



Callisto-R

Rack-mount digital component asynchronous vision switcher

(with Callisto-C remote control unit)

Operation manual

(v1.0b57)

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1.0 Introduction - please read the following notes. They will help you to get the most from your switcher.

Note1: throughout the text, buttons and controls are indicated by **bold red text**, and display information in “quotation marks”.

Note 2: Some of the switcher settings are stored in battery-backed memory. If the switcher is not used for a long time, it is possible that some of these settings may revert to the default condition. To change your switcher settings, see the menu section starting on page 6. For hybrid switchers users, see also the menu settings on page 9.

Note 2: If you have any comments or questions, contact information is available on our web site <http://www.brickhousevideo.com>. Firmware upgrades will be issued from time to time at no charge to the owner, subject to the condition that the user undertakes to return all original devices.

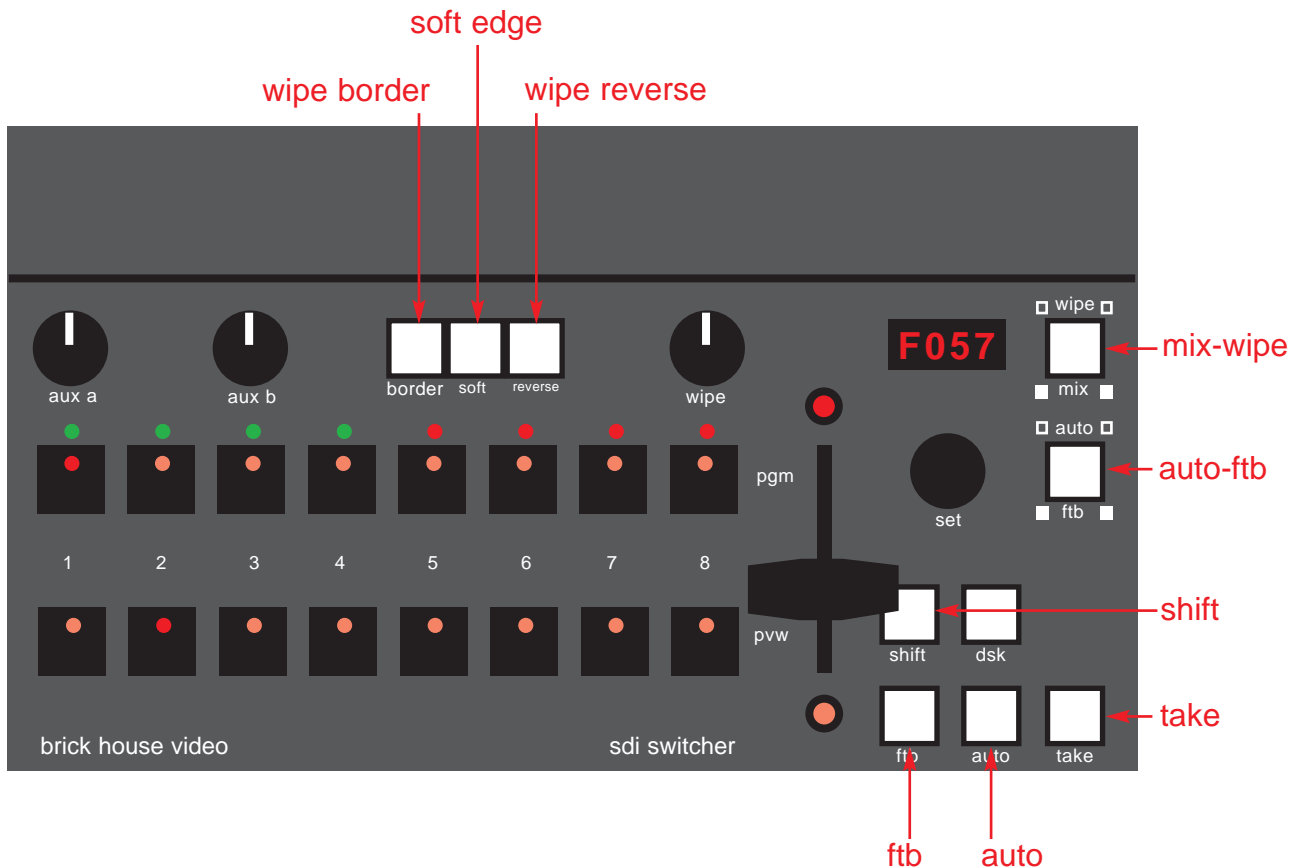
1.1 Overview

Callisto-R is an 8 input SDI rack-mount switcher for use in fixed installations in conjunction with the VTB-2DR remote control panel. It offers cut, auto/manual mix and wipe and fade to black, together with monitoring outputs AUX A and AUX B. Both programme and preview outputs are available in SDI and composite. All inputs are terminated in 75R. Eight composite inputs and a DSK are available as options. **Note:** your remote panel may differ in appearance from the illustration shown.

The unit is protected by low voltage and high voltage internal fuses against the unlikely event of a malfunction. The switcher is fitted with frame stores as standard, so it will accept asynchronous inputs, and can operate in stand-alone mode, or you can genlock the switcher to a reference source. Note that in frame mode, there is a one frame delay in the signal path. If this is not acceptable, you can work in line mode with the sources genlocked. In this mode, the total delay through the switcher is about 1 line. The programme, preview signal paths are 10-bit processing, while the composite outputs are 8-bit.

The cable between the remote unit and the main frame is a fully-wired 9-pin D-type. As all pins are used on this cable, a standard 9-pin RS-422 cable will not work with this switcher. The switcher has two modes of fader operation; local and remote (see set-up menu). In local mode, the fader control is connected directly to the main frame to give a smooth feel to the operation. This limits the cable length to 250m. In remote mode, the fader operation is less smooth, but the maximum cable length is 1200m. Note that these figures depend on the quality of cable used for the connection.

