XPression

XPression Clips User Guide

Version 11.5

Thank You for Choosing Ross

You've made a great choice. We expect you will be very happy with your purchase of Ross Technology.

Our mission is to:

1. Provide a Superior Customer Experience
   - offer the best product quality and support
2. Make Cool Practical Technology
   - develop great products that customers love

Ross has become well known for the Ross Video Code of Ethics. It guides our interactions and empowers our employees. I hope you enjoy reading it below.

If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at *solutions@rossvideo.com*.

David Ross
CEO, Ross Video
dross@rossvideo.com

Ross Video Code of Ethics

Any company is the sum total of the people that make things happen. At Ross, our employees are a special group. Our employees truly care about doing a great job and delivering a high quality customer experience every day. This code of ethics hangs on the wall of all Ross Video locations to guide our behavior:

1. We will always act in our customers' best interest.
2. We will do our best to understand our customers' requirements.
3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

XPression Clips · User Guide

- Ross Part Number: **3500DR-019-11.5**
- Release Date: October 4, 2023. Printed in Canada.
- Software Issue: **11.5**

The information contained in this Guide is subject to change without notice or obligation.

Copyright

Patents

Patent numbers US 7,034,886; US 7,508,455; US 7,602,446; US 7,802,802 B2; US 7,834,886; US 7,914,332; US 8,307,284; US 8,407,374 B2; US 8,499,019 B2; US 8,519,949 B2; US 8,743,292 B2; GB 2,419,119 B; GB 2,447,380 B; and other patents pending.

Notice

The material in this manual is furnished for informational use only. It is subject to change without notice and should not be construed as commitment by Ross Video Limited. Ross Video Limited assumes no responsibility or liability for errors or inaccuracies that may appear in this manual.

Third Party Licenses

XPression INcoder makes use of FFmpeg licensed under the LGPLv2.1 and its source can be downloaded here.

FFmpeg was configured with the following options:

```
---pkg-config=pkg-config --pkg-config-flags=static
--extra-version=ffmpeg-windows-build-helpers

--disable-debug --disable-w32threads --arch=x86 --target-os=mingw32
--cross-prefix=/root/src/sandbox/cross_compilers/mingw-w64-i686/bin/i686-w64-mingw32

--enable-gray --enable-libopus --enable-libsnappy --enable-libsoxr --enable-libtheora

--enable-libvorbis --enable-libwebp --enable-libzimg --enable-libopenjpeg

--enable-libopenh264 --enable-libxml2 --enable-libdav1d --enable-cuda-llvm

--enable-libvpx --enable-nvenc --enable-nvdec --extra-libs=-lm --extra-libs=-lpthread

--extra-cflags=-DLIBTWOLAME_STATIC --extra-cflags=-DMODPLUG_STATIC
--extra-cflags=-DCACA_STATIC

--disable-amf --enable-libmfx --enable-avresample --extra-cflags='-mtune=generic'

--extra-cflags=-O3 --enable-shared --disable-static
--prefix=/root/src/sandbox/win32/ffmpeg_git_lgpl_n4.3.2_shared
```

A patch of changes to FFMPEG 4.3.2 is available in the downloaded source as xpvc_win.patch.

End User Software License Agreement

This End User Software License Agreement is a legal agreement between you (the "**Licensee**") and Ross Video Limited ("**Ross Video**") specifying the terms and conditions of your installation and use of the Software and all Documentation (as those terms are defined herein).

IMPORTANT:

BY DOWNLOADING, ACCESSING, INSTALLING OR USING THE SOFTWARE AND/OR DOCUMENTATION LICENSEE AGREES TO THE TERMS OF THIS AGREEMENT AND THE LICENSE GRANTED HEREUNDER SHALL BE EFFECTIVE AS OF AND FROM SUCH DATE. IF YOU DO NOT WISH TO ACCEPT THE TERMS AND CONDITIONS OF THIS AGREEMENT, DO NOT DOWNLOAD, ACCESS, INSTALL, REFER TO OR OTHERWISE USE THE SOFTWARE AND/OR DOCUMENTATION.

1. **INTERPRETATION.** In this Agreement, (a) words signifying the singular number include the plural and vice versa, and words signifying gender include all genders; (b) every use of the words "herein", "hereof", "hereto" "hereunder" and similar words shall be construed to refer to this Agreement in its entirety and not to any particular provision hereof; (c) reference to any agreement or other document herein will be construed as referring to such agreement or other document as from time to time amended, modified or supplemented (subject to any restrictions on such amendment, modification or supplement set forth therein); (d) every use of the words "including" or "includes" is to be construed as meaning "including, without limitation" or "includes, without limitation", respectively; and (e) references to an Article or a Section are to be construed as references to an Article or Section of or to this Agreement unless otherwise specified.
2. **DEFINITIONS.** In this Agreement, in addition to the terms defined elsewhere in this Agreement, the following terms have the meanings set out below:

   "**Affiliate**" means, with respect to any Person, any other Person who directly or indirectly controls, is controlled by, or is under direct or indirect common control with, such Person. A Person shall be deemed to control a Person if such Person possesses, directly or indirectly, the power to direct or cause the direction of the management and policies of such Person, whether through the ownership of voting securities, by contract or otherwise; and the term "controlled" and "controlling" shall have a similar meaning.

   "**Agreement**" means this End User Software License Agreement including the recitals hereto, as the same may be amended from time to time in accordance with the provisions hereof.

   "**Backup System**" means the secondary piece of Designated Equipment upon which the Software is installed and mirrored for the sole purpose of replacing a Primary System in the event such Primary System is not available or functioning properly for any reason.

   "**Change of Control**" means (a) the direct or indirect sale, transfer or exchange by the shareholders of a Party of more than fifty percent (50%) of the voting securities of such Party, (b) a merger or amalgamation or reorganization or other transaction to which a Party is party after which the shareholders of such Party immediately prior to such transaction hold less than fifty percent (50%) of the voting securities of the surviving entity, (c) the sale, exchange, or transfer of all or substantially all of the assets of a Party.

   "**Confidential Information**" means all data and information relating to the business and management of either Party, including the Software, trade secrets and other technology to which access is obtained or granted hereunder by the other Party, and

any materials provided by Ross Video to Licensee; provided, however, that Confidential Information shall not include any data or information which:

(i) is or becomes publicly available through no fault of the other Party;

(ii) is already in the rightful possession of the other Party prior to its receipt from the other Party;

(iii) is already known to the receiving Party at the time of its disclosure to the receiving Party by the disclosing Party and is not the subject of an obligation of confidence of any kind;

(iv) is independently developed by the other Party;

(v) is rightfully obtained by the other Party from a third party; or

(vi) is disclosed with the written consent of the Party whose information it is.

"**Designated Equipment**" shall mean (a) the hardware products sold by Ross Video to Licensee on which the Software is installed and licensed for use, as the same may be replaced from time to time by Ross Video; or (b) in the case of Software sold on a stand-alone basis, the equipment of Licensee on which the Software is to be installed and meets the minimum specifications set out in the Documentation.

"**Documentation**" shall mean manuals, instruction guides, user documentation and other related materials of any kind pertaining to the Software (whether in electronic, hard-copy or other media format) that are furnished to Licensee by or on behalf of Ross Video in relation to the Software.

"**Governmental Authority**" means (a) and federal, provincial, state, local, municipal, regional, territorial, aboriginal, or other government, governmental or public department, branch, ministry, or court, domestic or foreign, including any district, agency, commission, board, arbitration panel or authority and any subdivision of any of them exercising or entitled to exercise any administrative, executive, judicial, ministerial, prerogative, legislative, regulatory, or taxing authority or power of any nature; and (b) any quasi-governmental or private body exercising any regulatory, expropriation or taxing authority under or for the account of any of them, and any subdivision of any of them.

"**Improvements**" means all inventions, works, discoveries, improvements and innovations of or in connection with the Software, including error corrections, bug fixes, patches and other updates in Object Code form to the extent made available to Licensee in accordance with Ross Video's release schedule.

"**License Fee**" means the fee(s) payable in respect of the Software in accordance with the relevant invoice(s) or other purchase documents delivered in connection with this Agreement.

"License Period" means the period of time that Licensee will have the rights granted under this Agreement, as may be specified in a Quote.

"**Maintenance Fee**" means the yearly maintenance fee(s) payable by Licensee to Ross Video, as determined by Ross Video, for the support, maintenance and update of the Software after the expiry of the Maintenance Period as set forth in this Agreement.

"**Maintenance Period**" means, in connection with the Software, the maintenance period of one (1) year from the date of shipment unless otherwise specified in the table below:

Product Category	Software Maintenance Period
Switchers	For the life of the Designated Equipment
Routers (excluding Ultrix)	For the life of the Designated Equipment
Master Control System Software (Dash-Board)	For the life of the Designated Equipment
Gear	For the life of the Designated Equipment
Neilsen Encoders	For the life of the Designated Equipment
Sports Analysis	For the License Period

"**Modifications**" means any enhancements, changes, corrections, translations, adaptations, revisions, developments, upgrades or updates thereto; and "Modify" shall mean the creation of any of the foregoing.

"**Object Code**" means the machine readable executable form of a computer software program.

"**Parties**" means both Ross Video and Licensee and "Party" means either one of them as the context requires.

"**Person**" will be broadly interpreted and includes (a) a natural person, whether acting in his or her own capacity, or in his or her capacity as executor, administrator, estate trustee, trustee or personal or legal representative; (b) a corporation or a company of any kind, a partnership of any kind, a sole proprietorship, a trust, a joint venture, as association, an unincorporated association, an unincorporated syndicate, an unincorporated organization or any other association, organization or entity of any kind; and (c) a Governmental Authority.

"**Primary System**" means the Designated Equipment upon which the Software is installed and executed to deliver it's intended functionality.

"Quote" means the document provided by Ross Video to Licensee detailing the Ross Video products contemplated for purchase, the corresponding fees and any License Period that may apply to the Software.

"**Software**" shall mean the version of the Object Code sold and delivered to Licensee by Ross Video concurrently with delivery of this Agreement and any subsequent error corrections, updates, Modifications or Improvements provided to Licensee by Ross Video pursuant to this Agreement, but specifically excluding any features or plug-ins that may be purchased by you directly from third parties as upgrades or enhancements to the Software.

"**Source Code**" means the human readable form of a computer software program, all tools and documentation necessary for a reasonably computer programmer to understand, maintain and Modify the Software.

"**Third Party Software**" means those portions of the Software, if any, which are owned or controlled by third parties and licensed to Ross Video pursuant to certain license agreements or arrangements with such third parties, including the NewTek NDI™ software (http://NDI.NewTek.com/)

"**Use**" means to execute, run, display, store, copy, make, use, sell, merge, network, Modify, translate, host, outsource, or integrate with Licensee's products or other third party software;

3. **LICENSE.** Subject to the terms and conditions of this Agreement, upon payment of the applicable License Fee by Licensee, Ross Video hereby grants to Licensee a non-transferable and non-exclusive right to Use the Software and Documentation solely for the internal use of Licensee (the "**License**"), during the License Period. In the event that a License Period is not identified on the Quote, such License Period shall be deemed to be perpetual, subject to Section 7 D of this Agreement. The Software shall only be used in connection with or installed on the Designated Equipment and, where applicable, shall only be used on the Primary System, provided such Primary System is operating properly. If the Primary System is not operating properly for any reason, the Software may be used on the designated Backup System for that Primary System until such time that the Primary System begins operating properly. The Software and Documentation are provided to Licensee for the exclusive use by Licensee's organization for its ordinary business purposes and shall not be used by any third party for any purposes. Licensee may make copies of the Software as required for internal backup and archival purposes. To the extent permitted hereunder, Licensee may distribute copies of the Software and/or Documentation to members of its organization, provided (a) this Agreement is included with each copy, (b) any member of its organization who uses the Software and/or Documentation accepts and agrees to be bound by the terms of this Agreement and by any other license agreements or other agreement incorporated by reference into this Agreement, and (c) Licensee has paid any applicable additional License Fees in respect of copying and redistributing of the Software. To the extent Licensee is permitted to make copies of the Software under this Agreement, Licensee agrees to reproduce and include on any copy made or portion merged into another work, all Ross Video proprietary notices, including any notices with respect to copyrights, trademarks and this License. With the exception of copying the Software for backup or archival purposes, Licensee agrees to keep a record of the number and location of all such copies and will make such record available at Ross Video's request. The Software may include mechanisms to limit or inhibit copying.
4. **LICENSE RESTRICTIONS.** Except as otherwise provided in section 2 above, Licensee shall not: (1) copy any Software or Documentation, or part thereof, which is provided to Licensee by Ross Video pursuant to this Agreement, in Object Code form, Source Code form or other human or machine readable form, including written or printed documents, without the prior written consent of Ross Video; (2) in any way market, distribute, export, translate, transmit, merge, Modify, transfer, adapt, loan, rent, lease, assign, share, sub-license, sell, make available for download on any website or make available to another Person, the Software and/or Documentation, in whole or in part, provided that Licensee shall not be prohibited from renting or leasing the Software if Ross Video has consented, in writing, to Licensee engaging in such activities in respect of the Software; (3) reverse engineer, decompile or disassemble the Software or electronically transfer it into another computer language; or (4) otherwise Use the Software or Documentation in a manner that is inconsistent with the License granted hereunder or that will result in a breach of this Agreement. Licensee agrees to take all reasonable precautions to prevent third parties from using the Software and/or Documentation in any way that would constitute a breach of this Agreement, including such precautions Licensee would ordinarily take to protect its own proprietary software, hardware or information.
5. **DELIVERY.** Ross Video shall deliver to Licensee one (1) master copy of the Software in compiled binary (executable) form suitable for reproduction in electronic files only

and Ross Video shall deliver to Licensee a minimum of one copy of the Documentation.

6. **IMPROVEMENTS.** Licensee may from time to time request Ross Video to incorporate certain Improvements into the Software. Ross Video may, in its sole discretion, undertake to incorporate and provide such Improvements to Licensee with or without payment of a fee to be negotiated at the time of such request. All Improvements, whether recommended and developed by Ross Video or Licensee, shall be considered the sole property of Ross Video and shall be used by Licensee pursuant to the terms of the License granted under this Agreement.

7. **LIMITED REPRESENTATIONS AND WARRANTIES.**

(A) Software Warranties

Ross Video represents and warrants that:

(i) During the Maintenance Period the Software is warranted to be free from material defects under normal use;

(ii) Ross Video has the authority to enter into this Agreement, is the owner or licensee of the Software and Documentation and has the right to grant all of the license rights herein;

(iii) Except as expressly stated herein, no disabling mechanism or protection feature designed to prevent the Software's Use, including any computer virus, worm, lock, drop dead device, Trojan-horse routine, trap door, time bomb or any other codes or instructions that may be used to access, Modify, delete, damage or disable the Software or any other hardware or computer system, will be used or activated by Ross Video in respect of Software that is delivered to Licensee under a valid License; and

(iv) The Software, if properly installed and used with Designated Equipment, will perform substantially as described in Ross Video's then current Documentation for such Software for the Maintenance Period.

(B) Warranty Exclusions and Inclusions

Notwithstanding the above, all of Ross Video's obligations with respect to the warranties set out in 7(A) above shall be contingent on Licensee's use of the Software in accordance with the terms and conditions of this Agreement and Ross Video's instructions as provided in the Documentation. Ross Video shall have no warranty obligations where any Software failure occurs as a result of misuse, neglect, accident, abuse, misapplication, improper installation, unauthorized modification, extreme power surge or extreme electromagnetic field or other Act of God. Ross Video shall pass through to Licensee the benefit of all warranties from third party manufacturers and suppliers.

(C) Remedy

If the Software becomes defective, and a valid claim is received by Ross Video during the Maintenance Period, Ross Video will, at its sole option and sole discretion, either (1) repair the defective Software at no charge, or (2) exchange the defective Software for a comparable product at no charge. The remedies set forth in this Section shall be the exclusive remedies available to Licensee in connection with a breach of the limited warranties set out above.

(D) Maintenance Charges

Technical support for the Software by telephone and email contact with Ross Video is provided by Ross Video to Licensee at no extra charge for the life of the product. During the Maintenance Period, Ross Video shall supply downloadable Software

Modifications upon request of Licensee, when available, at no extra charge to Licensee. Notwithstanding the foregoing, Ross Video shall be under no legal obligation to create or release Software Modifications at any time or in accordance with a fixed schedule. Upon expiry of the Maintenance Period, where applicable, Licensee may purchase Software maintenance, including downloadable Software upgrades in one (1) year increments at the then applicable extended Maintenance Fee rates offered by Ross Video, in which case the warranties granted by this Agreement shall survive and remain in full force and effect during each such one (1) year term.

8. **OWNERSHIP.** The Parties acknowledge and agree that, as between the Parties, Ross Video shall be the owner of all intellectual property rights in the Software, Documentation and all related Modifications and Improvements, written materials, logos, trademarks, trade names, copyright, patents, trade secret and moral rights, registered or unregistered. No proprietary interest or title in or to the intellectual property in the Software, Documentation or any Improvements or Modifications is transferred to Licensee by this Agreement. Ross Video reserves all rights not expressly licensed to Licensee under section 3.
9. **THIRD PARTY SOFTWARE.** Licensee acknowledges that the Third Party Software is not owned by Ross Video. Notwithstanding any other provision of this Agreement, Ross Video, to the extent permitted by applicable law, offers no warranties (whether express, implied, statutory or by course of communication or dealing with Licensee, or otherwise) with respect to the Third Party Software. Ross Video may pass through to Licensee, if and to the extent permitted by applicable law, any warranties expressly provided by such third parties to Ross Video for such Third Party Software.
10. **INTELLECTUAL PROPERTY INDEMNITY.** Ross Video agrees to defend, indemnify and hold harmless Licensee from final damages awarded by a court of competent jurisdiction (hereinafter referred to as the "**Losses**"), which Licensee, or any of its officers or directors, may incur, suffer or become liable for as a result of, or in connection with, any third party claim asserted against Licensee to the extent such claim is based on a contention that the Software, Documentation or any portion thereof, infringes any valid, registered, enforceable patents, copyrights, trade secrets, trademarks or other intellectual property rights of any third party, provided that (a) the allegedly infringing Software or Documentation has been used within the scope of and in accordance with the terms of this Agreement, and (b) Licensee notifies Ross Video in writing of such claim within ten (10) days of a responsible officer of Licensee becoming aware of such claim. If the Software, Documentation or any portion thereof is held to constitute an infringement of a third party's intellectual property rights, and use thereof is enjoined, Ross Video shall, at its election and expense, either (i) procure the right to use the infringing element of the Software or Documentation; or (ii) replace or modify the element of the Software or Documentation so that the infringing portion is no longer infringing and still performs the same function without any material loss of functionality. Ross Video shall make every reasonable effort to correct the situation with minimal effect upon the operations of Licensee.

    Notwithstanding the above, Ross Video reserves the right to terminate this Agreement and the License granted hereunder on immediate notice to Licensee, and without liability to Licensee, in the event that the Software or Documentation constitutes or may, in Ross Video's determination, constitute, an infringement of the rights of a third party that Ross Video, in its sole discretion, does not consider to be affordably remediable.

