback starts on block 1.

4. Press CLEAR to stop the playback on block 1 and delete the material recorded on that block. As the block 2 is being recorded, no record is started on block 1.

5. Press TAKE to stop the record on Block 2 and start it on the first available block (block 1). Playback starts on block 2.

6. Press TAKE again to stop the record on block 1 and start it on the first available block (block 3). The running playback on block 2 is not affected.

7. Press CAM A to cue block 2 at the beginning, and load the last recorded frame on block 1 in play mode. The record carries on on block 3.

8. Press CAM C to stop the recording on block 3 and start it on the first available block (block 4). The last recorded frame on block 3 is loaded in play mode.

9. Press TAKE to stop the record on block 4. As no free block is available, the recording does not start on another block.

10. Press CLEAR to stop the play on block 3, delete the material on block 3 and start recording on block 3.

11. Once block 3 has been recorded, the record ends as all the other blocks contain recorded material.

3.2.6. Using Speedbreak

The Speedbreak Functionality

Because hypermotion cameras record a lot more pictures than classical cameras, it is not efficient to review everything in slow motion. Operators often adapt the speed during replay: faster before the action they want to see on air, then slower during the action to fully benefit from the hypermotion recording, then again faster after the action.

The Speedbreak functionality has been developed to ease this process by identifying beforehand the points where the speed should change.

How to Use Speedbreak

1. Make sure the Speedbreak mode is active on the Remote Panel (See section "LCD Menu on the Remote Panel" on page 12).
2. Call a sequence back by pressing the **CAM** key of the requested block (for example).

   Previously introduced IN/OUT points are not taken into account when you are playing the sequence with the jog.

3. Jog in the sequence and define an IN point (compulsory) and an OUT point (optional) with the IN and OUT keys.

   If required, delete these points using the **CLEAR** + **IN**/**OUT** keys.

4. Start the replay using the **PLAY** button or the lever.
   - If a speed is defined on the Remote Panel, the replay starts at this defined speed.
   - If not, the replay starts at **PGMSpeed**.

The replay in Speedbreak mode is thus performed at the following speed

- Before the IN point: speed defined on the Remote Panel or **PGMSpeed**.
- Between the IN and the OUT points: nominal speed.
- After the OUT point: speed defined on the Remote Panel or **PGMSpeed**.

Managing IN and OUT Points

When the Speedbreak functionality is active:

- IN and OUT points are displayed on the OSD of the hypermotion recorder.
- IN and OUT points are memorized per block.
- IN and OUT points are deleted when:
  - A block is recorded again.
  - The number of blocks is modified.
  - The configured connection type or port is modified.
  - Multicam is restarted.

3.3. Specific Camera Features

3.3.1. Introduction

The subsections below describe the differences and variations of several camera models against the standard features described previously in this chapter.

The following sections are based on the manufacturer's camera name. The table below provides a direct access to the specific sections based on the commercial names of the cameras:

Commercial Name	Manufacturer
Antelope	Vision Research
FASTCAM	Photron
FOR-A VFC-7000	FOR-A
FOR-A FT-One	FOR-A
Hi-Motion I	ARRI
Hi-Motion II	NAC/Ikegami
Sprintcam	Vision Research
Superloupe	Vision Research
Vision Research	Vision Research
X-Mo	Vision Research

3.3.2. FOR-A VFC-7000 Camera

Application Start

At application start, the recording starts on the first memory block.

Parameter Values

The tables below list the parameter value, or value range that are specific to the camera.

The configuration parameters are defined in the Multicam Configuration window, Operation page, Hypermotion controller section.

Configuration Parameter	Value
Port	Ethernet
Protocol	UDP

The operational parameters are defined in the Hypermotion mode of the Remote Panel, in the LCD secondary menu.

Operational Parameter	Value Range	Default Value
# Blocks	1 to 4	1
Pre-Roll	from 00s00fr to 5s00fr	00s00fr
PGMSpeed	50, 100, 200, 400%	100
2nd Lever	+/- 1000%, 0-1000%	+/- 1000

Specific Behavior of Remote Panel Keys

- **RECORD**: Pressing this key while the current block is recording clears all memory blocks and starts recording on the first one.
- **RECORD**: The Remote beeps if the CAM key refers to an empty block.
- **TAKE**: This key is operational in ARM mode.
- **CLEAR**: Pressing this key deletes the current memory block data.

Cue Points Management

NOTE

The cue points are only operational when all memory blocks have been recorded once.