As with all switchers of this type, the switcher uses two full frame stores to handle asynchronous inputs. Accordingly, you will notice when working in frame mode that switching (hot-cutting) on the programme bus causes the output to freeze for one frame before making the switch. If you wish to avoid this condition, the switcher should be set to work in line mode and the sources genlocked. To cut between sources in field mode, we recommend that you use the **take** function.



1.2 Setting up

The following sections on operation refer to the nomenclature used in the diagram above.

1.2.1 Connect the Callisto-C remote panel to the Callisto-R main frame via an RS-422 cable. This cable should be of the fully-wired type.

Important note: It is essential that you use a fully-wired RS-422 cable for this connection. In particular, pins 1 and 9 on the cable connectors should be included in the connection set. If you do not use a cable that includes these pins, no damage to the switcher will result, but the remote panel will not function. **DO NOT** use any cable that contains wiring reversal of any type. See Appendix 1 for details of the rear panel connectors.

Assuming that you have a suitable cable installed, apply power to the rack-mount unit. The remote unit will now start up, and you should see message "Fxxx" in the red 4-character display, and the **mix-wipe** and **auto-ftb** buttons will be lit. On the mainframe, the data i.e.d. should flash at about 1Hz. If you see the message **COM?** on the remote, check that the cable is fully wired as described in Appendix 1.

1.2.2 Connect your SDI source outputs to the switcher via SDI inputs IN1 to IN8.

1.2.3 Connect a colour monitor (composite input) to the output PGM CV. With the **auto** switch set to off, the fader in mid-position and **mix-wipe** set to wipe, you should see a split screen of sources 1 and 2. You can also test the output by selecting a test pattern; see section 4.1. The preview output is also available in composite and SDI. If you need an extra programme output, and do not require the preview output, it can be configured to follow the programme - see section 3.2.1 for more information.

2.0 Operation

Callisto operates in conventional switcher fashion. In other words, the upper bank on the control panel is always the programme bus.

2.1 Manual wipe mode

With the **mix-wipe** switch set to wipe, the fader will wipe between the selected sources according to the **wipe select** switch setting. Settings C1 to C3 are for customer-specified wipes, and may be requested at time of purchase. Please contact Brick House Video or your local dealer for details. Operation of the reverse switch will reverse the origin of the wipe.