    Either party may terminate this Agreement immediately should any Software become, or in either party's opinion be likely to become, the subject of a claim of infringement of any intellectual property right and, in such event, there shall be no claim by either Licensee or Ross Video against the other arising out of such termination, provided

that the foregoing shall not apply to a claim for infringement by Ross Video against Licensee in the event that Licensee is alleged to have infringed Ross Video's intellectual property rights, in which case Licensee shall remain liable for all outstanding License Fees and other amounts owing to Ross Video.

Notwithstanding the foregoing, Ross Video shall have no liability for any claim of infringement based on use of other than a current, unaltered release of the Software and/or Documentation available from Ross Video if such infringement would have been avoided by the use of a current, unaltered release of the Software and/or Documentation provided that such current, unaltered release performs substantially in conformance with the specifications set out in the Documentation and was provided, at no additional cost by Ross Video, to those subscribing for maintenance services for the Software or Documentation.

11. **CONFIDENTIALITY.** Each Party shall maintain in confidence all Confidential Information of the other Party, shall use such Confidential Information only for the purpose of exercising its rights and fulfilling its obligations under this Agreement, and shall not disclose any Confidential Information of the disclosing Party to any third party except as expressly permitted hereunder or make any unauthorized use thereof. Each Party shall disclose the Confidential Information only to those of its employees, consultants, advisors, and/or subcontractors who have a need to know the Confidential Information. Each Party shall, prior to disclosing the Confidential Information to such employees, consultants, advisors and/or subcontractors, obtain their agreement to receive and use the Confidential Information on a confidential basis on the same terms and conditions contained in this Agreement. The receiving Party shall treat the Confidential Information of the disclosing Party with the same degree of care against disclosure and/or unauthorized use as it affords to its own information of a similar nature, or a reasonable degree of care, whichever is greater. The receiving Party further agrees not to remove or destroy any proprietary or confidential legends or markings placed upon any documents or other materials of the disclosing Party. The obligations of confidence set forth in this Agreement shall extend to any Affiliates that have received Confidential Information of the disclosing Party and shall also cover Confidential Information disclosed by any Affiliate. The receiving Party shall be responsible for any actions or omissions of its Affiliates as if such actions or omissions were its own.

    Either party may disclose certain Confidential Information if it is expressly required to do so pursuant to legal, judicial, or administrative proceedings, or otherwise required by law, provided that (i) such Party provides the other Party with reasonable written notice prior to such disclosure; (ii) such Party seeks confidential treatment for such Confidential Information; (iii) the extent of such disclosure is only to the extent expressly required by law or under the applicable court order; and (iv) such Party complies with any applicable protective or equivalent order.

    Each of Ross Video and Licensee (the "**Indemnifying Party**", as applicable) agree to indemnify the other (the "**Indemnified Party**", as applicable) for all Losses incurred by the Indemnified Party as a result of a failure of the Indemnifying Party to comply with its obligations under this Section 11 provided that the Indemnified Party has given prompt notice of any such claim and, to the extent that a claim may lie against a third party for the unauthorized disclosure of such Confidential Information, the right to control and direct the investigation, preparation, action and settlement of each such claim and, further, provided that the Indemnified Party reasonably co-operates with the Indemnifying Party in connection with the foregoing and provides the Indemnifying Party with all information in the Indemnified Party's possession related to such claim and such further assistance as reasonably requested by the Indemnifying Party.

The Parties acknowledge and agree that any breach of the confidentiality provisions of this Agreement by one Party may cause significant and irreparable injury to the other Party that is not compensable monetarily, as well as damages that may be difficult to ascertain, and agrees that, in addition to such other remedies that may be available at law or in equity, the other Party shall be entitled to seek injunctive relief (including temporary restraining orders, interim injunctions and permanent injunctions) in a court of competent jurisdiction in the event of the breach or threatened breach by such party of any of the confidentiality provisions of this Agreement. The relief contemplated in this Section shall be available to each Party without the necessity of having to prove actual damages and without the necessity of having to post any bond or other security. Each Party further agrees to notify the other Party in the event that it learns of or has reason to believe that any Person has breached the confidentiality provisions of this Agreement.

12. **LIMITATION OF LIABILITY.** The limitation of liability provisions of this Agreement reflect an informed voluntary allocation of the risks (known and unknown) that may exist in connection with the licensing of the Software or Documentation hereunder by Ross Video, and that voluntary risk allocation represents a material part of the Agreement reached between Ross Video and Licensee. Should Ross Video be in breach of any obligation, Licensee agrees that Licensee's remedies will be limited to those set forth in this Agreement. No action, regardless of form, arising out of this Agreement may be brought by Licensee more than twelve (12) months after the facts giving rise to the cause of action have occurred, regardless of whether those facts by that time are known to, or reasonably ought to have been discovered by, Licensee.

    (A) EXCEPT AS EXPRESSLY PROVIDED IN THIS AGREEMENT, THE SOFTWARE AND DOCUMENTATION ARE PROVIDED "AS IS" AND ROSS VIDEO (I) MAKES NO OTHER REPRESENTATIONS, AND PROVIDES NO WARRANTIES OR CONDITIONS OF ANY KIND, EXPRESS OR IMPLIED, STATUTORY, BY USAGE OF TRADE CUSTOM OF DEALING, OR OTHERWISE, AND (II) SPECIFICALLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING ANY IMPLIED WARRANTY OF UNINTERRUPTED OR ERROR FREE OPERATION, MERCHANTABILITY, QUALITY OR FITNESS FOR A PARTICULAR PURPOSE. ROSS VIDEO DOES NOT REPRESENT OR WARRANT THAT THE SOFTWARE WILL MEET ANY OR ALL OF LICENSEE'S PARTICULAR REQUIREMENTS, THAT THE USE AND OPERATION OF THE SOFTWARE WILL OPERATE ERROR-FREE OR UNINTERRUPTED, THAT ALL PROGRAMMING ERRORS IN THE SOFTWARE CAN BE FOUND IN ORDER TO BE CORRECTED, OR THAT THE SOFTWARE WILL BE COMPATIBLE WITH OTHER PROGRAMS, SYSTEMS, AND HARDWARE.

    (B) IN NO EVENT SHALL ROSS VIDEO, ITS AFFILIATES AND LICENSORS, AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES AND AGENTS, BE LIABLE FOR ANY CLAIM FOR INDIRECT, CONSEQUENTIAL, SPECIAL, INCIDENTAL, PUNITIVE, EXEMPLARY, AGGRAVATED DAMAGES; LOST PROFITS, OR LOST REVENUE ARISING FROM OR IN CONNECTION WITH THIS AGREEMENT, REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, OR IN TORT, EVEN IF THE PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

    (C) IN ANY EVENT THE AGGREGATE LIABILITY OF ROSS VIDEO, ITS AFFILIATES AND LICENSORS, AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES AND AGENTS, FOR ANY CLAIM FOR DIRECT DAMAGES WITH RESPECT TO THE SUBJECT MATTER OF THIS AGREEMENT SHALL NOT EXCEED THE AMOUNT OF THE PURCHASE PRICE PAID TO ROSS VIDEO UNDER THIS AGREEMENT.

13. **TERM AND TERMINATION.**

    (1) Unless terminated earlier in accordance with the terms of this Agreement, the term of this Agreement shall commence upon Licensee's first download, access,

installation, or other use of the Software or Documentation and continues until, in the case of Software sold with Designated Equipment provided by Ross Video, the earliest of (a) the end of the License Period, or (b) if the Designated Equipment is assigned or transferred in accordance with this Agreement, the date on which the Designated Equipment is no longer owned by Licensee;

(2) Either Party shall have the right to terminate this Agreement on notice to the other Party if:

(a) the other Party fails to pay any fees or other amounts when due hereunder or under any other agreement between the Parties (or any Affiliates of the Parties, as applicable) in connection with the Software and/or Designated Equipment and such breach is not cured within thirty (30) days after written notice of such failure to pay is given to the defaulting Party by the non-defaulting Party;

(b) the other Party shall file a voluntary petition in bankruptcy or insolvency or shall petition for reorganization under any bankruptcy law, consent to an involuntary petition in bankruptcy, or if a receiving order is given against it under the Bankruptcy and Insolvency Act (Canada) or the comparable law of any other jurisdiction (and such is not dismissed within ten (10) days);

(c) there shall be entered an order, judgment or decree by a court of competent jurisdiction, upon the application of a creditor, approving a petition seeking reorganization or appointing a receiver, trustee or liquidator of all or a substantial part of the other Party's assets and such order, judgment or decree continues in effect for a period of thirty (30) consecutive days; or

(d) the other Party shall fail to perform any of the other material obligations set forth in this Agreement and such default, in the case of a default which is remediable, continues for a period of thirty (30) days after written notice of such failure has been given by the non-defaulting Party or, in the case of a non-remediable default, immediately upon notice.

(3) Notwithstanding any to the contrary contained in this Agreement:

(a) Ross Video may forthwith terminate this Agreement if Licensee is in breach of any of sections 3, 4 or 11 of this Agreement. For greater certainty, In such instances Ross Video shall provide written notice of such termination as soon as practicable but written notice shall not be a necessary prerequisite to such termination; and

(b) in the event of a Change of Control of Licensee, Ross Video shall have the rights to terminate this Agreement and the License granted hereunder upon thirty (30) days' prior written notice to Licensee. For greater certainty, Ross Video's right to terminate in the event of a Change of Control of Licensee shall continue for a period of six (6) months from the date Licensee delivers notice of such Change of Control to Ross Video.

(c) Ross Video may terminate the License immediately on the date on which it provides notice to Licensee, if its agreements for Third Party Software are terminated.

(4) Upon the termination or expiry of this Agreement:

(a) Licensee shall immediately cease and desist all use of the Software and Documentation;

(b) Licensee shall immediately deliver to Ross Video any of Ross Video's Confidential Information provided hereunder (including the Software and Documentation) then in its possession or control, if any, and shall deliver a certificate of an officer of Licensee certifying the completeness of same;

(c) Licensee shall refrain from further use of such Confidential Information; and

(d) Licensee shall forthwith pay all amounts owing to Ross Video or any of its Affiliates hereunder.

14. **SURVIVAL.** The provisions of sections 1, 2, 4, 6, 8, 9, 11, 12, 13, 14, 17 and 19 herein shall survive the expiry or termination of this Agreement.

15. **FORCE MAJEURE.** Dates and times by which Ross Video is required to render performance under this Agreement shall be automatically postponed to the extent and for the period that Ross Video is prevented from meeting them by reason of events of force majeure or any cause beyond its reasonable control provided Ross Video notifies Licensee of the commencement and nature of such cause and uses its reasonable efforts to render performance in a timely manner.

16. **ASSIGNMENT.** Ross Video may assign this Agreement, or any of its rights or obligations hereunder, in whole or in part, upon notice to Licensee. Licensee shall not assign this Agreement, or any of its rights or obligations hereunder, in whole or in part, without the prior written consent of Ross Video, which consent may not be unreasonably withheld. This Agreement enures to the benefit of and is binding upon each of the Parties and their respective successors and permitted assigns.

17. **GOVERNING LAW.** This Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario and federal laws of Canada applicable therein and shall be treated, in all respects, as an Ontario contract. Each Party irrevocably and unconditionally submits and attorns to the exclusive jurisdiction of the courts of the Province of Ontario to determine all issues, whether at law or in equity, arising from this Agreement.

18. **LANGUAGE.** The Parties have expressly required that this Agreement and all documents relating thereto be drawn-up in English. Les parties ont expressément exigé que cette convention ainsi que tous les documents qui s'y rattachent soient rédigés en anglais.

19. **GOVERNMENT CONTRACTS.** If the Software and/or Documentation to be furnished to Licensee hereunder are to be used in the performance of a government contract or subcontract, the Software and/or Documentation shall be provided on a "restricted rights" basis only and Licensee shall place a legend, in addition to applicable copyright notices, in the form provided under the applicable governmental regulations. For greater certainty, Ross Video shall not be subject to any flowdown provisions required by any customers of Licensee that are a Governmental Authority unless Ross Video expressly agrees to be bound by such flowdown provisions in writing.

20. **EXPORT AND IMPORT LAWS.** Licensee acknowledges and agrees that the Software (including any technical data and related technology) may be subject to the export control laws, rules, regulations, restrictions and national security controls of the United States and other applicable countries (the "**Export Controls**") and agrees not export, re-export, import or allow the export, re-export or import of such export-controlled Software (including any technical data and related technology) or any copy, portion or direct product of the foregoing in violation of the Export Controls. Licensee hereby represents that it is not an entity or person to whom provision of the Software (including any technical data and related technology) is restricted or prohibited by the Export Controls. Licensee agrees that it has the sole responsibility to obtain any authorization to export, re-export, or import the Software (including any technical data and related technology), as may be required. Licensee will defend, indemnify and hold Ross Video harmless from any and all claims, losses, liabilities, damages, fines, penalties, costs and expenses (including attorney's fees) arising from or relating to any breach by Licensee of its obligations under this Section.

21. **AMENDMENT AND WAIVER.** No amendment, discharge, modification, restatement, supplement, termination or waiver of this Agreement or any Section of this Agreement is binding unless it is in writing and executed by the Party to be bound. No waiver of, failure to exercise or delay in exercising, any Section of this Agreement constitutes a waiver of any other Section (whether or not similar) nor does any waiver constitute a continuing waiver unless otherwise expressly provided.
22. **SEVERABILITY.** Each Section of this Agreement is distinct and severable. If any Section of this Agreement, in whole or in part, is or becomes illegal, invalid, void, voidable or unenforceable in any jurisdiction by any court of competent jurisdiction, the illegality, invalidity or unenforceability of that Section, in whole or in part, will not affect (a) the legality, validity or enforceability of the remaining Sections of this Agreement, in whole or in part; or (b) the legality, validity or enforceability of that Section, in whole or in part, in any other jurisdiction.
23. **ENTIRE AGREEMENT.** This Agreement, and any other documents referred to herein, constitutes the entire agreement between the Parties relating to the subject matter of this Agreement and supersedes all prior written or oral agreements, representations and other communications between the Parties.

Warranty and Repair Policy

Ross Video Limited (Ross) warrants its XPression systems to be free from defects under normal use and service for the following time periods from the date of shipment:

- **XPression Server** — 12 months
- **XPression Software Upgrades** — 12 months free of charge
- **System and Media hard drives** — 12 months

If an item becomes defective within the warranty period Ross will repair or replace the defective item, as determined solely by Ross.

Warranty repairs will be conducted at Ross, with all shipping FOB Ross dock. If repairs are conducted at the customer site, reasonable out-of-pocket charges will apply. At the discretion of Ross, and on a temporary loan basis, plug in circuit boards or other replacement parts may be supplied free of charge while defective items undergo repair. Return packing, shipping, and special handling costs are the responsibility of the customer.

This warranty is void if products are subjected to misuse, neglect, accident, improper installation or application, or unauthorized modification.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profit). Implied warranties, including that of merchantability and fitness for a particular purpose, are expressly limited to the duration of this warranty.

This warranty is TRANSFERABLE to subsequent owners, subject to Ross' notification of change of ownership.

Extended Warranty

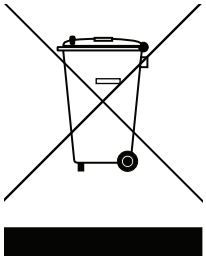
For customers that require a longer warranty period, Ross offers an extended warranty plan to extend the standard warranty period by one year increments. For more information about an extended warranty for your XPression system, contact your regional sales manager.

Environmental Information

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed-out wheeled bin symbol invites you to use these systems.



If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

You can also contact Ross Video for more information on the environmental performances of our products.

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Appendix A: Keyboard Shortcuts A

Introduction

Pre-rolls are a thing of the past with XPression Clips, a production clip server for live production that incorporates the latest advances in IT technologies. Built on the industry-leading XPression real-time graphics platform, XPression Clips offers you instant recall times and back-to-back clip transitions from an intuitive user interface or via automation triggers from other devices like Ross Video productions switchers.

You can simultaneously ingest multiple channels of baseband video and output multiple channels of clips to air. Both NAS and SAN configurations are available for attached storage, in addition to ample local hard drive space. Database management and synchronization are possible with the Clip Store that supports user rights and roles.

Key features of XPression Clips include:

- Multi-channel ingest and playout
- 1, 2, or 4 channels of baseband video ingest
- 2 or 4 channels of playout (user-definable fill/fill or fill/key configuration). Only one channel of 1080p 50 f/s or 1080p 59.94 f/s for fill/key.
- Back-to-back transitions
- Multiple clips on the same output
- Clip Browser with searching
- Clip trimming and looping
- VDCP, AMP, PBus, and RossTalk automation protocols
- PBus Manager for intelligent clip assignment
- Clip Manager application with user rights for database management and synchronization setup
- NAS or SAN attached storage with SNS storage (Studio Network Solutions)

Streamline your production clips workflow with Ross Video's next-generation production clip servers and transcoding applications. XPression Clips brings lightning-fast recall speeds, baseband video ingest, and multi-layer clip playback to the control room.

For More Information on...

- VDCP and AMP protocols, refer to the Media Control Gateway section of the ***XPression Clips Workflow User Guide***.
- Clip Manager, refer to the ***XPression Clips Workflow User Guide***.

About This Guide

This user guide describes the XPression Clips workflow, its configuration, and functions.

If, at any time, you have a question pertaining to the installation, configuration, or operation of the XPression Clips tools, please contact us at the numbers listed in the section "**Contacting Technical Support**" on page 1–2. Our technical staff are always available for consultation, training, or service.

Documentation Conventions

Special text formats are used in this guide to identify parts of the user interface, text that a user must enter, or a sequence of menus and submenus that must be followed to reach a particular command.

Bold text	Bold text is used to identify a user interface element such as a dialog box, menu item, or button. For example: In the **3D Model Files** section, use the **Mode** list to select the folder used to store 3D model files.
`Courier text`	Courier text is used to identify text that a user must enter. For example: Enter `localhost` when the DataLinq server is running of the same computer as XPression.
>	Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example, if a step reads "**Display** > **Widgets**," you would click the **Display** menu and then click **Widgets**.

Getting Help

The ***XPression Clips User Guide*** is supplied as a print-ready PDF file. Locate the guide in the C:\Archive folder to open a guide PDF in Adobe® Reader® for viewing or printing.