- When a new ARM/REC command is issued on a block, all its cue points are cleared.
- If the **Last Cue** command cannot access the desired TC preroll, the player remains on the current cue point.
- If the **Last Cue** command refers to a TC that does not exist anymore, the key beeps but the OSD still displays the number of the cue that you wanted to go to.
- Cue points can be marked across several blocks but the recall is limited to the currently selected block.

  Example:

  - While recording on memory block 1, mark cue points 1, 2, and 3 on memory block 1.
  - Press **TAKE** to start recording on block 2 and mark cue points 1, 2, and 3.
  - Press **TAKE** and select memory block 2. The **Last Cue** command scrolls through the cue points of block 2.
  - To go through cue points of another block, select that block first, then press **Last Cue**.
- On OSD, the first information, displayed in white, refers to the cue points on the playing block while the second information, displayed in red, refers to the recording block.

3.3.3. FOR-A FT-One Camera

Application Start

At application start, when the block numbers has been selected, the camera automatically starts recording on the first memory block.

Parameter Values

The tables below list the parameter value, or value range that are specific to the camera.

The configuration parameters are defined in the Multicam Configuration window, Operation page, Hypermotion controller section.

Configuration Parameter	Value
Port	Ethernet
Protocol	UDP

The operational parameters are defined in the Hypermotion mode of the Remote Panel, in the LCD secondary menu.

Operational Parameter	Value Range	Default Value
# Blocks	1 to 4	1
Pre-Roll	from 00s00fr to 5s00fr	00s00fr
PGMSpeed	50, 100, 200, 400, 800, 1600%	100
2nd Lever	+/- 1600%, 0-1600%	+/- 1000

Specific Behavior of Remote Panel Keys

- **RECORD**: Pressing this key when no block is in RECORD and no block is selected starts recording on the first block. Previously recorded material remains unchanged.
- **RECORD**: Pressing this key while the current block is recording clears all memory blocks in play or recorded state. The material on the current recording block is not deleted. It is moved to the first block, and the camera starts recording on the next empty block (block 2).
- **RECORD**: The Remote beeps if the CAM key refers to an empty block.
- **TAKE**: This key is operational in REC STANDBY mode. When the user presses the **TAKE** key, if a block was in play mode, it remains in this mode. If no block was in play mode, the previous recording block starts playing.
- **CLEAR (+CAM key)**: Pressing the CLEAR key deletes the data on the memory block that is in PLAY (or on the selected block) and shifts the recording block to the left.

Cue Points Management

NOTE

The cue points are only operational when all memory blocks have been recorded once.

- When a new ARM/REC command is issued on a block, all its cue points are cleared.
- If the **Last Cue** command cannot access the desired TC preroll, the player remains on the current cue point.
- If the **Last Cue** command refers to a TC that does not exist anymore, the key beeps but the OSD still displays the number of the cue that you wanted to go to.
- Cue points can be marked across several blocks but the recall is limited to the currently selected block.

  Example:

  - While recording on memory block 1, mark cue points 1, 2, and 3 on memory block 1.
  - Press **TAKE** to start recording on block 2 and mark cue points 1, 2, and 3.
  - Press **TAKE** and select memory block 2. The **Last Cue** command scrolls through the cue points of block 2.
  - To go through cue points of another block, select that block first then press **Last Cue**.
- On OSD, the first information, displayed in white, refers to the cue points on the playing block while the second information, displayed in red, refers to the recording block.

Memory Block Management

General Principle

On the FOR-A FT-One camera, the blocks that are freed up are moved to the left. Therefore, we can consider that the general principle for block management is the following:

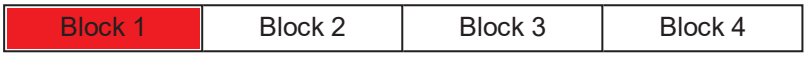
- The recorded blocks are found in first position(s).
- The recording blocks are found after the recorded blocks.
- The empty blocks come in last position.

Example

The following steps provide an example for a typical use of the LSM Remote commands with a hypermotion camera:

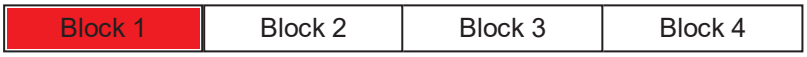
1. Initially, the blocks are recorded or empty

2. Press RECORD on the remote to delete any recorded material on the blocks and start the recording in loop mode on block 1 (first use of this key).



3. Press TAKE to stop recording on the current block, and start recording on the next available one (block 2). At the same time, the playback starts on block 1.

4. Press CLEAR to stop the playback on block 1 and delete the material recorded on that block. Block 2 is still recording, and becomes block 1.