2.2 Manual mix mode

With the **mix-wipe** switch set to mix, the fader will mix between the selected sources.

2.3 Auto mix/wipe mode

Press **auto-ftb** so that it is unlit. The display will read **Axxx**, where **xxx** is the speed setting for the auto transition in frames per second. Use the **set** control to adjust this as required. With the **auto-man** switch set to auto, the fader will (according to the setting of the **mix-wipe** switch) mix or wipe between the selected sources when the **take** button is pressed. The speed of the transition offers the range 0 - 150 frames in 1 frame increments. Note that the **take** button is disabled during transitions.

2.4 Fade to black

Press **auto-ftb** so that it is lit. The display will read **Fxxx**, where **xxx** is the speed setting for the fade to black transition in frames per second. Use the **set** control to adjust this as required. Press **ftb** and the picture will fade down at the set rate. Press again, and the picture will fade up. The speed of the transition offers the range 0 - 150 frames in 1 frame increments. The **ftb** button is always live, so you can reverse the fade at any time during its operation. During the transition, the **ftb** button will flash, and remain lit when the output is faded to black.

2.5 Auxiliary outputs

Outputs AUX A and AUX B are controlled by the front panel rotary switches, and provide independent monitoring of the sources in SDI.

2.6 Composite input source selection

Note: the switcher must be in hybrid mode for this function. See page 8 for more information. If your switcher has been fitted with the composite input option, you can change any of the inputs from SDI to composite format. To do this, hold down the shift key and press the preview bus switch corresponding to the input you wish to be composite. The l.e.d. above that switch will change from green (SDI) to red (composite). Once the change is effected, you can use this analogue source in the usual way. To revert a channel to SDI. hold down the shift key and press the preview bus selector again.

Important note on programme bus switching: This switcher is of the dual-converter type. Any analogue source selection made on the programme bus will result in a temporary freeze

on the output as the converters resynchronise. For this reason, we do not recommend that you use the programme bus for “hot-cutting” when on-air, unless you are working in line mode with the sources genlocked to a common reference..

2.7 DSK set-up and operation

To enter DSK set-up mode, hold down the shift key and press DSK. The DSK light will flash. In this mode, the display reads “DXXX”. This represents the DSK transition rate, and can be set to any value between 0 and 150 frames with the SET control.

In DSK set-up, the programme and preview source buttons indicate the key and fill channels respectively. The default positions are inputs 7 and 8, but others may be selected if required. The switcher does not retain memory of the C and D channel inputs, so it may be a good idea to use inputs 7 and 8, so that the DSK is correctly set up each time you switch on. Once you are happy with the DSK settings, press DSK again, and the switcher will return to normal operation. Press DSK again, and the button will flash while the DSK is faded up. Press once more, and the DSK fades down.

Note: future issues of firmware for the DSK will include adjustments for gain, soft clip and black level. Please contact Brick House Video for further details.

3.0 Menus

The menu functions are allocated as follows:

Operation	Engineering	Composite	GPI
Test generator	Preview output	Monitoring	GPI input function
Soft edge	625/525		
Border width	V-fade		
Border colour	Field selection		
Aspect ratio	No-signal output		
Editor status	Audio operation		
	Frame/line mode		
	Output sync		
	GPI polarity		
	(Pending)		
	Fader hysteresis		
	Input 8 to bars		
	Fader status		
	SDI/hybrid switch		
	Software version		
	Analogue delay		

3.1 Operation menu (Ops1)

To enter the operation menu mode, hold down **shift** and press **ftb**. The display will read “Ops1”, and **ftb** and **take** will flash slowly. The lower case legends beneath the programme bank 1 - 4 and preview bank 1 - 4 source selector buttons now apply. To exit this menu, press **take** at any time. Note that any function is selected by pressing the corresponding source button; pressing it again or pressing another source selector button will deselect that function.

3.1.1 Test pattern generator

Press **programme 1** to select test patterns. Rotating the **set** control will cycle through 75% bars, SDI test field, grey field and colour field. When the display reads “OFF”, the programme output will reappear.