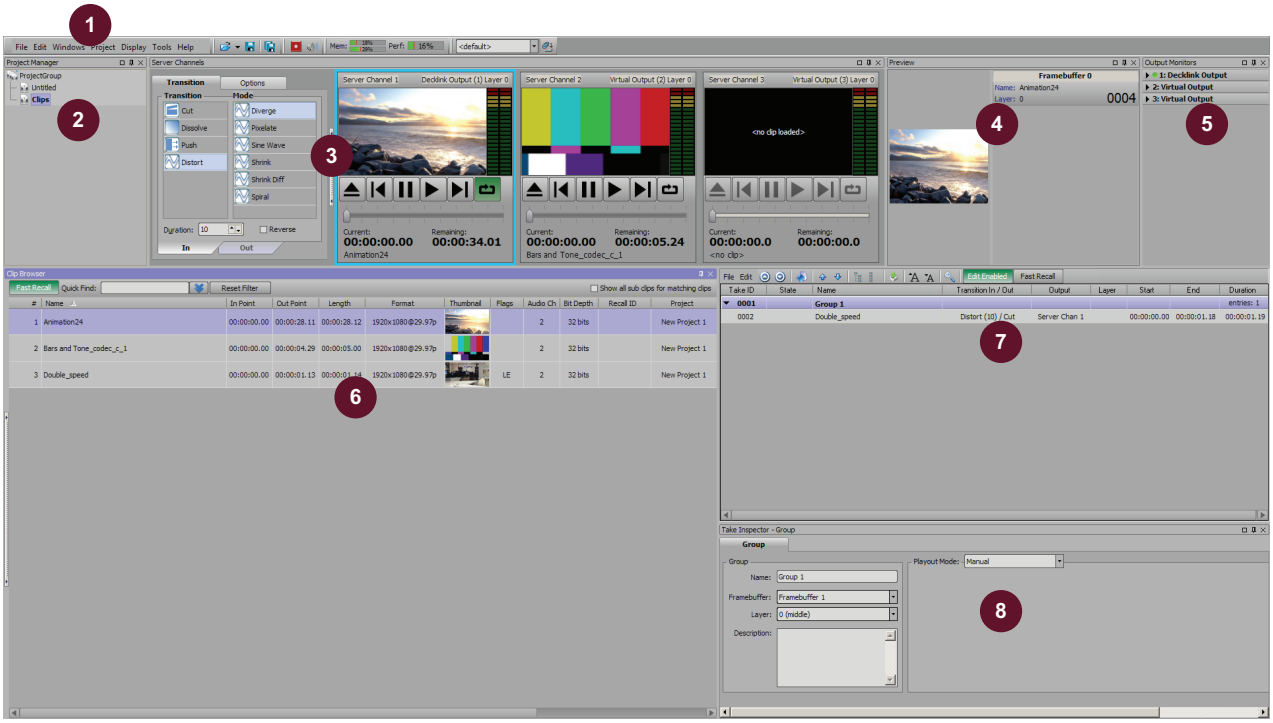
Contacting Technical Support

At Ross Video, we take pride in the quality of our products, but if problems occur, help is as close as the nearest telephone.

Our 24-hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support is provided directly by Ross Video personnel. During business hours (eastern time), technical support personnel are available by telephone any time. After hours and on weekends, a direct emergency technical support phone line is available. If the technical support person who is on call does not answer this line immediately, a voice message can be left and the call will be returned shortly. This team of highly trained staff is available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

- **Technical Support:** (+1) 613-652-4886
- **After Hours Emergency:** (+1) 613-349-0006
- **E-mail:** techsupport@rossvideo.com
- **Website:** http://www.rossvideo.com

User Interface Overview



1) **Menu Bar & Toolbar** — use this menu bar to access the File, Edit, Windows, Projects, Display, Tools, and Help menus. Use the toolbar to quickly access XPression tools.
2) **Project Manager** — use this window to view and manage the projects and project groups.
3) **Server Channels** — use this window to preview, playout, and edit clips.
4) **Preview** — use this window to preview a selected take item from the sequencer.
5) **Output Monitors** — use this window to select the output framebuffer. Each output framebuffer contains an infinite number of layers. The hierarchical order for visibility runs from +# to -#, with positive layers being the top layers and negative layers being the lower layers.
6) **Clip Browser** — use this window to browse for clips to drop into the Server Channels or Sequencer for preview and playout. Clips can also be edited and sub clips can be created.
7) **Sequencer** — use this window to view and control a list of take items or take item groups to be played in the order from top to bottom. A list is built by adding take items from the Clip Browser.
8) **Take Inspector** — use this window to edit the properties of a selected group or take item.

System Setup

Before you start using XPression Clips to playout clips, it needs to be configured for your environment. In addition to describing how to set preferences for XPression Clips, this section also describes how to configure GPIs, video framebuffers, audio devices, video preview, and audio monitors.

✶ A backup copy of the preferences and hardware setup are created when changes in the **Preferences** and **Hardware Setup** dialog box are made and **OK** is clicked, or when XPression is exited.

The following topics are discussed in this section:

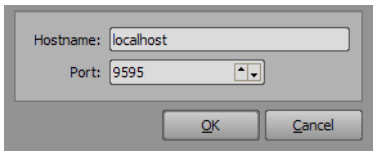
- Configure XPression Clips for XPression Clip Store
- Set Preferences
- Configure an AJA NTV2 Video FrameBuffer
- Configure an AJA Video FrameBuffer (Legacy)
- Configure a Blackmagic Design FrameBuffer
- Configure a Blackmagic Design FrameBuffer (Legacy)
- Configure a Graphite FrameBuffer
- Configure a Matrox DSX, X.mio3 and X.mio5 FrameBuffer
- Configure a Matrox Video X.mio2 FrameBuffer
- NewTek™ Network Device Interface (NDI™)
- Configure an XPression Desktop Preview Client
- Configure an XPression RossLinq Connector
- Configure an XPression Virtual Output
- Change the Order of Video Inputs / Outputs
- Delete a Video Input / Output
- Configure an Audio Device
- Delete an Audio Device
- Add a Timecode Source
- Configure Video Preview and Audio Monitor
- Configure RS232 CTS/DSR GPI for Contact Closures
- Configure a 25-Pin GPIO Port
- Configure a SeaLevel GPIO Board
- Configure Smart GPI / RossTalk
- Configure PBus Interface and PBus Recalls
- Set Up Server Channels

Configure XPression Clips for XPression Clip Store

Once XPression Clip Store has been configured using the Clip Store Manager, XPression needs to be set up for use with the Clip Store.

1. In XPression, click **Edit** > **Clip Store Setup**.

   The **Clip Store Setup** dialog box opens.



2. Use the **Hostname** box to enter the IP address of the Clip Store service if using remotely. If using the Clip Store service locally, use **localhost** (default).
3. Use the **Port** box to enter or select the port number for the Clip Store server connection. The default is 9595.
4. Click **OK**.

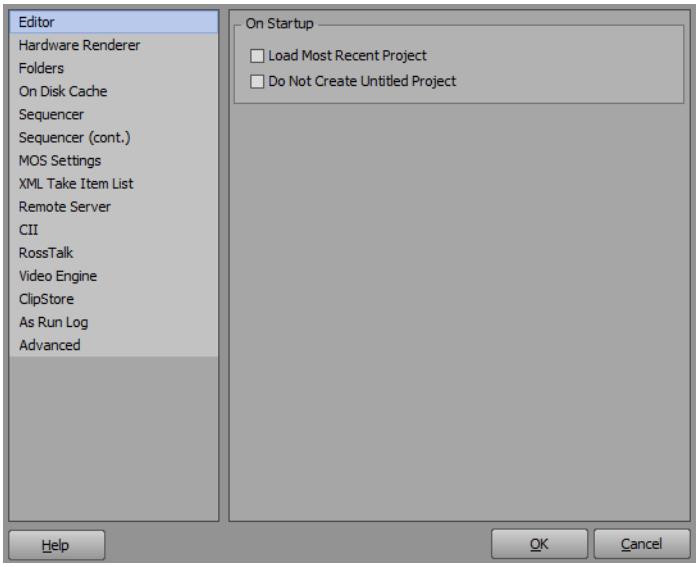
   XPression is now connected to the Clip Store service.

Set Preferences

1. In **XPression**, use the **Edit** menu to select **Preferences**.

   The **Preferences** dialog box opens.

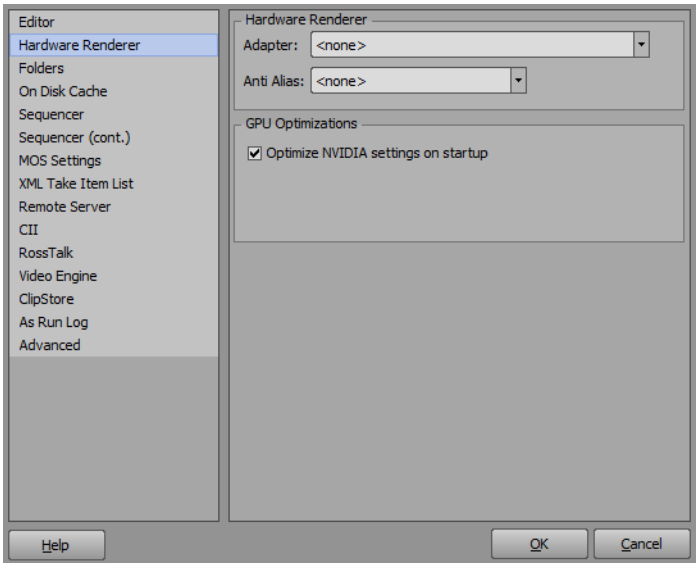
2. Click the **Editor** panel to set project preferences for the Editor section of XPression.



   a. In the **On Startup** section, select the **Load Most Recent Project** check box to automatically load the last opened project after starting XPression.

   b. Select the **Do Not Create Untitled Project** check box to avoid creating a new project when launching XPression. This is useful for MOS workflows.

3. Click the **Hardware Renderer** panel to select the graphics device used by XPression to render scenes to output framebuffers.



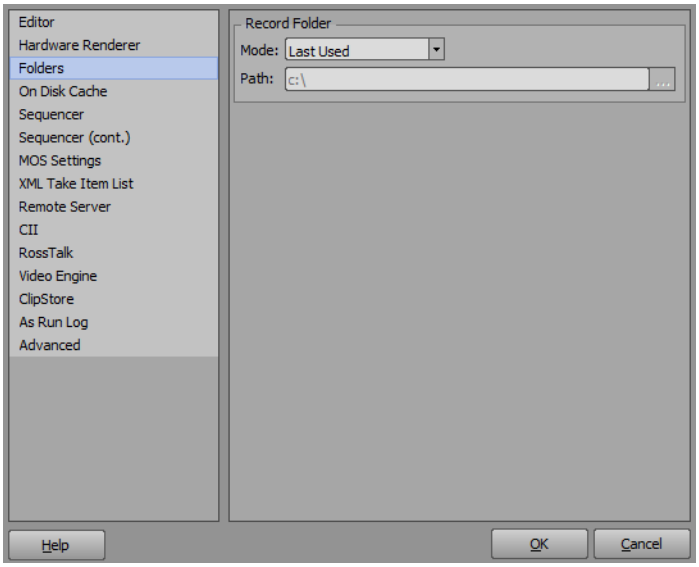
   a. Use the **Adapter** list to select the graphics device installed in the XPression computer.

   b. Use the **Anti-Alias** list to select the Multi-sampling value used to control the visual quality of rendered output.

      The higher the multi-sampling value, the smoother the rendered graphic edges. The <none> option is equal to 1x multi-sampling. For most situations, set the multi-sampling value according to the best quality/performance ratio, usually around 8x.

c. In the **GPU Optimizations** section, select the **Optimize NVIDIA settings on startup** check box to optimize the NVIDIA global settings on startup to disable options like Anti-aliasing Gamma Correction. This option is selected by default.

4. Click the **Folders** panel to set the folder used by XPression to store files created by the Record Client.

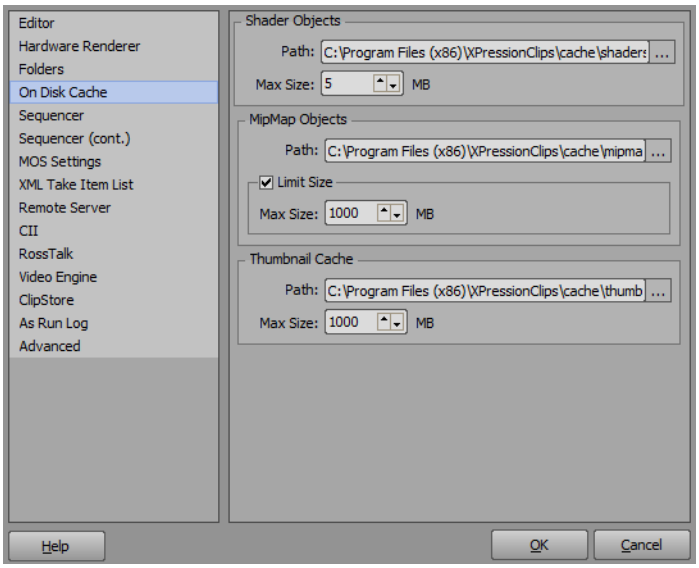


a. In the **Record Folder** section, use the **Mode** list to select the mode of folder management to use to store files created by the Record Client. The options are:

- **Project | Last Used** — save the files to the last folder used in a project folder for saving a file.
- **Last Used** — save the files to the last folder used for saving a file.
- **Fixed** — always save the files to the folder file path entered or selected in the **Path** box.
- **Project** — always save the files to the last project folder used for saving a file.

If using the fixed folder mode, use the **Path** box to enter the full path to the folder in which to save files created using the Record Client, or click **Browse** (**...**) to the right of this box to select a folder.

5. Click the **On Disk Cache** panel to set the folder locations used by XPression to store cache files on disk.



a. In the **Shader Objects** section, use the **Path** box to enter the full path to the folder in which to cache shader object files or click **Browse (...)** to the right of the box to use the **Browse for Folder** dialog box to select the cache folder.

b. In the **Max Size** box, enter or select the size limit in MB for the total of all the cache files stored in the cache folder.

c. In the **MipMap Objects** section, use the **Path** box to enter the full path to the folder in which to cache MipMap object files or click **Browse (...)** to the right of the box to use the **Browse for Folder** dialog box to select the cache folder.

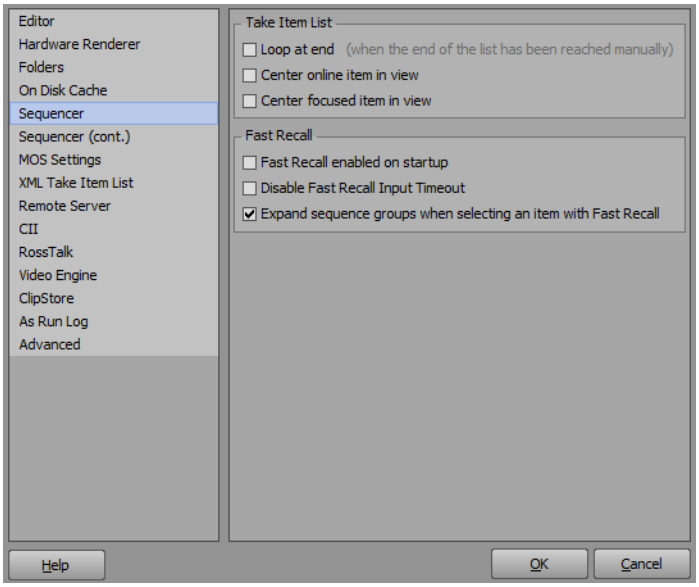
d. Select the **Limit Size** check box to limit the total size of MipMap object files stored in the cache folder.

   In the **Max Size** box, enter or select the size limit in MB for the total of all the cache files stored in the cache folder.

e. In the **Thumbnail Cache** section, use the **Path** box to enter the full path to the folder in which to cache thumbnail files made from clips or click **Browse (...)** to the right of the box to use the **Browse for Folder** dialog box to select the cache folder.

f. In the **Max Size** box, enter or select the size limit in MB for the total of all the cache files stored in the cache folder.

6. Click the **Sequencer** panel to control sequence lists.



a. In the **Take Item List** section, select the **Loop at end** check box to automatically loop a sequence list when the end is reached manually.

b. Select the **Center online in view** check box to position the active scene in a sequence list in the middle of the view, provided the sequence list extends the size of the view.

c. Select the **Center focused item in view** check box to position a focused scene in a sequence list in the middle of the view, provided the sequence list extends the size of the view.

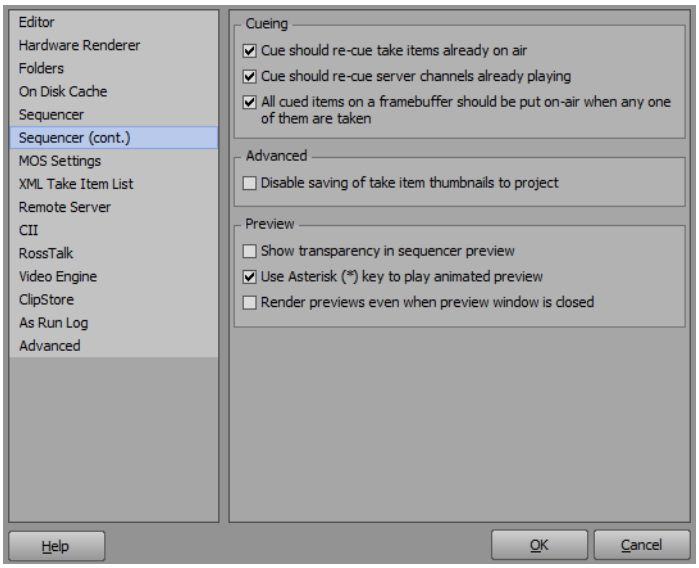
d. Select the **Enable sorting by clicking column headers** check box to sort the information in the columns of the sequencer by heading.

e. In the **Fast Recall** section, select the **Fast Recall enabled on startup** check box to automatically enable fast recall in the sequencer on startup.

f. Select the **Disable Fast Recall Input Timeout** check box to turn off the user entered input timeout for Take IDs in the sequencer.

g. Select the **Expand sequence groups when selecting an item with Fast Recall** check box to expand the parent group of an item when it is selected using Fast Recall.

7. Click the **Sequencer (cont.)** panel for more options to control sequence lists.



a. In the **Cueing** section, select the **Cue should re-cue take items already on air** check box to re-cue on air take items when the cue button is pressed.

b. Select the **Cue should re-cue server channels already playing** check box to re-cue on air server channels when the cue button is pressed.

c. Select the **All cued items on a framebuffer should be put on-air when any one of them are taken** check box to take all cued items on a framebuffer on air when one of them is taken online.

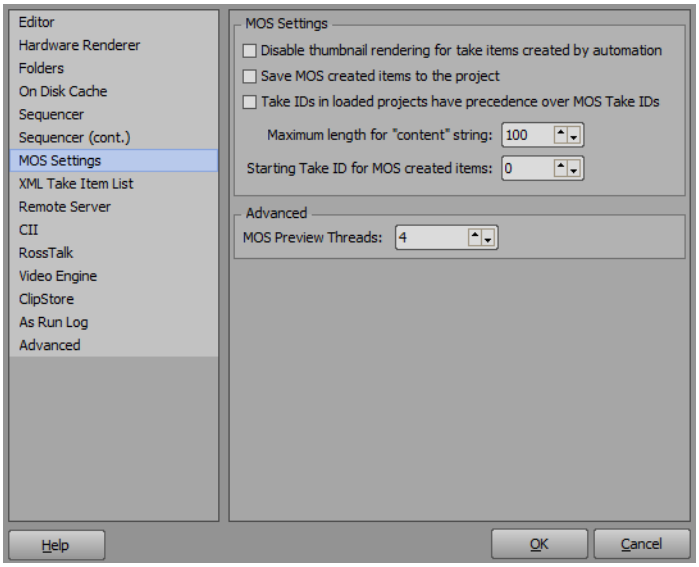
d. In the **Advanced** section, select the **Disable saving of take item thumbnails to project** check box to save projects without take item thumbnails. This results in faster saving, but the thumbnails might need to be regenerated upon loading of the project.

e. In the **Preview** section, select the **Show transparency in sequencer preview** check box to display transparency when previewing a take item in the sequencer preview window. This option can also be applied by right-clicking in the sequencer Preview window and selecting **Show Transparency** from the shortcut menu.

f. Select the **Use Asterisk (*) key to play animated preview** check box to enable the display of a live moving preview in the sequence mode when the asterisk key (*) is pressed on the number pad.

g. Select the **Render previews even when preview window is closed** check box to allow for external previews to be updated or for logic in OnPreviewRender scripts to be executed even when the preview window is closed.