5. Press TAKE to stop the record on block 1 and start the record on the first empty block (block 2). Playback starts on block 1.

6. Press CAM D. The Remote beeps because the block is empty.

7. Press TAKE again to stop the record on block 2 and start it on the first available block (block 3). The running playback on block 1 is not affected.

8. Press CAM A to cue up block 1 at the beginning. The record carries on on block 3.

9. Press TAKE to stop the recording on block 3 and start it on the first available block (block 4).

10. Press TAKE to stop the record on block 4. As no free block is available, the recording does not start on another block.

11. Press CLEAR +C to delete the material on block 3. Block 4 shifts to the left (becomes block 3). Recording starts on block 4.

12. Once block 4 has been recorded, the record ends as all the other blocks contain recorded material.

3.3.4. Hi-Motion I Camera

Camera Names

The cameras manufactured by ARRI are sold as Hi-Motion I cameras on the market.

Application Start

At application start, this camera is in ARM mode and the recording starts on the first memory block.

Parameter Values

The tables below list the parameter value, or value range that are specific to the camera.

The configuration parameters are defined in the Multicam Configuration window, Operation page, Hypermotion controller section.

Configuration Parameter	Value
Port	RS422
Protocol	Sony 9-PIN

The operational parameters are defined in the Hypermotion mode of the Remote Panel, in the LCD secondary menu.

Operational Parameter	Value Range	Default Value
# Blocks	1 to 4	1
Pre-Roll	from 00s00fr to 5s00fr	00s00fr
PGMSpeed	50, 100, 200, 300, 400,1000%	100
2nd Lever	+/- 1000%, 0-1000%	+/- 1000

Specific Behavior of Remote Panel Keys

- **RECORD**: The Remote does not beep if the CAM key refers to an empty block.
- **RECORD**: Pressing this key while the current block is recording does not send any command to the camera.
- **TAKE**: This key is operational in ARM mode.
- **CLEAR**: This key has no effect.

Cue Points Management

- When a new ARM/REC command is issued on a block, all its cue points are cleared.
- Cue points can only be marked when working with single-block memory.
- If the **Last Cue** command cannot access the desired TC preroll, the player remains on the current cue point.
- If the **Last Cue** command refers to a TC that does not exist anymore, the player jumps to the beginning of the current memory block.

3.3.5. Hi-Motion II Camera

Camera Names

The cameras manufactured by NAC/Ikegami are sold as Hi-Motion II cameras on the market.

Application Start

At application start, this camera is in ARM mode and the recording starts on the first memory block.

Parameter Values

The tables below list the parameter value, or value range that are specific to the camera.

The configuration parameters are defined in the Multicam Configuration window, Operation page, Hypermotion controller section.

Configuration Parameter	Value
Port	RS422
Protocol	Sony 9-PIN

The operational parameters are defined in the Hypermotion mode of the Remote Panel, in the LCD secondary menu.

Operational Parameter	Value Range	Default Value
# Blocks	1 to 4	1
Pre-Roll	from 00s00fr to 5s00fr	00s00fr
PGMSpeed	50, 100, 200, 300, 400,1000%	100
2nd Lever	+/- 1000%, 0-1000%	+/- 1000

Specific Behavior of Remote Panel Keys

- **RECORD**: The Remote beeps if the CAM key refers to an empty block.
- **RECORD**: Pressing this key while the current block is recording does not send any command to the camera.
- **TAKE**: This key is operational in ARM mode.
- **CLEAR**: Press this key to delete the current memory block data.
- **CAM key**: When the CAM key is pressed for the first time after selecting the number of blocks you want to work with, the block is loaded at the frame specified in the camera menu. When the CAM key is pressed subsequently, the block is loaded at the last frame it was last loaded on.
- **ENTER + CAM key**: Locks the corresponding memory block.

TAKE Key Behavior

Depending on the operational mode of the Hi-Motion II camera, the **TAKE** key will behave differently, as explained below:

- In **Continuous** mode, when the **TAKE** key is pressed, the record stops on the current block and starts on the next free block. Pressing **TAKE** on the last block stops the recording. This corresponds to the standard behavior.
- In **Loop** mode, when the **TAKE** key is pressed, the record stops on the current block and starts on the next free block. When the **TAKE** key is pressed on the last block, the recording starts again on the first block.
- In **Single** mode, when the **TAKE** key is pressed, the record stops on the current block. No record is started on another block.