3.1.2 Soft edge

Press **preview 1** and use the **set** control to adjust the level of wipe transition softness in the range 1-15.

3.1.3 Border width

Source selector **programme 2** sets the border width. Use the **set** control for the desired result; the display will show the range “WD1” to “WD5”

3.1.4 Border colour

Source selector **preview 2** sets the border colour. In the display, you will see legends, representing the six primary colours, white and black. At the end of this sequence, you will then see the legends **CUS1**, **CUS2** and **CUS3**. These three settings allow you to set and store border colours of your own. To adjust a user setting, hold down the **shift** key and adjust **set** for the required colour. Releasing the **shift** key will store the setting for future use.

3.1.5 Aspect ratio

Source selector **programme 3** sets the aspect ratio as follows:

4:3 - unblanked 4:3

LTB - “letterbox”

Use the **set** control for the desired result; the display will show the option selected. Note: the LTB settings are not aspect-ratio converted.

3.1.6 Remote and function settings

Preview 3 and **preview 4** are reserved for future development, and should not be used at this stage.

3.2 Composite menu (Cmp1) (only available when switcher is in hybrid mode)

To enter the composite menu mode, hold down **shift** and press **ftb**. The display will read “Ops1”, and **take** will flash slowly. Press **ftb**, and the display will now read “Cmp1”. To exit this menu, press **take** at any time.

3.2.1 Output monitoring

In hybrid mode, the connector labelled “cv mon” on the main frame rear panel is used for composite monitoring. Press **programme 1**, and rotate the **set** control to choose from the following options:

Display	Function
SDI	Aux B controls the Aux B SDI output, “cv mon” gives no output
CV	Aux B controls the analogue monitoring and Aux B out tracks Aux A
AUXA	Aux B output tracks AUX A output

3.3 Engineering menu (Eng1)

To enter this mode, hold down **shift** and press **ftb**. The **take** light will flash, and the display will show “Ops1”. Press **ftb** repeatedly until the display reads “Eng1”. To exit this menu, press **take** at any time.

3.3.1 Preview output selection

Press **programme 1** to select preview status. The display should read “PVW”. In this mode, the preview outputs act show the “next” state of the switcher. Rotate the **set** control so that the display shows “PROG”. The preview outputs will now echo the programme outputs.

3.3.1 625/525

Press **preview 1** and use the **set** control to change to the TV standard required. The display will show **625** or **525** accordingly.

3.3.3 V-fade

Press **programme 2** and use **set** to switch between “FTB” and “VFAD”. In VFAD mode, the switcher will perform a V-fade, which consists of a fade to black, a bus switch, and then a fade to picture.

3.3.4 Field selection

Press **preview 2** and use **set** to switch between “FLD1” and “FLD2”. This determines whether the switcher performs all cuts on field 1 or field 2.

3.3.5 No-signal option (active in frame mode only)

Press **programme 3** and use **set** to switch between the following:

BLK - the switcher will write black to the output when an unused input is selected

FRZ - the switcher will display the last complete frame of the previous source when an unused input is selected.

PASS - the switcher will display the input regardless of whether a source is connected or not.

3.3.6 Audio mode selection

Press **preview 3** and use **set** to switch between the following:

LK - Embedded audio is stripped and discarded

SW - Embedded audio is switched on the programme bus. During transitions, the audio switch is performed at 50% of the transition. Note that this is not a fade, but a hard switch, so there may be a “click” in the audio output at the switch point.

3.3.7 Synchroniser mode

Press **programme 4** and use **set** to switch between the following:

FRME - the on-board synchronisers are enabled, and you can connect asynchronous sources to the switcher. Note that, in this mode, the switcher introduces a one-frame delay into the transmission path.

LINE - the on-board synchronisers are bypassed, and the line stores are enabled. In this mode, you must genlock the sources to the switcher. The total delay through the switcher is now approximately 1 line.