8. Click the **MOS Settings** panel to configure the XPression Clips settings when using XPression Clips within a MOS workflow.



   a. In the **MOS Settings** section, select the **Disable thumbnail rendering for take items created by automation** check box to disable displaying scene thumbnails in the Sequencer Playlist for MOS items.

   b. Select the **Save MOS created items to the project** check box to save MOS items in the sequencer.

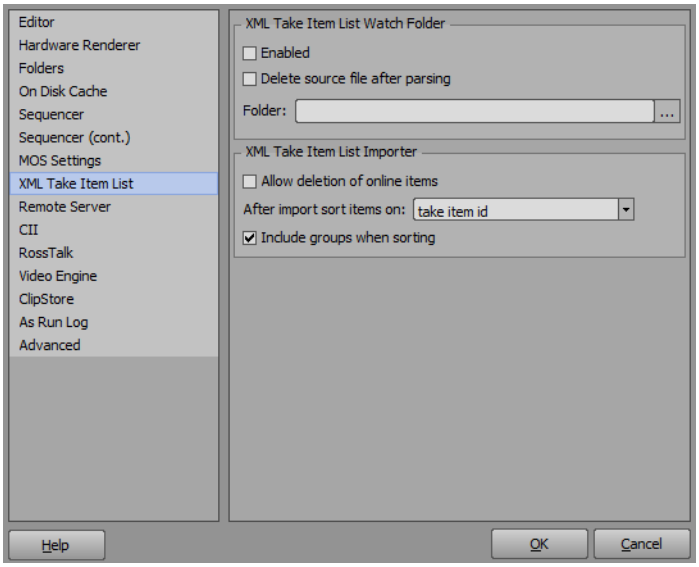
   c. Select the **Take IDs in loaded projects have precedence over MOS Take IDs** check box to give priority to the take IDs of take items from a subsequently loaded project over those from MOS.

   d. Use the **Maximum length for Content string** box to enter or select a maximum character length for the take item content string in the sequencer.

   e. Use the **Starting Take ID for MOS created items** box to enter or select a take ID number at which to start the MOS take IDs in the sequencer.

   f. In the **Advanced** section, use the **MOS Preview Threads** box to enter or select the amount of simultaneous MOS previews that can be rendered at a time.

9. Click the **XML Take Item List** panel to configure the path and settings for XML Take Items.



a. In the **XML Take Item List Watch Folder** section, select the **Enabled** check box to use XML Take Items from a folder.

b. Select the **Delete source file after parsing** check box to delete XML Take Items after they are parsed from the selected folder.

c. Enter the full path to the folder in the **Folder** box, or click **Browse (...)** to the right of the box to use the **Browse for Folder** dialog box to select the folder.

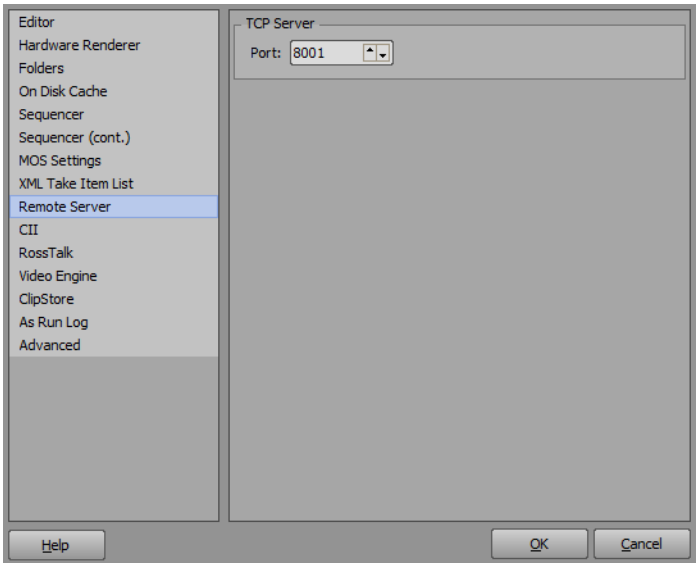
d. In the **XML Take Item List Importer** section, select the **Allow deletion of online items** check box to enable the removal of take items that are currently active on an output.

e. Use the **After import sort items on** list to sort the imported take items. The available options are as follows:

- **<do not sort>** — do not sort the take items.
- **take item id** — sort the take items by ID.
- **take item state** — sort the take items by state.
- **take item scene name** — sort the take items by scene name.
- **take item name** — sort the take items by name.
- **take item layer** — sort the take items by layer.
- **take item framebuffer** — sort the take items by framebuffer.

f. Select the **Include groups when sorting** check box to import the XML Take Items according to the groups that the items have been assigned.

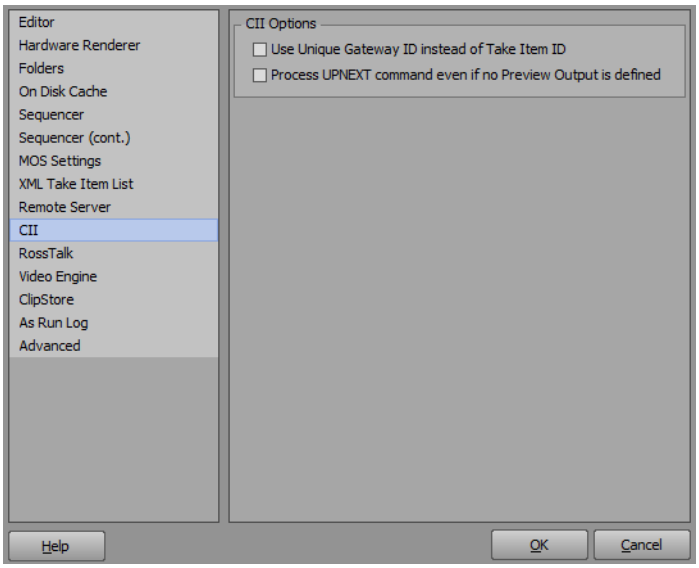
10. Click the **Remote Server** panel to configure the TCP server settings.



a. In the **TCP Server** section, enter or select the port number for the remote server.

This is the port number on which XPression will listen for incoming connections from other applications such as the MOS Gateway, CII gateway, and Media Control Gateway.

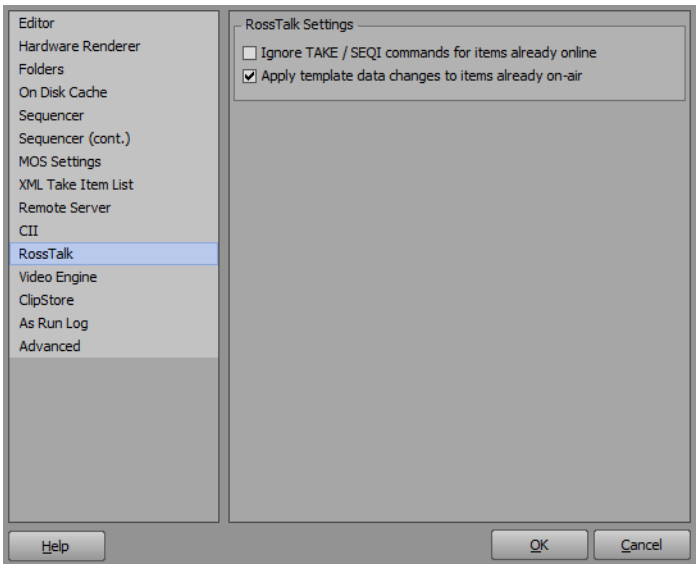
11. Click the **CII** panel to configure the CII settings.



a. In the **CII Page Recall** section, select the **Use Unique Gateway ID instead of Take Item ID** check box to recall CII pages using a Unique Gateway ID.

b. Select the **Process UPNEXT command even if no Preview Output is defined** check box to process UPNEXT commands from OverDrive when no preview output has been defined in the hardware setup.

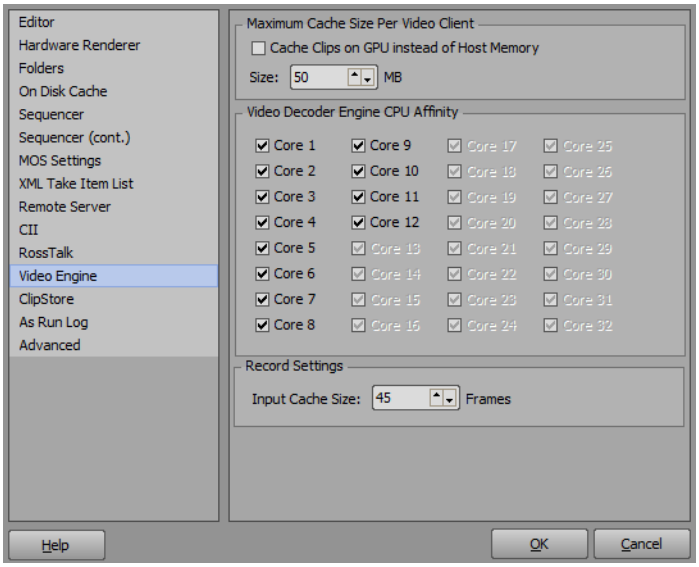
12. Click the **RossTalk** panel to configure the RossTalk settings for XPression Clips.



a. In the **RossTalk Settings** section, select the **Ignore TAKE / SEQI commands for items already online** check box to ignore TAKE and SEQI RossTalk commands for an item if it is already in the online state.

b. Select the **Apply template data changes to items already on-air** check box to allow RossTalk TEMPLATEDATA commands to update published fields in sequencer items that are already on-air. It is selected by default.

13. Click the **Video Engine** panel to configure the cache size and select the CPU core of the video clients.



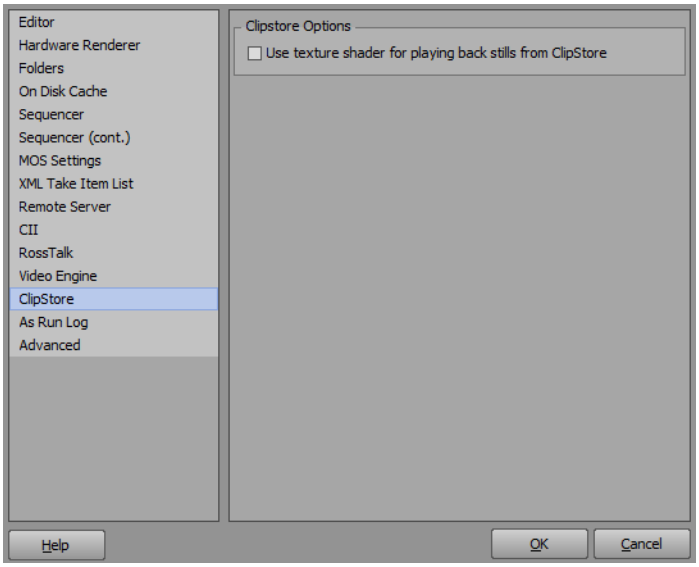
   a. In the **Maximum Cache Size Per Video Client** section, select the Cache Clips on GPU instead of Host Memory check box to cache directly on the GPU to improve playback performance.

   b. Use the **Size** box to enter or select the maximum cache size in MB per video client.

   c. In the **Video Decoder Engine CPU Affinity** section, select the CPU core of the video client.

   d. In the **Record Settings** section, use the **Input Cache Size** box to enter or select the number of frames to cache when recording an input.

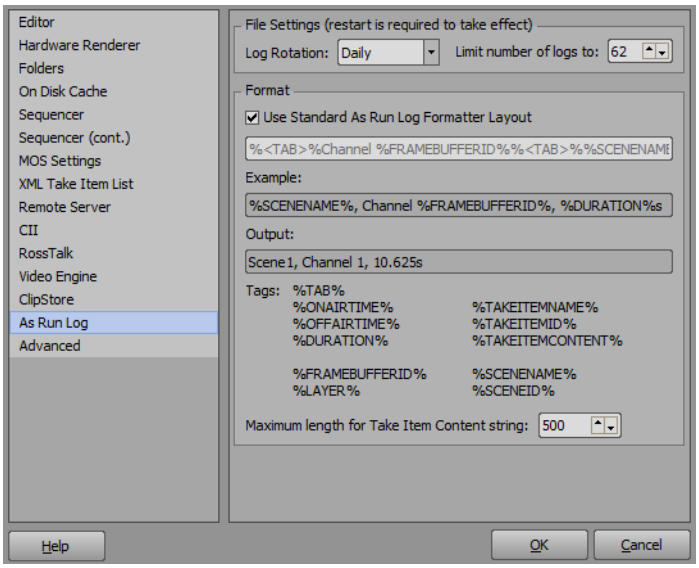
14. Click the **ClipStore** panel to configure the ClipStore options for XPression Clips.



   a. In the **ClipStore Options** section, select the **Use texture shader for playing back stills from ClipStore** check box to assign ClipStore stills to published material using a texture shader instead of a video shader.

15. Click the **As Run Log** panel to configure the file settings and format for the XPression As Run Log.

    The As Run Log can be located in the C:\ drive under **Program Files** > **XPressionClips** > **logs** > **AsRun**.



   a. In the **File Settings** section, use the **Log Rotation** list to select the frequency that the logging takes place. The available options are:

      - **Daily**
      - **Weekly**
      - **Monthly**

   b. Use the **Limit number of logs to** box to enter or select the maximum amount of log files to keep.

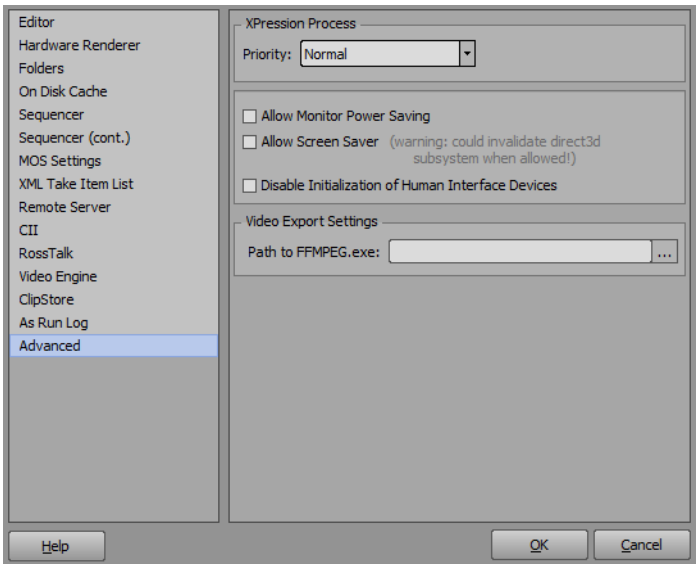
✶ XPression needs to be restarted for any changes to the file settings to take effect.

   c. In the **Format** section, select the Use Standard As Run Log Formatter Layout check box to set the As Run Log format to the standard layout required by the (external) XPression As Run Log formatter.

   d. Use the text box to enter a tag string for the items you want to log. Use the example string and output to assist in constructing the format using the available tags.

   e. Use the **Maximum length for Take Item Content string** box to enter or select a maximum character length for the take item content string logged in the As Run Log.

16. Click the **Advanced** panel to manage screen settings.



a. In the **XPression Process** section, use the **Priority** list to select the CPU usage priority for XPression. The available CPU usage priorities are as follows:

- **Normal** — evenly distribute the CPU time between system processes with the similar priority.
- **High** — give XPression preference and allocate the majority of the CPU time to XPression.
- **Real-Time** — allocate all CPU time to XPression.

✶ Use the Real-Time CPU usage priority with caution, as this priority may cause other applications running on the XPression computer to freeze.

b. Select the **Allow Monitor Power Saving** check box to allow the monitor to run into sleep mode.

c. Select the **Allow Screen Saver** check box to allow the screen saver to run. A screen saver may compromise output performance. For maximum performance, clear this check box to stop the screen saver from running on the XPression computer.

d. Select the **Disable Initialization of Human Interface Devices** check box to ignore a 3Dconnexion 3D mouse connected to an XPression system.

e. In the **Video Export Settings** section, use the **Path to FFMPEG.exe** box to enter the absolute path to an FFMPEG executable or click **Browse** (**...**) to the right of the box to use a file navigator to locate the executable if using XPression 64-bit.

✶ XPression 64-bit editions cannot use QuickTime for export, so it is necessary to use a user-supplied FFMPEG version to perform a .MOV export.

17. Click **OK**.

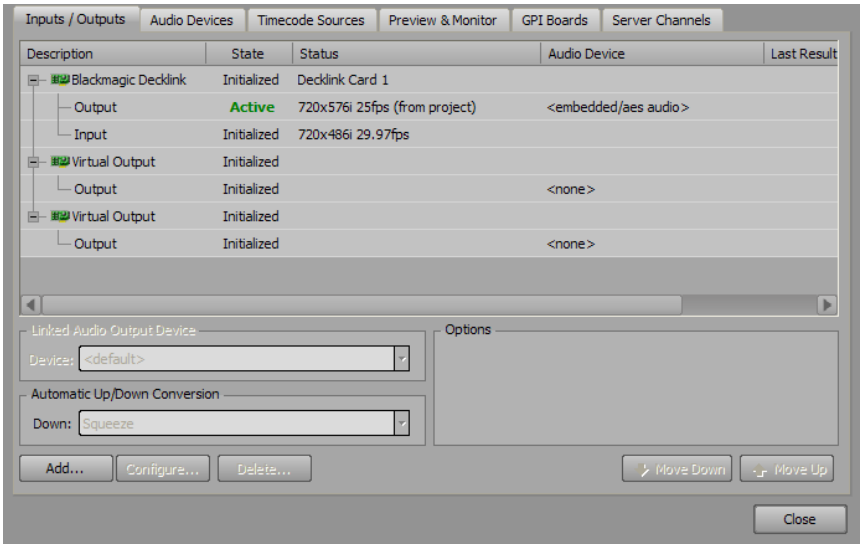
The **Preferences** dialog box closes.

Configure an AJA NTV2 Video FrameBuffer

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

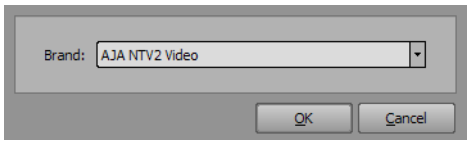
   The **Hardware Setup** dialog box opens.