Cue Points Management

- When a new ARM/REC command is issued on a block, all its cue points are cleared.
- If the **Last Cue** command cannot access the desired TC preroll, the player remains on the current cue point.
- If the **Last Cue** command refers to a TC that does not exist anymore, the player jumps to the beginning of the current memory block.

- Cue points can be marked across several blocks but the recall is limited to the currently selected block.

  Example:

  - While recording on memory block 1, mark cue points 1, 2, and 3 on memory block 1.
  - Press **TAKE** to start recording on block 2 and mark cue points 1, 2, and 3.
  - Press **TAKE** and select memory block 2. The **Last Cue** command scrolls through the cue points of block 2.
  - To go through cue points of another block, select that block first then press **Last Cue**.
- On OSD, the first information, displayed in white, refers to the cue points on the playing block while the second information, displayed in red, refers to the recording block.

3.3.6. Photron Camera

Camera Names

The cameras manufactured by Photron are sold under the following product name:

- FASTCAM

Application Start

At application start, this camera is in ARM mode and the recording starts on the first memory block.

Parameter Values

The tables below list the parameter value, or value range that are specific to the camera.

The configuration parameters are defined in the Multicam Configuration window, Operation page, Hypermotion controller section.

Configuration Parameter	Value
Port	RS422
Protocol	Sony 9-PIN

The operational parameters are defined in the Hypermotion mode of the Remote Panel, in the LCD secondary menu.

Operational Parameter	Value Range	Default Value
# Blocks	1 to 4	1
Pre-Roll	from 00s00fr to 5s00fr	00s00fr
PGMSpeed	50, 100, 200, 300, 400,1000%	100
2nd Lever	+/- 1000%, 0-1000%	+/- 1000

Specific Behavior of Remote Panel Keys

- **RECORD**: Pressing this key while the current block is recording does not send any command to the camera.
- **RECORD**: The Remote beeps if the CAM key refers to an empty block.
- **TAKE**: This key is operational in ARM mode.
- **CLEAR**: This key has no effect.

Cue Points Management

- When a new ARM/REC command is issued on a block, all its cue points are cleared.
- If the **Last Cue** command cannot access the desired TC preroll, the player remains on the current cue point.
- If the **Last Cue** command refers to a TC that does not exist anymore, the player jumps to the beginning of the current memory block.
- Cue points can not be marked when working on several memory blocks.

3.3.7. Vision Research Camera

Camera Names

The Vision Research cameras are also sold under the following product names:

- Vision Research
- X-Mo
- Superloupe
- Antelope
- Sprintcam

Camera Models

This section applies to the following Vision Research camera models:

- Phantom V642
- Miro Series
- Phantom Flex4K

Application Start

At application start, the recording does not start automatically.

Parameter Values

The tables below list the parameter value, or value range that are specific to the camera.

The configuration parameters are defined in the Multicam Configuration window, Operation page, Hypermotion controller section.

On Vision Research cameras, two protocols can be used, each with a different port:

Values	Port	Protocol
Value set 1	RS422	ASCII
Value set 2	Ethernet	TCP

The operational parameters are defined in the Hypermotion mode of the Remote Panel, in the LCD secondary menu.

Operational Parameter	Value Range	Default Value
# Blocks	1 to 4	1
Pre-Roll	from 00s00fr to 5s00fr	00s00fr
PGMSpeed	50, 100, 200, 300, 400,1000%	100
2nd Lever	+/- 1000%, 0-1000%	+/- 1000

Specific Behavior of Remote Panel Keys

- **RECORD**: Pressing this key while the current block is recording clears all memory blocks and starts recording on the first one.
- **RECORD**: The Remote beeps if the CAM key refers to an empty block.
- **TAKE**: This key is operational in any mode.
- **CLEAR**: Press this key to delete the current memory block data.

Cue Points Management

- When a new ARM/REC command is issued on a block, all its cue points are cleared.
- If the **Last Cue** command cannot access the desired TC preroll, the player remains on the current cue point.
- If the **Last Cue** command refers to a TC that does not exist anymore, the key beeps but the OSD still displays the number of the cue that you wanted to go to.
- Cue points can be marked across several blocks but the recall is limited to the currently selected block.

  Example:

  - While recording on memory block 1, mark cue points 1, 2, and 3 on memory block 1.
  - Press **TAKE** to start recording on block 2 and mark cue points 1, 2, and 3.
  - Press **TAKE** and select memory block 2. The **Last Cue** command scrolls through the cue points of block 2.
  - To go through cue points of another block, select that block first then press **Last Cue**.
- On OSD, the first information, displayed in white, refers to the cue points on the playing block while the second information, displayed in red, refers to the recording block.

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