3.3.8 Sync adjustment

Press **preview 4** and use **set** to adjust the display in the range **-127** to **+127**. This control varies the relative timing of the genlock outputs to the switcher programme output in increments of 1 line. This mode is especially useful when you are working in minimum delay mode (see section 3.1.8), as some sources (especially those consisting of an analogue source with an SDI converter require advance sync for correct operation.

3.3.9 Synchroniser mode

Press **programme 5** and use **set** to switch between the following:

GPI0 - GPI outputs are active low
GPI0 - GPI outputs are active high

3.3.10 Fader hysteresis

To ensure maximum stability of the fader action, a degree of hysteresis has been added to its operation. The normal setting is maximum. However, if you wish to make the fader more sensitive, you can reduce this setting. To do so, press **programme 6**. The display will read "HY6". Use the **set** control to reduce the level of hysteresis. Note that at low settings, the wipe may be unstable if the fader is left in mid-position.

3.3.11 Input bars

The switcher can be set up so that test colour bars are available on input 8. To do so, press **preview 6**. The display will read "TS8N". Use the **set** control to exchange this to "TS8Y". After exiting the menu, pressing **programme 8** will send 75% colour bars to the programme output.

3.3.12 Fader mode (see introduction, page 2)

If you wish to use extremely long cable lengths between the remote control unit and the main frame, you may wish to set the fader to "remote". This will make the fader operation less smooth. All other functions are unaffected. To do this, press **programme 7**. The display will read "FLOC". Use the **set** control to change this to "FREM".

3.3.13 SDI/Hybrid setting

If your switcher has the analogue conversion installed, the switcher needs to be in hybrid mode. To do this, press **preview 7**. The display will read "SDI". Use the **set** control to change

this to “HYB”.

3.3.14 Software version number

To check the software version installed, press **programme 8**. The display will read “X.XX”. Use the **set** control to show the build number for this version thus “bXX”.

3.3.15 Analogue switching delay

The analogue to SDI converters take time to settle after a change of input. To compensate for this, the switcher delays the operation of the programme bus when switching between analogue sources using the programme keys. The effect is to freeze the output for a specified number of frames when the programme bus is used to switch analogue sources. You can change this setting (default is 4 frames) by pressing **preview 8**. The display will read “DL4”. Use the **set** control to change this to “DL2” or “DL0”.

3.4 GPI menu (GPI1)

To enter this mode, hold down **shift** and press **ftb**. The **take** light will flash, and the display will show “Ops1”. Press **ftb** repeatedly until the display reads “GPI1”. To exit this menu, press **take** at any time.

3.4.1 GPI input assignment

Press **programme 1** and use **set** to select from the options listed in the display:

- Take - GPI1 will initiate a **take** operation when triggered
- FTB - GPI1 will initiate a fade to black operation when triggered
- PGM1 - GPI1 will select programme 1 when triggered
- PVW1 - GPI1 will select preview 1 when triggered

Similarly, use programme selectors 2-8 to set the other GPI inputs.

Note: models with serial number 91001 to 91025 are not fitted with the necessary hardware for GPI inputs. If in doubt, or if you wish to have this hardware installed, please contact us for an upgrade.. There is no charge for this service other than shipping.

**If you have any questions,
please telephone us on +44 2380 676026, fax us on +44 2380 583426,
send an e-mail to sales@brickhousevideo.com
or visit the web site for a list of contacts and distributors
www.brickhousevideo.com**

Appendix 1: Rear panel connector wiring

GPI in: These inputs are driven by active-low logic levels.

GPI out: The tally outputs are high-current open-collector types, and will sink 600mA at 36V.

a) GPI (15 pin D-type)

Pin	Identity
1	Tally out 1
2	Tally out 2
3	Tally out 3
4	Tally out 4
5	GPI in 1
6	GPI in 2
7	GPI in 3
8	GPI in 4
9	Tally out 5
10	Tally out 6
11	Tally out 7
12	Tally out 8
13	GPI out common (connect to tally supply if switching relays)
14	0V
15	0V

b) GPI (26 pin D-type)