2. Click the **Inputs / Outputs** tab.



3. Click **Add**.

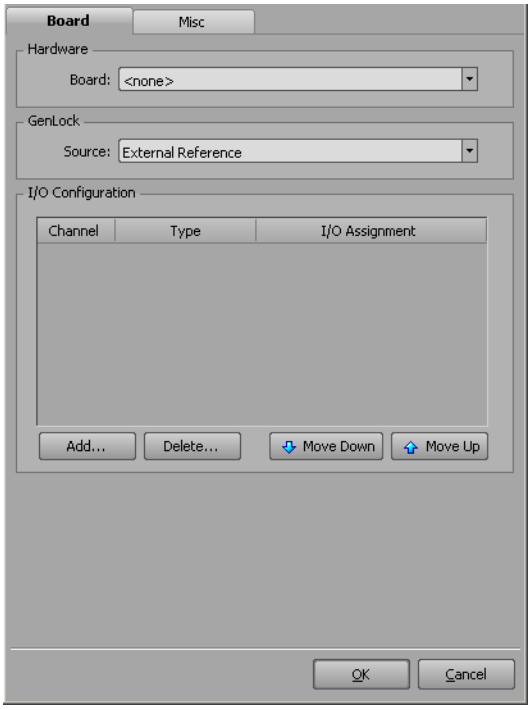
   The **Add New FrameBuffer Board** dialog box opens.



4. Select **AJA NTV2 Video** from the **Brand** list.
5. Click **OK**.

   The **AJA NTV2 Video - Framebuffer Setup** dialog box opens.

6. Click the **Board** tab to configure hardware settings, genlock settings, and the input and output configuration.



   a. In the **Hardware** section, use the **Board** list to select the installed board.

      This menu is automatically populated based on installed hardware (such as Corvid22, Corvid88, Kona IP).

   b. In the **GenLock** section, use the **Source** list to select the source of the genlock signal with which to synchronize XPression. The available genlock signal sources are as follows:

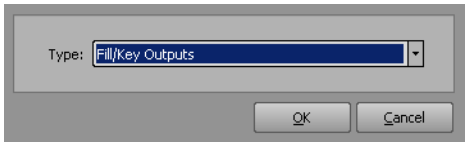
      - **External Reference** — Synchronize with a genlock signal received from an external application through the GenLock In port of the XPression computer. Ross Video recommends using an external reference for the genlock signal source.
      - **Input 1** — Sync to Video In 1 source signal.
      - **Input 2** — Sync to Video In 2 source signal.
      - **Input 3** — Sync to Video In 3 source signal.
      - **Input 4** — Sync to Video In 4 source signal.
      - **Input 5** — Sync to Video In 5 source signal.
      - **Input 6** — Sync to Video In 6 source signal.
      - **Input 7** — Sync to Video In 7 source signal.
      - **Input 8** — Sync to Video In 8 source signal.
      - **Free Running** — Do not synchronize XPression with an external source.

✶ The availability of inputs depends on the output board of the XPression system. For example: up to two inputs with the Corvid22 or up to eight inputs with the Corvid88.

✶ If the output keying mode is set to Internal in the Output tab, it is recommended that the GenLock source be set to an SDI input.

   c. In the **I/O Configuration** section, click **Add** to add an input or output channel.

      The **Select I/O Type** dialog box opens.



d. Use the **Type** list to select an input /output type. The options are:

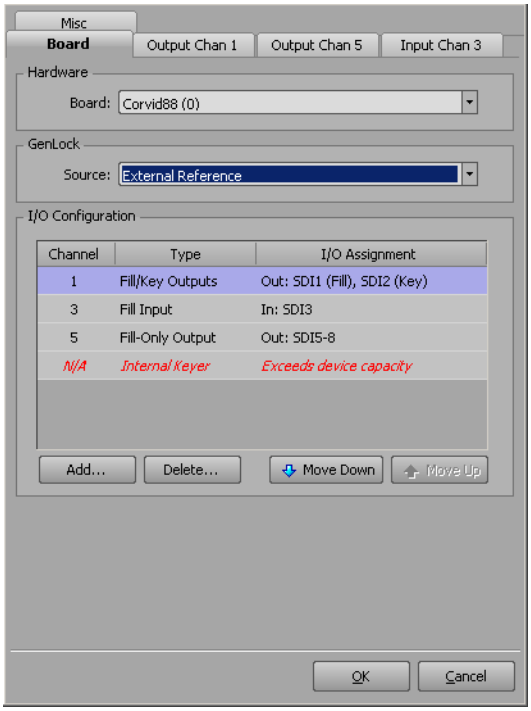
- **<none>** (this option is not applicable)
- **Fill-Only Output** (1 output, no input) (requires a separate license or the XPression Clips option)
- **Fill/Key Outputs** (2 outputs, no input)
- **Fill Input** (1 input, no output)
- **Internal Keyer** (1 input, 1 output)

✶ If the installed card does not have bidirectional I/Os, adding the output channels before the input channels is recommended.

e. Click **OK**.

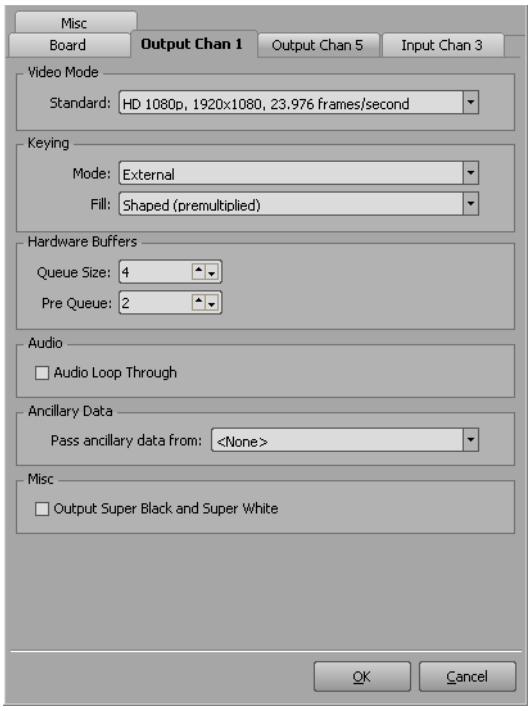
The input/output assignment is added to the **I/O Configuration** list.

Repeat steps c to e for as many channels as necessary.



✶ SDI channel assignments are automatic and any channels beyond the number of channels supported by the graphics card will be listed as **N/A**.

7. Click an **Output** tab to configure output settings.



a. In the **Video Mode** section, use the **Standard** list to select the video format in which to output an XPression project. Depending on the graphics card, the available video formats are as follows:

- **<from project>** — automatically switch to the output video format to the video format of the currently loaded project.

  The project video format is ignored when a specific output video format is selected, and the selected video format is used to playout scenes.
- **PAL, 720x576, 25 frames/second**
- **NTSC, 720x486, 29.97 frames/second**
- **HD 1080i, 1920x1080, 25 frames/second**
- **HD 1080i, 1920x1080, 29.97 frames/second**
- **HD 1080p, 1920x1080, 23.976 frames/second**
- **HD 1080p, 1920x1080, 29.97 frames/second**
- **HD 1080p, 1920x1080, 50 frames/second**
- **HD 1080p, 1920x1080, 59.94 frames/second**
- **HD 1080p, 1920x1080, 60 frames/second**
- **HD 720p, 1280x720, 50 frames/second**
- **HD 720p, 1280x720, 59.94 frames/second**
- **HD 720p, 1280x720, 60 frames/second**
- **HD 1080psf, 1920x1080 23.976 frames/second**
- **HD 1080psf, 1920x1080 24 frames/second**
- **HD 1080psf, 1920x1080 25 frames/second**
- **HD 1080psf, 1920x1080 29.97 frames/second**
- **HD 1080psf, 1920x1080 30 frames/second**
- **UHD 2160p (Quad), 3840x2160, 29.97 frames/second**
- **UHD 2160p (Quad), 3840x2160, 50 frames/second**
- **UHD 2160p (Quad), 3840x2160, 59.94 frames/second**
- **UHD 2160p (2SI), 3840x2160, 29.97 frames/second**
- **UHD 2160p (2SI), 3840x2160, 50 frames/second**
- **UHD 2160p (2SI), 3840x2160, 59.94 frames/second**

- **UHD 2160psf (Quad), 3840x2160, 23.976 frames/second**
- **UHD 2160psf (Quad), 3840x2160, 24 frames/second**
- **UHD 2160psf (Quad), 3840x2160, 25 frames/second**

✶ UHD formats only available on cards that support UHD.

b. In the **Keying** section, use the **Mode** list to select how graphics are output to a video stream. The available modes are as follows:

- **Off (Fill Only)** — output a video signal with no key.
- **External** — output the key and fill graphics as separate video signals. Graphics mixing occurs in an external keyer/mixer.
- **Internal** — key and fill graphics are mixed internally and output as a single video signal from the framebuffer. In this mode the framebuffer functions as the keyer/mixer.

✶ Selecting external or internal keying will change the number of inputs/outputs required and the I/O assignments in the **Board** tab.

✶ If the output keying mode is set to Internal, it is recommended that the GenLock source in the Board tab be set to an SDI input.

c. When **External** is selected in the **Mode** list, use the **Fill** list to select the method used to process fill graphics before output. The available processing methods are as follows:

- **Shaped (premultiplied)** — multiply/shape the fill signal color information by the luminance information in the key signal.
- **Unshaped** — output fill and key signals "as is".

d. In the **Hardware Buffers** section, use the **Queue Size** box to enter or select the number of frames to buffer in memory before sending to the output.

Use this setting to avoid buffer under runs, which may cause frame skipping. Larger queue sizes ensure smooth playout of generated graphics, but add delay to the output.

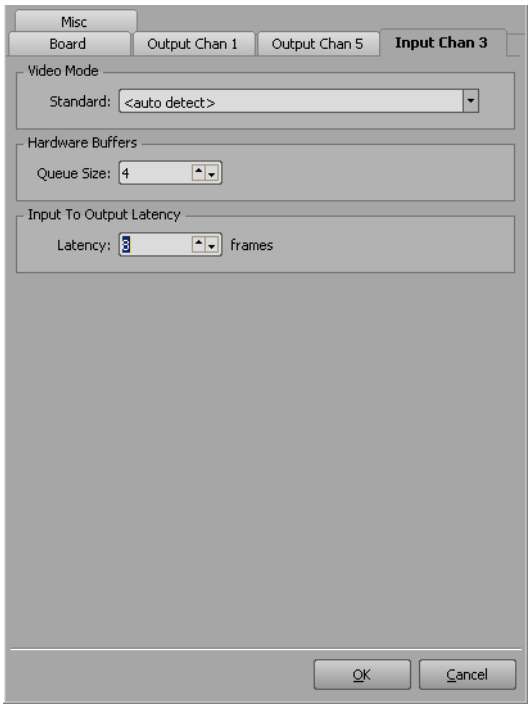
e. Use the **Pre Queue** box to enter or select the number of frames to buffer for the pre-queue. The pre-queue size can be between 1 and 8.

f. In the **Audio** section, select the **Audio Loop Through** check box to enable embedded audio loop through. This option applies to internal keyer only.

g. In the **Ancillary Data** section, select the **Pass Ancillary Data From** check box and use the list to select an input from which to pass the vertical ancillary data from a live source. The functionality of this feature is based on the availability of an ancillary input that is determined by the installed output board.

h. In the **Misc** section, select the **Output Super Black and Super White** to output using the full super black to super white range.

8. Click the **Input** tab to configure input settings.

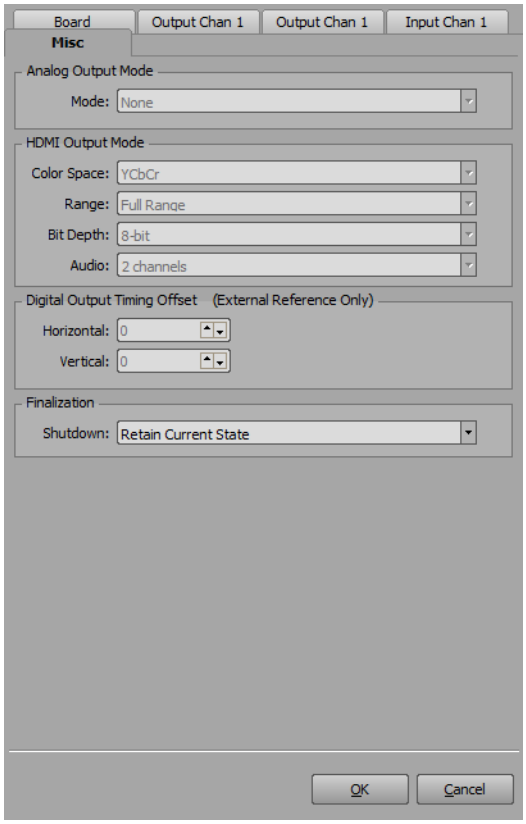


   a. In the **Video Mode** section, use the **Standard** list to select the video format in which to receive video.

   b. In the **Hardware Buffers** section, use the **Queue Size** box to enter or select the number of frames to buffer in memory before sending to XPression.

   c. In the **Input to Output Latency** section, use the **Latency** box to enter or select a fixed delay, in frames, between the input and output. To remain fixed, the delay must be large enough to accommodate the **Queue Size** and **Pre Queue** values in the **Hardware Buffers** section.

9. Click the **Misc** tab to configure analog, HDMI output, digital output timing offset, startup, and shutdown settings.



✶ Analog output and HDMI output are only available on cards that provide them.

a. In the **Analog Output Mode** section, use the **Mode** list to select the video format in which to output an analog video signal.

b. In the **HDMI Output Mode** section, use the **Color Space** list to select the specific organization of colors for the HDMI output. The options are:

- **YCbCr**
- **RGB**

c. Use the **Range** list to select the color range for the selected color space. The options are:

- **SMPTE Range**
- **Full Range**

d. Use the **Bit Depth** list to select the number of bits used for a pixel. The options are:

- **8-bit**
- **10-bit**

e. Use the **Audio Channels** list to select the number of audio channels to output. The options are:

- **2 channels**
- **8 channels**

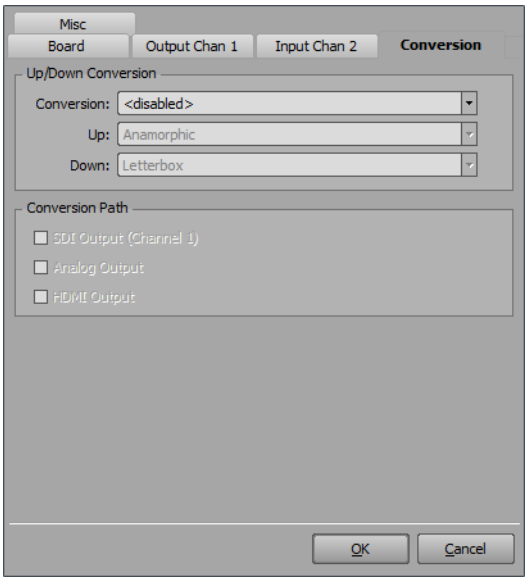
f. In the **Digital Output Timing Offset** section, use the **Horizontal** box to enter or select the horizontal delay timing offset with regards to an external reference. This setting is for external reference only.

g. In the **Vertical** box, enter or select the number of lines for vertical delay timing offset with regards to an external reference. This setting is for external reference only.

h. In the **Finalization** section, use the **Shutdown** list to select the video state at shutdown. The available states are as follows:

- **Retain Current State** — do not clear the content of the framebuffers on shutdown.
- **Clear Framebuffers** — clear all framebuffers from the output framebuffer.

10. If the installed card provides up/down conversion, click the **Conversion** tab to enable or disable output conversion to a predefined signal.



a. In the **Up/Down Conversion** section, use the **Conversion** list to select the video mode for the conversion.

b. Use the **Up** list to select a format for the up converted output. The available output formats are:

- **Anamorphic** — display a full-screen image.
- **Pillar box 4:3** — display a 4:3 image in the center of the screen with black sidebars.
- **Zoom 14:9** — display a 4:3 image zoomed to fill a 14:9 image with black sidebars.
- **Letterbox** — display an image zoomed to fill letterbox displays or display a reduced image with black bars added to top and bottom of the image area with aspect ratio preserved.
- **Zoom Wide** — display an image zoomed and horizontally stretched to fill full screen.

c. Use the **Down** list to select a format for the down converted output. The available output formats are:

- **Letterbox** — display a reduce image with black bars added to the top and bottom of the image area with the aspect ratio preserved.
- **Crop** — crop the image to fit the new screen size.
- **Anamorphic** — display a 16:9 image in a 4:3 box.

d. In the **Conversion Path** section, select the check box or check boxes of the outputs to use to display the converted video:

- **SDI Output (Channel 1)**
- **Analog Output**
- **HDMI Output**

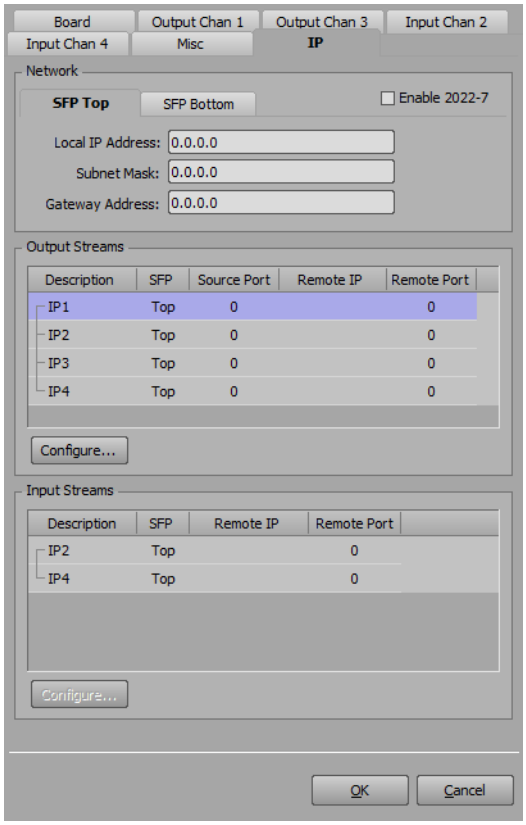
11. If configuring a Kona IP card, select the **IP** tab to configure the **SFP** settings.

    Depending on the card firmware configuration, the settings can be available according to 1-SFP and 2-SFP, where:

    - with 1-SFP, the primary streams will be on the top SFP module. If 1-SFP is enabled with 2022-7 protocol, the bottom SFP module will be used for the redundant streams.
    - with 2-SFP, the some primary streams will be on the top SFP module and others on the bottom SFP module. Specifically:
        - output streams 1 and 2 on the bottom
        - output streams 3 and 4 on the top
        - input streams 1 and 2 on the top
        - input streams 3 and 4 on the bottom

    ### 1-SFP

    If the Kona IP card is configured for 1-SFP, the IP tab is displayed.



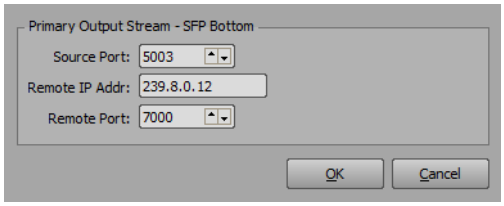
    a. Use the **SFP Top** and **SFP Bottom** tabs in the **Network** section to configure the local IP address of the location to connect the small form-factor pluggable transceiver using the **Local IP Address** box.

    b. Use the **Subnet Mask** box to enter the subnet mask of the location to connect the small form-factor pluggable transceiver.

    c. Use the **Gateway Address** box to enter the IP address of the location to connect the small form-factor pluggable transceiver.

d. Select an output stream in the **Output Streams** section and click **Configure**.

   The **AJA NTV2 - IP Output Stream Setup** dialog box opens.



e. In the **Primary Output Stream - SFP Top / Bottom** section configure the following settings:

   - **Source Port** — use this box to enter or select the port number of the primary output stream source.
   - **Remote IP Addr** — use this box to enter the remote IP address of the primary output stream.
   - **Remote Port** — use this box to enter or select the remote port number for the primary output stream.

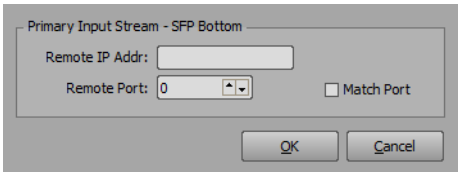
f. Click **OK**.

   The **AJA NTV2 - IP Output Stream Setup** dialog box closes and the settings are added to the selected output stream.

g. Repeat steps d to f for any other output streams.

h. In the **Input Streams** section, select an input stream and click **Configure**.

   The **AJA NTV2 - IP Input Stream Setup** dialog box opens.



i. In the **Primary Input Stream - SFP Top / Bottom** section configure the following settings:

   - **Remote IP Addr** — use this box to enter the remote IP address of the primary video input stream.
   - **Remote Port** — use this box to enter or select the remote port number for the primary video input stream.
   - **Match Port** — select this check box to enable that the remote IP address and remote port must match. When not selected, only the remote IP address needs to match and the remote port is ignored.

j. Click **OK**.

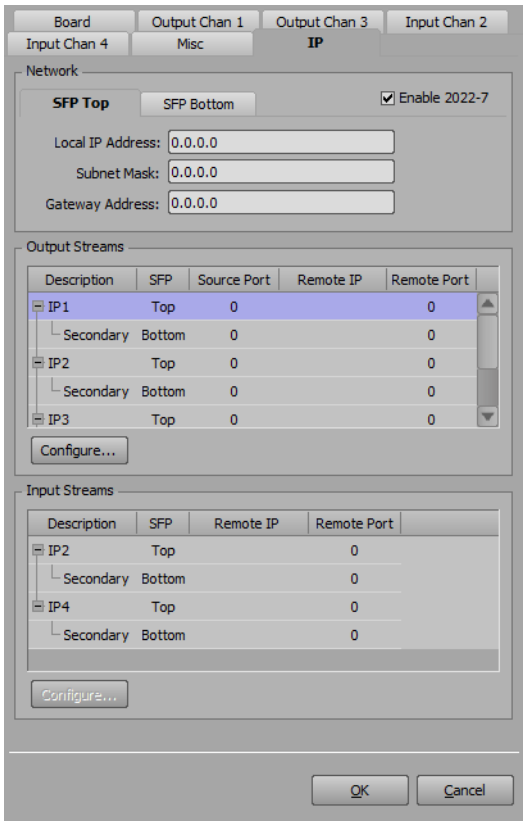
   The **AJA NTV2 - IP Input Stream Setup** dialog box closes and the settings are added to the selected input stream.

k. Repeat steps h to j for any other input streams.

1-SFP 2022-7 Protocol Enabled

If the Kona IP card is configured for 1-SFP, the IP tab is displayed.

a. In the **Network** section, select the **Enable 2022-7** check box to use the 2022-7 standard to enable redundancy for the SFP module connection. If enabling redundancy, the output streams will include both a primary and secondary output stream.



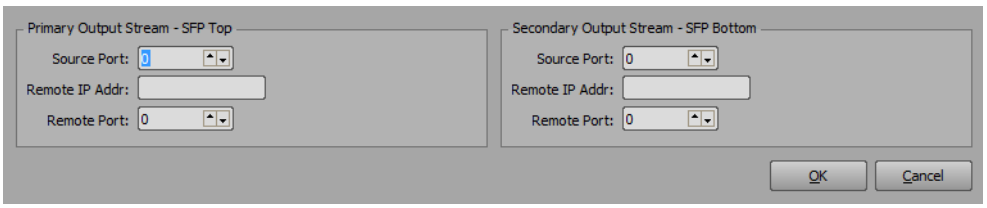
a. Use the **SFP Top** and **SFP Bottom** tabs to configure the local IP address of the location to connect the small form-factor pluggable transceiver using the **Local IP Address** box.

b. Use the **Subnet Mask** box to enter the subnet mask of the location to connect the small form-factor pluggable transceiver.

c. Use the **Gateway Address** box to enter the IP address of the location to connect the small form-factor pluggable transceiver.

d. Select an output stream in the **Output Streams** section and click **Configure**.

The **AJA NTV2 - IP Output Stream Setup** dialog box opens.



e. In the **Primary Output Stream - SFP Top** section configure the following settings:

- **Source Port** — use this box to enter or select the port number of the primary output stream source.
- **Remote IP Addr** — use this box to enter the remote IP address of the primary output stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary output stream.

f. In the **Secondary Output Stream - SFP Bottom** section configure the following settings:

- **Source Port** — use this box to enter or select the port number of the secondary output stream source.
- **Remote IP Addr** — use this box to enter the remote IP address of the secondary output stream.
- **Remote Port** — use this box to enter or select the remote port number for the secondary output stream.

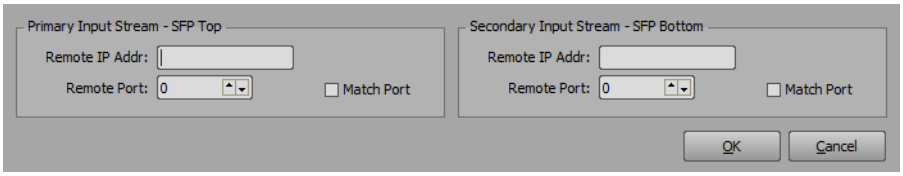
g. Click **OK**.

The **AJA NTV2 - IP Output Stream Setup** dialog box closes and the settings are added to the selected output stream.

h. Repeat steps d to g for any other output streams.

i. In the **Input Streams** section, select an input stream and click **Configure**.

The **AJA NTV2 - IP Input Stream Setup** dialog box opens.



j. In the **Primary Input Stream - SFP Top** section configure the following settings:

- **Remote IP Addr** — use this box to enter the remote IP address of the primary video input stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary video input stream.
- **Match Port** — select this check box to enable that the remote IP address and remote port must match. When not selected, only the remote IP address needs to match and the remote port is ignored.

k. In the **Secondary Input Stream - SFP Bottom** section configure the following settings:

- **Remote IP Addr** — use this box to enter the remote IP address of the secondary video input stream.
- **Remote Port** — use this box to enter or select the remote port number for the secondary video input stream.
- **Match Port** — select this check box to enable that the remote IP address and remote port must match. When not selected, only the remote IP address needs to match and the remote port is ignored.

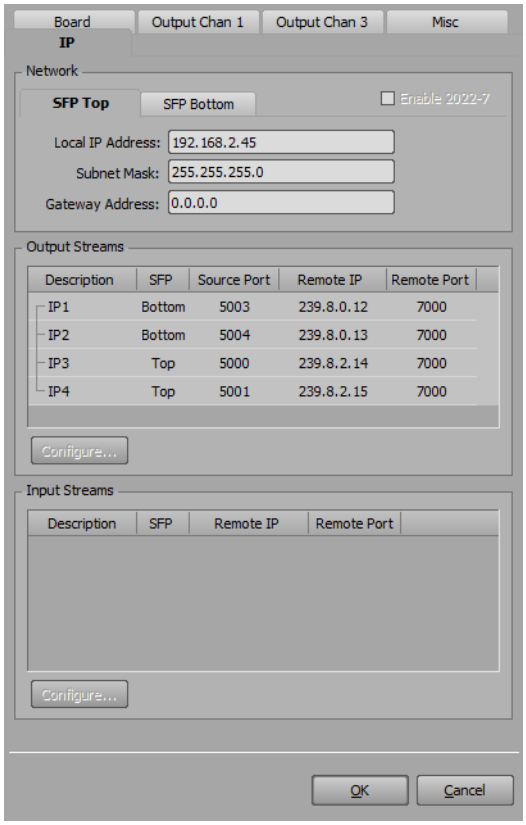
l. Click **OK**.

The **AJA NTV2 - IP Input Stream Setup** dialog box closes and the settings are added to the selected input stream.

m. Repeat steps i to l for any other input streams.

2-SFP

If the Kona IP card is configured for 2-SFP, the IP tab is displayed.



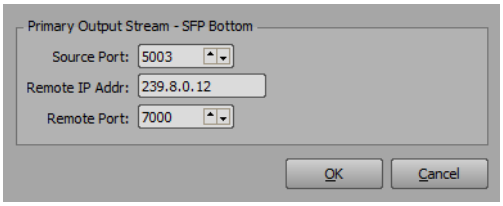
a. Use the **SFP Top** and **SFP Bottom** tabs in the **Network** section to configure the local IP address of the location to connect the small form-factor pluggable transceiver using the **Local IP Address** box.

b. Use the **Subnet Mask** box to enter the subnet mask of the location to connect the small form-factor pluggable transceiver.

c. Use the **Gateway Address** box to enter the IP address of the location to connect the small form-factor pluggable transceiver.

d. In the **Output Streams** section, select an output stream and click **Configure**.

   The **AJA NTV2 - IP Output Stream Setup** dialog box opens.



e. In the **Primary Output Stream - SFP Top / Bottom** section configure the following settings:

- **Source Port** — use this box to enter or select the port number of the primary output stream source.
- **Remote IP Addr** — use this box to enter the remote IP address of the primary output stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary output stream.

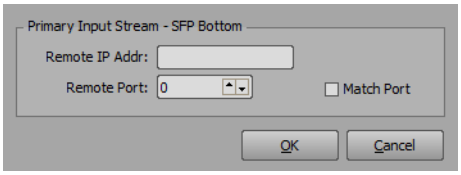
f. Click **OK**.

   The **AJA NTV2 - IP Output Stream Setup** dialog box closes and the settings are added to the selected output stream.

g. Repeat steps d to f for any other output streams.

h. In the **Input Streams** section, select an input stream and click **Configure**.

   The **AJA NTV2 - IP Input Stream Setup** dialog box opens.



i. In the **Primary Input Stream - SFP Top / Bottom** section configure the following settings:

   - **Remote IP Addr** — use this box to enter the remote IP address of the primary video input stream.
   - **Remote Port** — use this box to enter or select the remote port number for the primary video input stream.
   - **Match Port** — select this check box to enable that the remote IP address and remote port must match. When not selected, only the remote IP address needs to match and the remote port is ignored.

j. Click **OK**.

   The **AJA NTV2 - IP Input Stream Setup** dialog box closes and the settings are added to the selected input stream.

k. Repeat steps h to j for any other input streams.

12. Click **OK**.

    The configured AJA Video framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog box.

13. In the **Hardware Setup** dialog box, click **Close**.

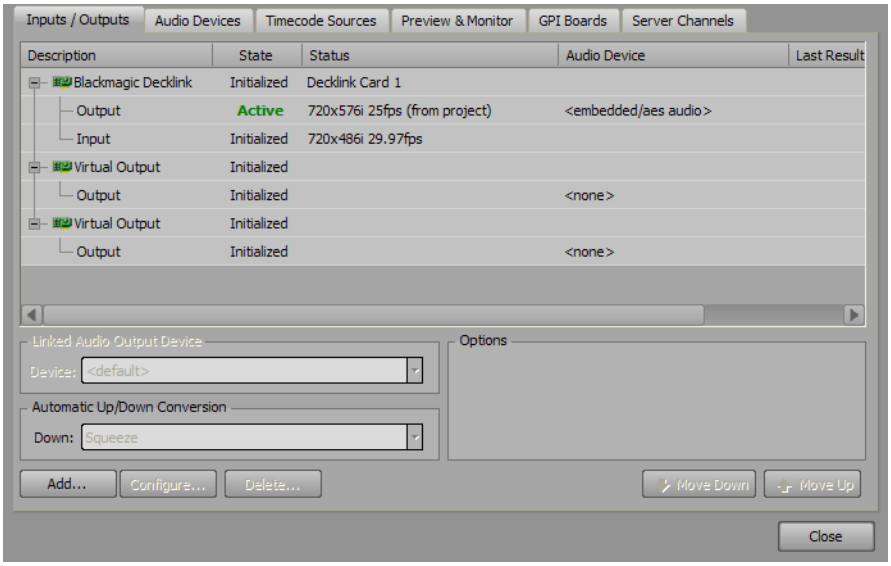
    The **Hardware Setup** dialog box closes.

Configure an AJA Video FrameBuffer (Legacy)

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

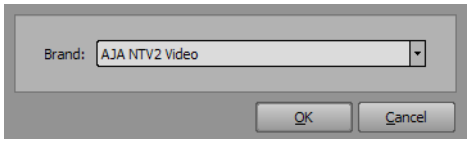
   The **Hardware Setup** dialog box opens.

2. Click the **Inputs / Outputs** tab.



3. Click **Add**.

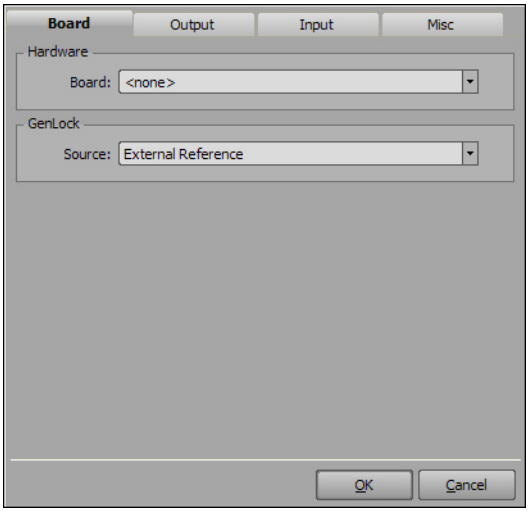
   The **Add New FrameBuffer Board** dialog box opens.



4. Select **AJA Video (legacy)** from the **Brand** list.
5. Click **OK**.

   The **AJA Video (Legacy) - Framebuffer Setup** dialog box opens.

6. Click the **Board** tab to configure hardware and genlock settings.



   a. In the **Hardware** section, use the **Board** list to select the installed board.

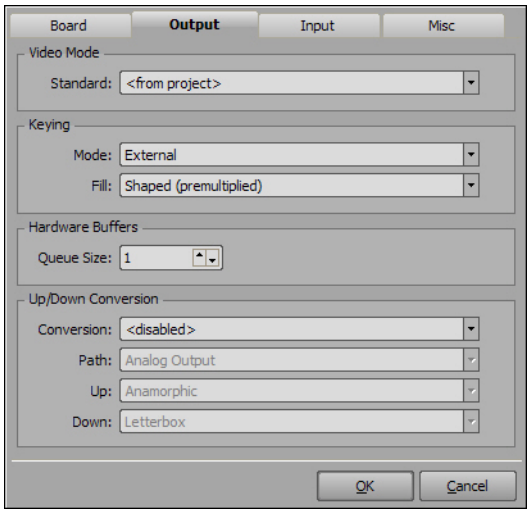
      This menu is automatically populated based on installed hardware.

b. In the **GenLock** section, use the **Source** list to select the source of the genlock signal with which to synchronize XPression. The available genlock signal sources are as follows:

- **External Reference** — Synchronize with a genlock signal received from an external application through the GenLock In port of the XPression computer. Ross Video recommends using an external reference for the genlock signal source.
- **Input 1** — Sync to Video In 1 source signal.
- **Input 2** — Sync to Video In 2 source signal.
- **Free Running** — Do not synchronize XPression with an external source.

✶ If the output keying mode is set to Internal in the Output tab, the GenLock source needs to be set to an SDI input.

7. Click the **Output** tab to configure output settings.



a. In the **Video Mode** section, use the **Standard** list to select the video format in which to output an XPression project. The available video formats are as follows:

- **<from project>** — automatically switch to the output video format to the video format of the currently loaded project.

  The project video format is ignored when a specific output video format is selected, and the selected video format is used to playout scenes.
- **PAL, 720x576, 25 frames/second**
- **NTSC, 720x486, 29.97 frames/second**
- **HD 1080i, 1920x1080, 25 frames/second**
- **HD 1080i, 1920x1080, 29.97 frames/second**
- **HD 1080p, 1920x1080, 23.976 frames/second**
- **HD 1080p, 1920x1080, 50 frames/second**
- **HD 1080p, 1920x1080, 59.94 frames/second**
- **HD 1080p, 1920x1080, 60 frames/second**
- **HD 720p, 1280x720, 50 frames/second**
- **HD 720p, 1280x720, 59.94 frames/second**

b. In the **Keying** section, use the **Mode** list to select how graphics are output to a video stream. The available modes are as follows:

- **External** — Output the key and fill graphics as separate video signals. Graphics mixing occurs in an external keyer/mixer.
- **Internal** — Key and fill graphics are mixed internally and output as a single video signal from the framebuffer. In this mode the framebuffer functions as the keyer/mixer.

c. When **External** is selected in the **Mode** list, use the **Fill** list to select the method used to process fill graphics before output. The available processing methods are as follows:

- **Shaped (premultiplied)** — Multiply/shape the fill signal color information by the luminance information in the key signal.
- **Unshaped** — Output fill and key signals "as is".

d. In the **Hardware Buffers** section, use the **Queue Size** box to enter or select the number of frames to buffer in memory before sending to the output.

Use this setting to avoid buffer under runs, which may cause frame skipping. Larger queue sizes ensure smooth playout of generated graphics, but add delay to the output.

e. In the **Up/Down Conversion** section, use the **Conversion** list to enable or disable output conversion to a predefined signal.

f. Use the **Path** list to select the source display on the output.

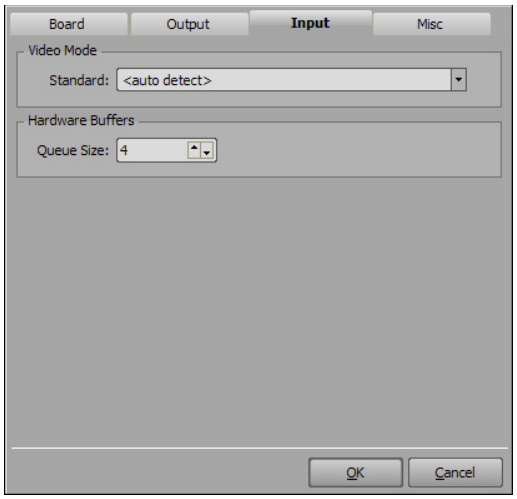
g. Use the **Up** list to select the format for up converted output. The available output formats are as follows:

- **Anamorphic** — Display a full-screen image.
- **Pillar box 4:3** — Display a 4:3 image in the center of the screen with black sidebars.
- **Zoom 14:9** — Display a 4:3 image zoomed to fill a 14:9 image with black sidebars.
- **Letterbox** — Display an image zoomed to fill full screen.
- **Zoom Wide** — Display an image zoomed and horizontally stretched to fill full screen.

h. Use the **Down** list to select the format for down converted output. The available output formats are as follows:

- **Letterbox** — Display a reduce image with black bars added to the top and bottom of the image area with the aspect ratio preserved.
- **Crop** — Crop the image to fit the new screen size.
- **Anamorphic** — Display a 16:9 image in a 4:3 box.