Pin	Identity
1	Tally out 1
2	Tally out 2
3	Tally out 3
4	Tally out 4
5	GPI in 1
6	GPI in 2
7	GPI in 3
8	GPI in 4
9	NC
10	Tally out 5
11	Tally out 6
12	Tally out 7
13	Tally out 8
14	GPI out common (connect to tally supply if switching relays)
15	0V
16	0V
17	NC
18	NC
19	GPI in 5
20	GPI in 6
21	GPI in 7
22	GPI in 8
23	NC
24	NC
25	NC
26	NC

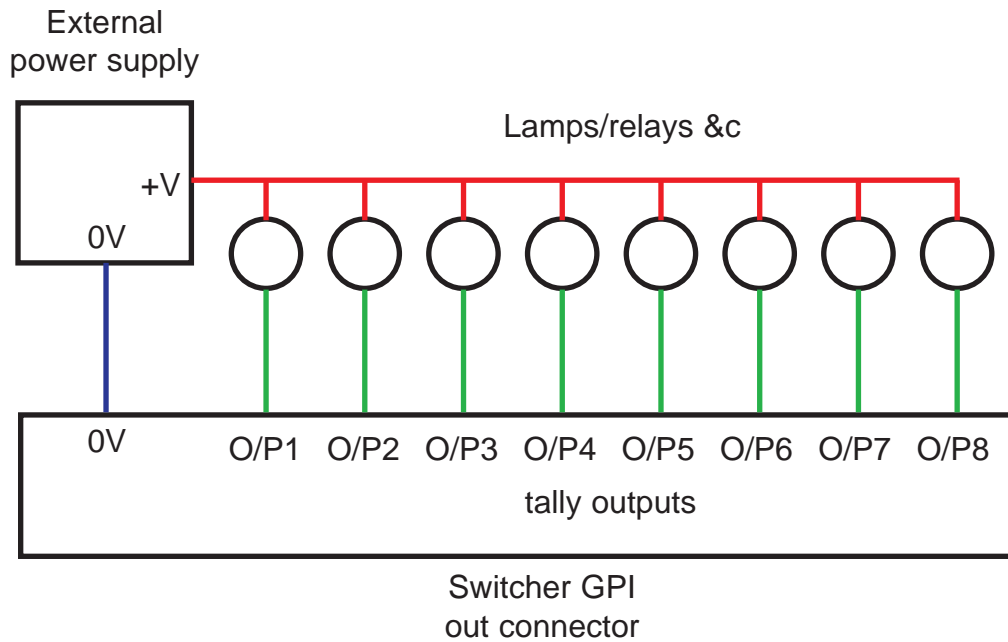
c) GPI (12 pin Hirose) for switchers with serial numbers 90128 and up

GPI in	Pin	Identity
	1	GPI in 1
	2	GPI in 2
	3	GPI in 3
	4	GPI in 4
	5	GPI in 5
	6	GPI in 6
	7	GPI in 7
	8	GPI in 8
	9	Reserved
	10	Reserved
	11	Reserved
	12	0V
GPI out	1	Tally out 1
	2	Tally out 2
	3	Tally out 3
	4	Tally out 4
	5	Tally out 5
	6	Tally out 6
	7	Tally out 7
	8	Tally out 8
	9	Reserved
	10	Reserved
	11	Reserved
	12	0V

Note: Switchers shipped before April 2004 do not have the GPI input software installed. Please consult Brick House Video for a free upgrade.

The corresponding plug for the GPI sockets is available from Hirose (<http://www.hirose.com>). The part number is HR10A-10P-12P. If this is not available, you can use the more expensive HR10-10P-12P.

See the next page for a diagram of a typical GPI output (tally) connection.



Example of wiring for open-collector GPI drivers

d) Remote (9 pin D-type)

Pin	Identity
1	0V
2	Comms TX-
3	Comms RX+
4	0V
5	Fader TX+
6	Fader TX-
7	Comms TX+
8	Comms RX-
9	+12V from mainframe

e) Editor (9 pin D-type)

Pin	Identity
2	Comms TX-
3	Comms RX+
4	0V
7	Comms TX+
8	Comms RX-