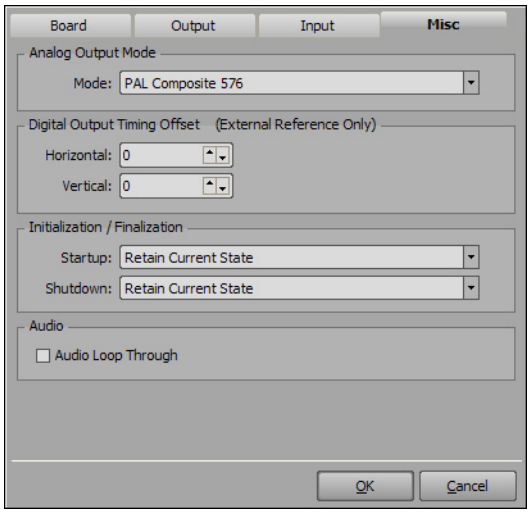
8. Click the **Input** tab to configure input settings.



a. In the **Video Mode** section, use the **Standard** list to select the analog video format in which to receive video.

b. In the **Hardware Buffers** section, use the **Queue Size** box to enter or select the number of frames to buffer in memory before sending to XPression.

9. Click the **Misc** tab to configure analog, timing, startup, shutdown, and audio settings.



   a. In the **Analog Output Mode** section, use the **Mode** list to select the video format in which to output an analog video signal.

   b. In the **Digital Output Timing Offset** section, use the **Horizontal** box to enter or select the number of lines for horizontal delay timing offset with regards to an external reference.

   c. In the **Vertical** box, enter or select the number of lines for vertical delay timing offset with regards to an external reference.

   d. In the **Initialization / Finalization** section, use the **Startup** list to select the video state at startup. The available states are as follows:

      - **Retain Current State** — Retain resources to use once again.
      - **Clear Framebuffers** — Clear all framebuffers from the output framebuffer.

   e. Use the **Shutdown** list to select the video state at shutdown. The available states are as follows:

      - **Retain Current State** — Retain resources to use once again.
      - **Clear Framebuffers** — Clear all framebuffers from the output framebuffer.

   f. In the **Audio** section, select the **Audio Loop Through** check box to enable embedded audio loop through.

10. Click **OK**.

    The configured AJA Video framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog box.

11. In the **Hardware Setup** dialog box, click **Close**.

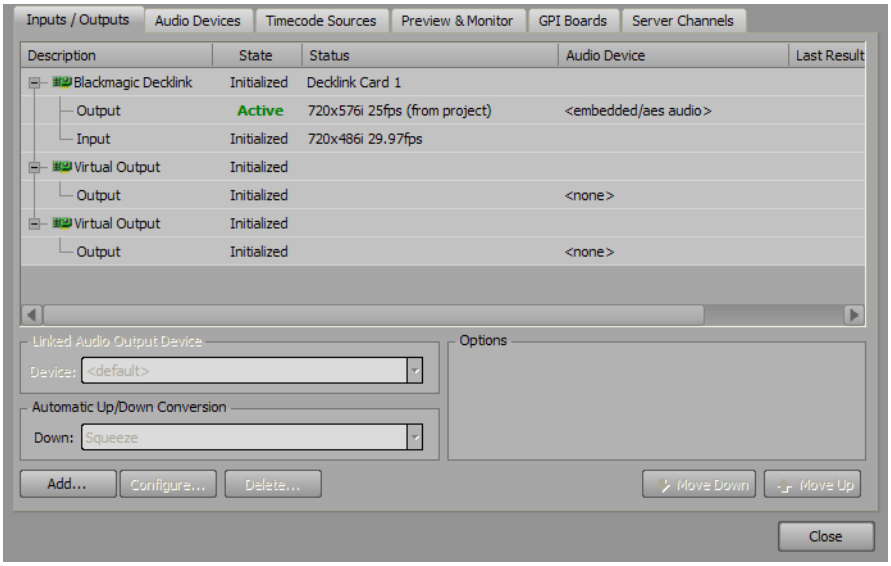
    The **Hardware Setup** dialog box closes.

Configure a Blackmagic Design FrameBuffer

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

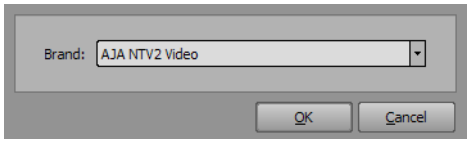
   The **Hardware Setup** dialog box opens.

2. Click the **Inputs / Outputs** tab.



3. Click **Add**.

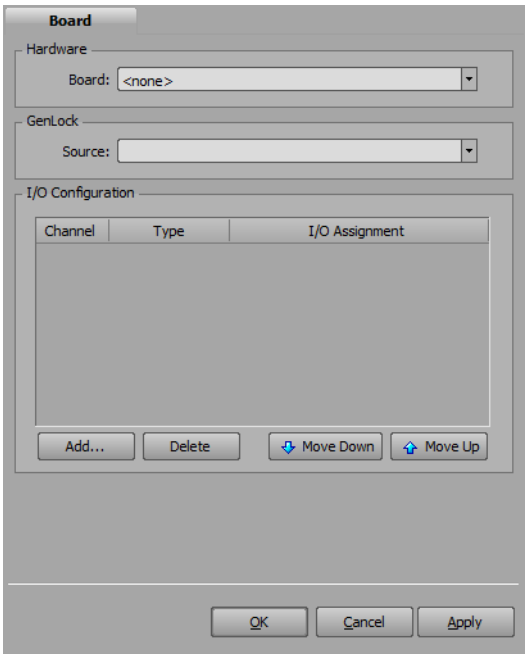
   The **Add New FrameBuffer Board** dialog box opens.



4. Select **Blackmagic Design** from the **Brand** list.
5. Click **OK**.

   The **Blackmagic Design - Framebuffer Setup** dialog box opens.

6. Click the **Board** tab to configure hardware settings.



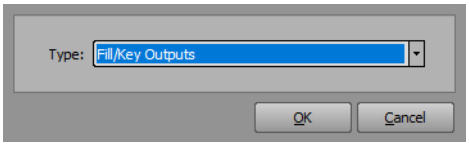
a. In the **Hardware** section, use the **Board** list to select the installed Blackmagic Design card to configure.

b. In the **GenLock** section, use the **Source** list to select the source of the genlock signal with which to synchronize XPression. The available genlock signal sources are as follows:

- **External Reference** — Synchronize with a genlock signal received from an external application through the GenLock In port of the XPression computer. Ross Video recommends using an external reference for the genlock signal source.
- **Free Running** — Do not synchronize XPression with an external source.

c. In the **I/O Configuration** section, click **Add** to add an input or output channel.

The **Select I/O Type** dialog box opens.



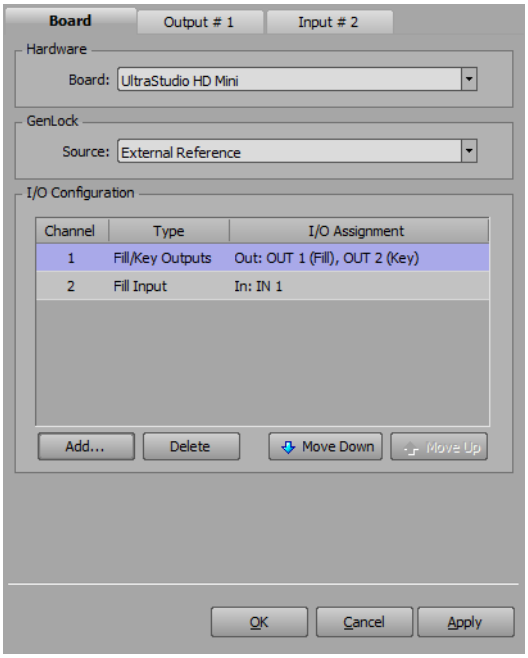
d. Use the **Type** list to select an input /output type. The options are:

- **<none>** (this option is not applicable)
- **Fill-Only Output** (uses 1 output) (requires a separate license or the XPression Clips option)
- **Fill/Key Output** (uses 2 outputs)
- **Fill Input** (uses 1 input)
- **Internal Keyer** (uses 1 input, 1 output)

e. Click **OK**.

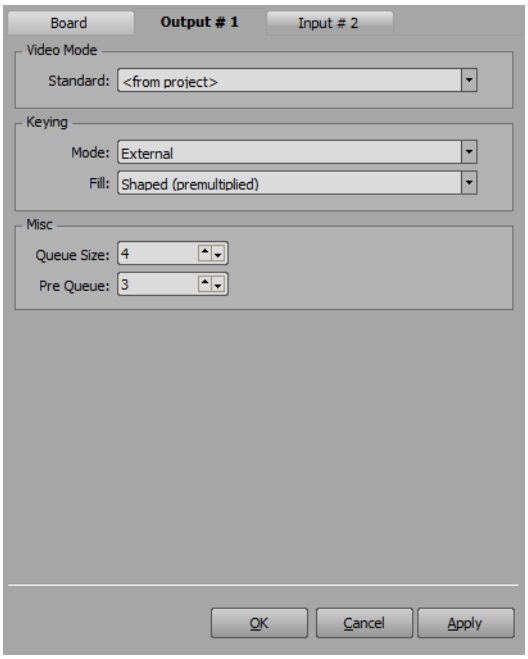
The input/output assignment is added to the **I/O Configuration** list.

Depending on the I/O configuration, repeat steps c to e for as many channels as necessary.



✶ SDI channel assignments are automatic and any channels beyond the number of channels supported by the graphics card will be listed as **Exceeds device capacity**.

7. Click the **Output** tab to configure output settings.



a. In the **Video Mode** section, use the **Standard** list to select the video format in which to output an XPression project.

b. In the **Keying** section, use the **Mode** list to select how graphics are output to a video stream. The modes are as follows:

- **Off (Fill Only)** — Only output a video signal. In this mode, graphics are excluded from the output.
- **External** — Output the key and fill as separate video signals. Graphics and video mixing occurs in an external keyer/mixer.
- **Internal** — Key and fill are mixed internally. Graphics and video input are outputted as a single video signal from the framebuffer. In this mode the framebuffer functions as the keyer/mixer.

c. When **External** is selected in the **Mode** list, use the **Fill** list to select the method used to process fill graphics before output. The available processing methods are as follows:

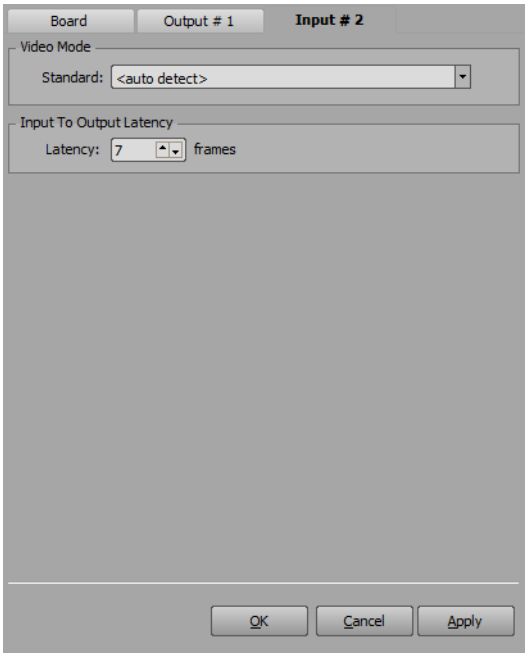
- **Shaped (premultiplied)** — Multiply/shape the fill signal color information by the luminance information in the key signal.
- **Unshaped** — Output fill and key signals "as is".

d. In the **Misc** section, use the **Queue Size** box to enter or select the number of frames to buffer in memory before sending to the output.

Use this setting to avoid buffer under runs, which may cause frame skipping. Larger queue sizes ensure smooth playout of generated graphics, but add delay to the output.

e. Use the **Pre Queue** box to enter or select the number of frames to buffer for the pre-queue. The pre-queue size can be between 1 and 8.

8. Click the **Input** tab to configure input settings.



a. In the **Video Mode** section, use the **Standard** list to select the analog video format in which to receive video. The only option currently available is **<auto detect>**.

b. In the **Input to Output Latency** section, use the **Latency** box to enter or select a fixed delay, in frames, between the input and output. To remain fixed, the delay must be large enough to accommodate the **Queue Size** and **Pre Queue** values in the **Hardware Buffers** section of the corresponding **Output** tab.

9. Click **Apply**.

The changes to the Blackmagic Design framebuffer board are applied.

10. Click **OK**.

The configured Blackmagic Design framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog box.

11. In the **Hardware Setup** dialog box, click **Close**.

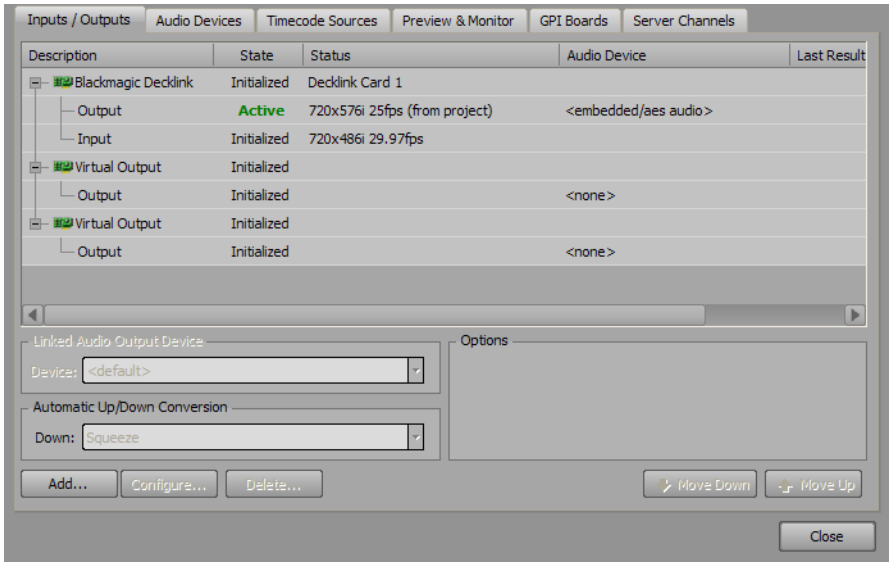
    The **Hardware Setup** dialog box closes.

Configure a Blackmagic Design FrameBuffer (Legacy)

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

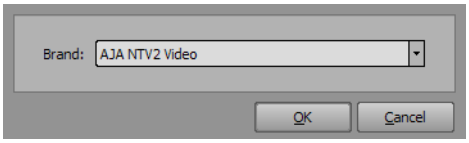
   The **Hardware Setup** dialog box opens.

2. Click the **Inputs / Outputs** tab.



3. Click **Add**.

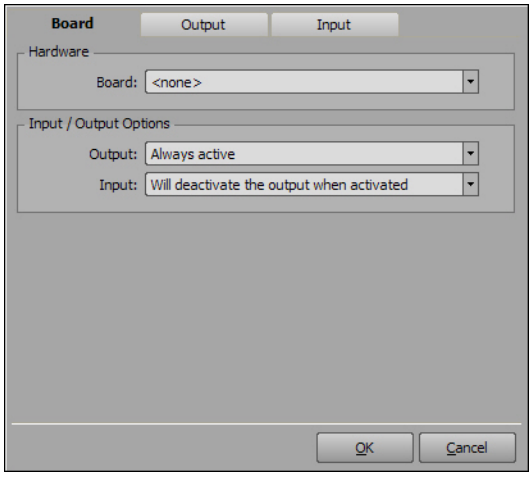
   The **Add New FrameBuffer Board** dialog box opens.



4. Select **Blackmagic Design (Legacy)** from the **Brand** list.
5. Click **OK**.

   The **Blackmagic Design (Legacy) - Framebuffer Setup** dialog box opens.

6. Click the **Board** tab to configure hardware settings.



   a. In the **Hardware** section, use the **Board** list to select the installed DeckLink Studio card to configure.

b. In the **Input / Output Options** section, use the **Output** list to select when to activate video output from the Blackmagic Design framebuffer. The options are as follows:

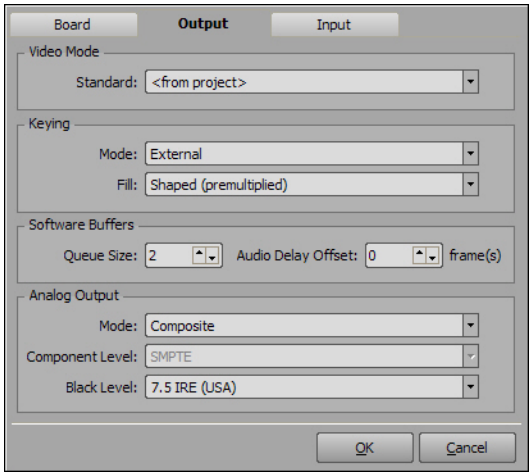
- **Always active** — Always output video.
- **Active on use only** — Only output video when the card is in use.

c. Use the **Input** list to select when to activate video input through the Blackmagic Design framebuffer. The available options are as follows:

- **Will deactivate the output when activated** — automatically deactivate the output when the input is activated.
- **Can only be activated when the output is not active** — input can only be activated when the output is not active.
- **Always disabled** — disable the input.
- **Always enabled (output will always be disabled)** — enable the input and disable the output at all times.

✶ Input grabbing may compromise output performance.

7. Click the **Output** tab to configure output settings.



a. In the **Video Mode** section, use the **Standard** list to select the video format in which to output an XPression project.

b. In the **Keying** section, use the **Mode** list to select how graphics are output to a video stream. The modes are as follows:

- **External** — Output the key and fill as separate video signals. Graphics and video mixing occurs in an external keyer/mixer.
- **Internal** — Key and fill are mixed internally. Graphics and video are output as a single video signal from the framebuffer. In this mode the framebuffer functions as the keyer/mixer.
- **Off** — Only output a video signal. In this mode, graphics are excluded from the output.

c. When **External** is selected in the **Mode** list, use the **Fill** list to select the method used to process fill graphics before output. The available processing methods are as follows:

- **Shaped (premultiplied)** — Multiply/shape the fill signal color information by the luminance information in the key signal.
- **Unshaped** — Output fill and key signals "as is".

d. In the **Software Buffers** section, use the **Queue Size** box to enter or select the number of frames to buffer in memory before sending to the output.

Use this setting to avoid buffer underruns, which may cause frame skipping. Larger queue sizes ensure smooth playout of generated graphics, but add delay to the output.

e. Use the **Audio Delay Offset** box to enter or select an amount of frames as a buffer.

f. In the **Analog Output** section, use the **Mode** list to select the type of analog video signal to output. The available output video signals are as follows:

- **Composite** — output a single video signal that combines luminance and chroma.
- **Component** — output three channels (Y, R-Y, and B-Y).
- **S-Video** — output a video signal that carries the video data as two separate signals (brightness and color), unlike composite video which carries the entire set of signals through a signal line.

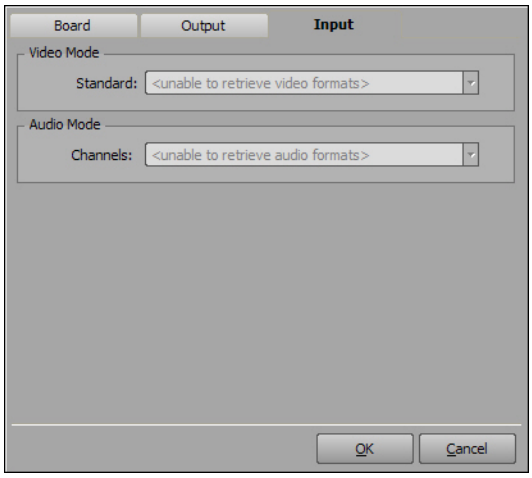
g. When **Component** is selected in the **Mode** list, use the **Component Level** list to select the output component analog level. The available levels are as follows:

- **SMPTE** — use this level for monitoring component analog video.
- **Betacam** — use this level for output to Sony Betacam SP decks.

h. Use the **Black Level** list to select the default black level analog video signal. The available levels are as follows:

- **7.5 IRE (USA)** — standard black level for all NTSC countries except Japan.
- **0.0 IRE (Japan)** — standard black level for Japan.

8. Click the **Input** tab to configure input settings.



a. In the **Video Mode** section, use the **Standard** list to select the analog video format in which to receive video.

b. In the **Audio Mode** section, use the **Channels** list to select the channel inputs in which to receive the embedded audio. The options available are:

- **2 channel**
- **4 channel**
- **6 channel**
- **8 channel**
- **10 channel**
- **12 channel**
- **16 channel**

9. Click **OK**.

   The configured Blackmagic Design framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog box.

10. In the **Hardware Setup** dialog box, click **Close**.

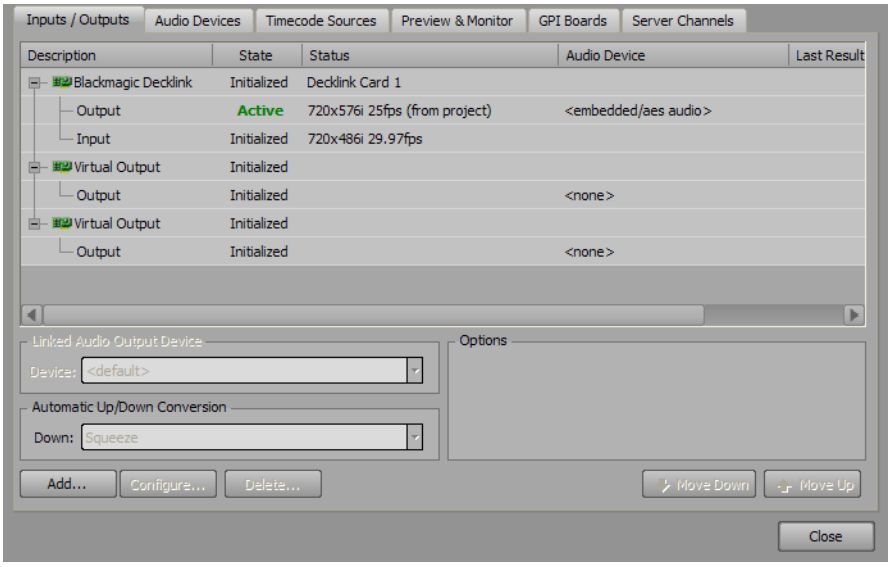
    The **Hardware Setup** dialog box closes.

Configure a Graphite FrameBuffer

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

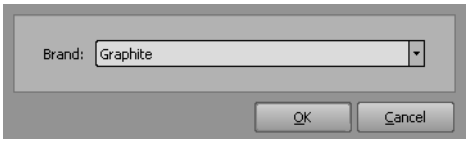
   The **Hardware Setup** dialog box opens.

2. Click the **Inputs / Outputs** tab.



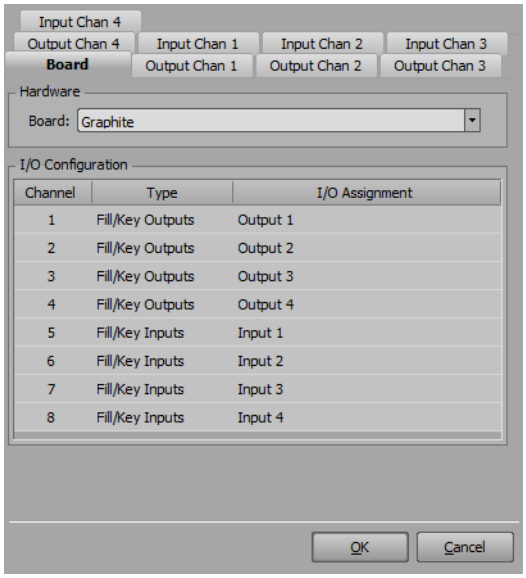
3. Click **Add**.

   The **Add New FrameBuffer Board** dialog box opens.



4. Select **Graphite** from the **Brand** list, if not already selected.
5. Click **OK**.

   The **Graphite - Framebuffer Setup** dialog box opens.



6. Select the **Board** tab to choose and configure an installed card.

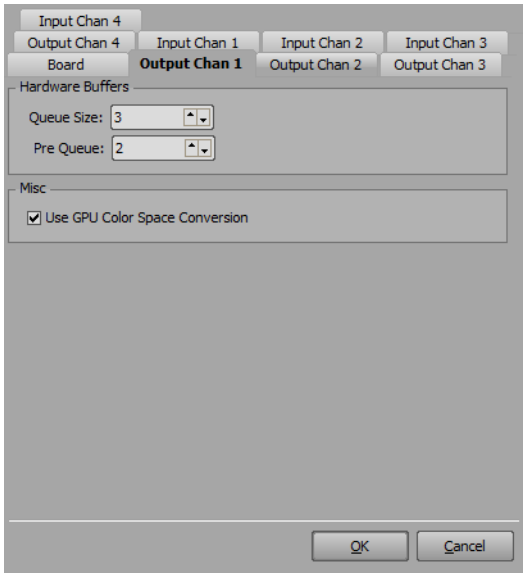
   This menu is automatically populated based on installed hardware.

7. In the **Hardware** section, use the **Board** list to select a Graphite card to configure, if not already selected.

   The **I/O Configuration** list will be populated according to the type of XPression system:

   - XPression Graphite and XPression Studio SCE:
     - 3 Fill/Key Outputs
     - 1 Fill/Key Input
   - XPression Studio:
     - 4 Fill/Key Outputs
     - 4 Fill/Key Inputs

8. Click an **Output Chan** (Output Channel) tab to configure an output channel.



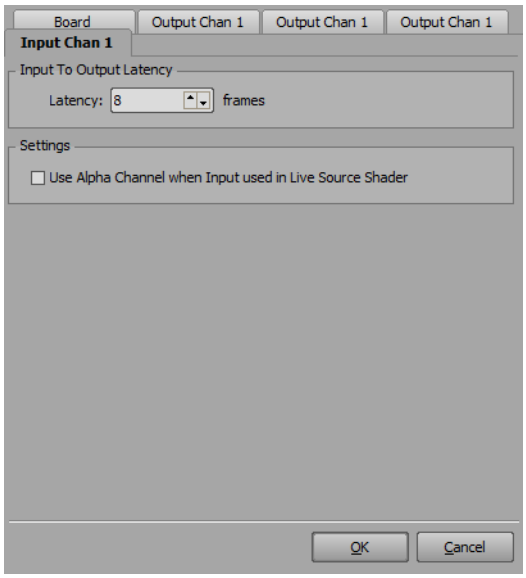
   a. In the **Hardware Buffers** section, use the **Queue Size** box to enter or select the number of frames to buffer in memory before sending to the output.

      Use this setting to avoid buffer under runs, which may cause frame skipping. Larger queue sizes ensure smooth playout of generated graphics, but add delay to the output.

   b. Use the **Pre Queue** box to enter or select the number of frames to buffer for the pre-queue. The pre-queue size can be between 1 and 8.

   c. In the **Misc** section, select the **Use GPU Color Space Conversion** to use the GPU to perform the color space conversion on the outputs. This option provides optimal performance.

9. Click an **Input Chan** (Input Channel) tab to configure an input channel.



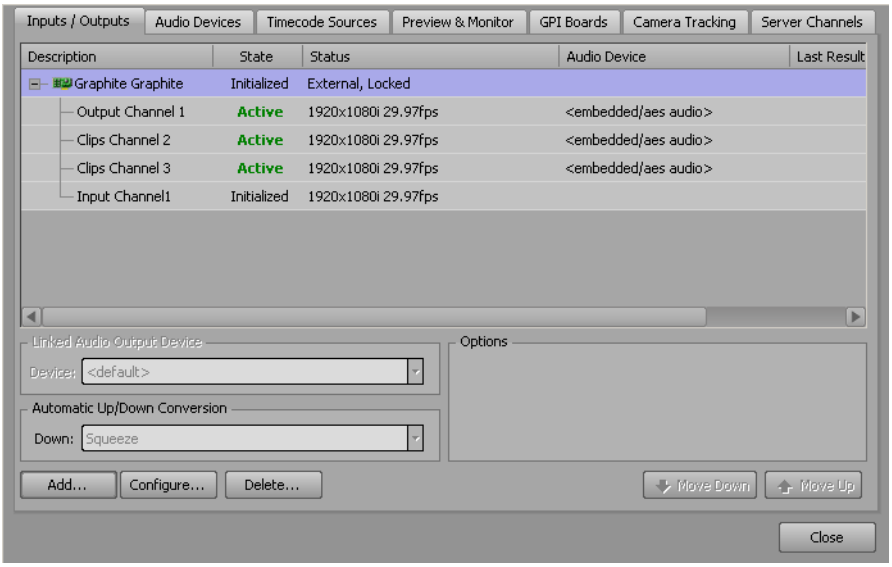
   a. In the **Input to Output Latency** section, use the **Latency** box to enter or select a fixed delay, in frames, between the input and output. To remain fixed, the delay must be large enough to accommodate the **Queue Size** and **Pre Queue** values in the **Hardware Buffers** section of the corresponding **Output** tab.

   b. In the **Settings** section, select the **Use Alpha Channel when Input used in Live Source Shader** check box to use the alpha channel when the selected input is used in a live source shader.

   Repeat steps 8 to 9 for as many channels as necessary.

10. Click **OK**.

    The input/output assignment is added to the **I/O Configuration** list.



Configure a Matrox DSX, X.mio3 and X.mio5 FrameBuffer

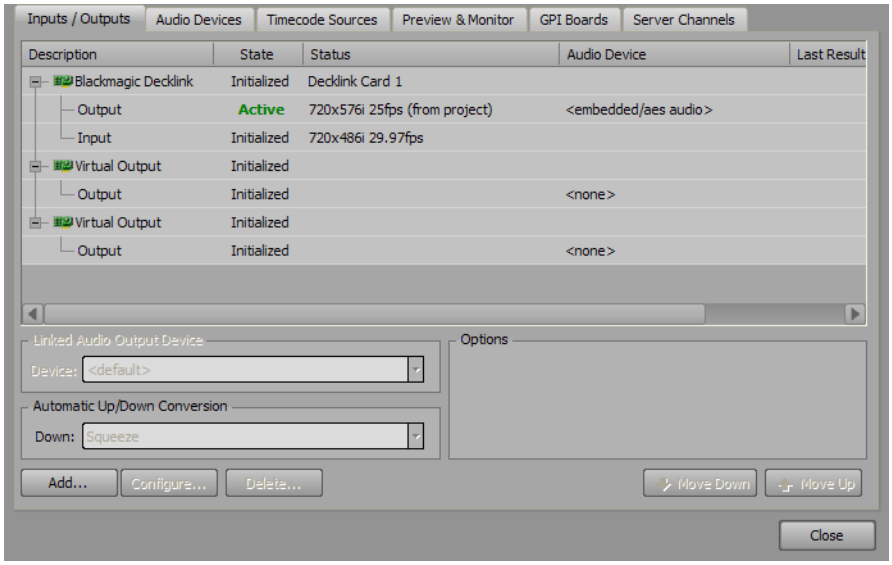
Use the following procedure to configure a Matrox DSX LE4, DSX LE5 D25, X.mio3, or X.mio5 framebuffer board.

- No 2SI support with XPression 10.5 combined with Matrox driver version 10.0.3. Matrox driver 10.1 is required.

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

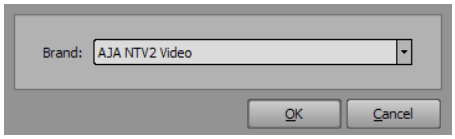
   The **Hardware Setup** dialog box opens.

2. Click the **Inputs / Outputs** tab.



3. Click **Add**.

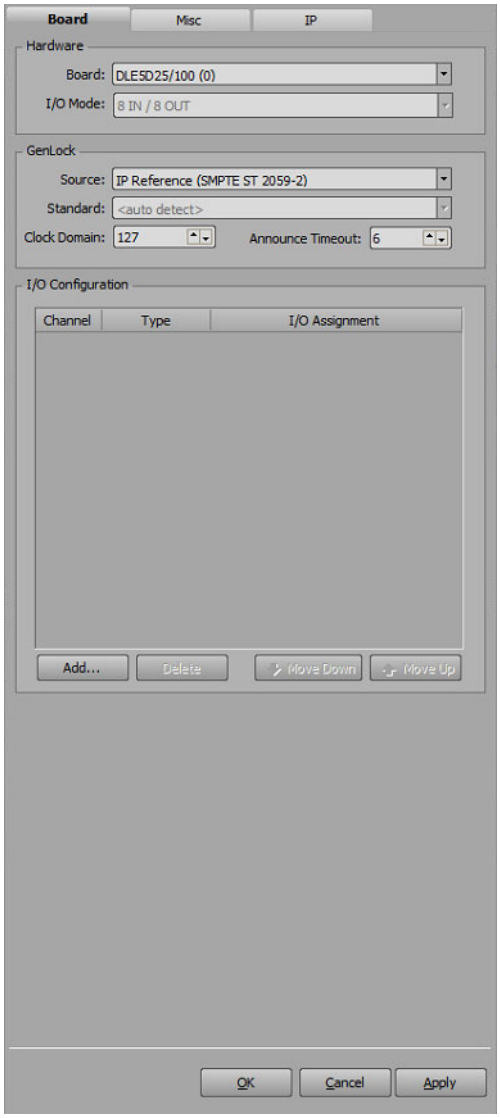
   The **Add New FrameBuffer Board** dialog box opens.



4. Select **Matrox DSX** from the **Brand** list.

5. Click **OK**.

   The **Matrox DSX - Framebuffer Setup** dialog box opens.



6. Select the **Board** tab to choose and configure an installed DSX LE4, DSX LE5 D25, or X.mio3 card.

   a. In the **Hardware** section, use the **Board** list to select the installed DSX LE4, DSX LE5 D25, or X.mio3 card to configure.

      The read-only **I/O Mode** displays the input and output configuration for the card. These options vary based on the card and in what configuration it was flashed. The defaults are:

      - **2 IN / 6 Out** (for DSX LE4/8/100 and X.mio3/6/100)
      - **4 IN / 4 Out** (for DSX LE IP and X.mio3 IP)
      - **8 IN / 8 OUT**, **2 IN / 2 OUT** for UHD (for DSX LE5 D25)

      Depending on the XPression software version, extra fill outputs on the DSX LE4, DSX LE5 D25, and X.mio3 can be used for preview purposes. Contact a Ross representative for details.

b. In the **GenLock** section, use the **Source** list to select the source of the GenLock signal with which to synchronize XPression. The available GenLock signal sources vary based on the card and card configuration. Examples include:

- **External Reference** — Synchronize with a genlock signal received from an external application through the GenLock In port of the XPression computer. Ross Video recommends using an external reference for the GenLock signal source.
- **SDI IN #** — sync to an available SDI Input source signal. The SDI input numbers will vary based on the card and how it was flashed.
- **IP Reference (SMPTE ST 2059-2)**
- **SFP A (SMPTE ST 2059-2)**
- **SFP B (SMPTE ST 2059-2)**
- **Free Running** — do not synchronize XPression with an external source.

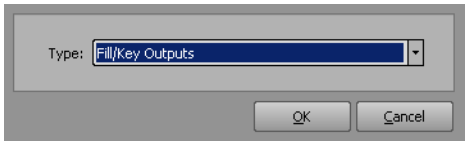
c. Use the **Standard** list to select the format of the incoming GenLock signal.

d. Use the **Clock Domain** box to enter or select the PTP clock domain when using an IP GenLock (SMPTE ST-2059). This option is only available on cards supporting IP.

e. Use the **Announce Timeout** box to enter or select the number of announce messages that can be missed before triggering the Best Master Clock Algorithm (BMCA) to find a new Grand Master (GM).

f. In the **I/O Configuration** section, click **Add** to add an input or output channel.

The **Select I/O Type** dialog box opens.



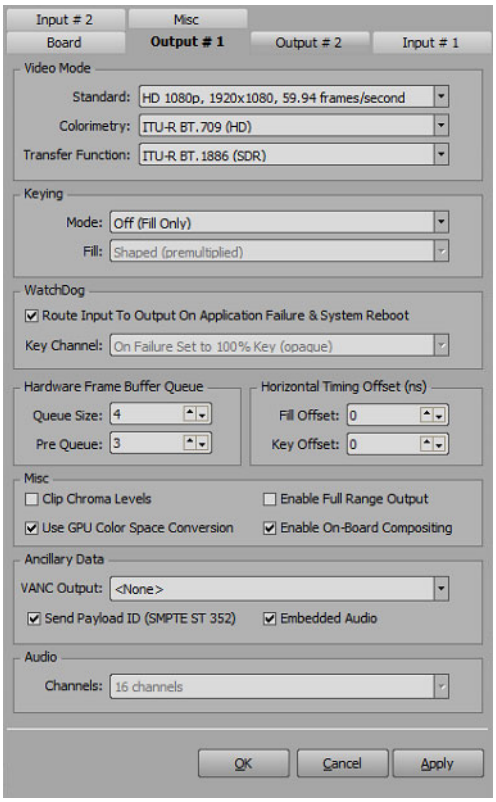
g. Use the **Type** list to select an input /output type. The options are:

- **<none>** (this option is not applicable)
- **Fill-Only Output** (uses 1 output) (requires a separate license or the XPression Clips option)
- **Fill/Key Outputs** (uses 2 outputs)
- **Fill Input** (uses 1 input)
- **Fill/Key Inputs** (uses 2 inputs)
- **Internal Keyer** (uses 1 input, 1 output)

✶ For DSXLE4, when adding three fill/key and one fill, the one fill must be on the bottom of list. If not, one fill/key will show as exceeding device capacity and will be removed from the hardware setup I/O list.

h. Click **OK**.

7. Select an **Output** tab to configure the parameters of the selected output.



a. In the **Video Mode** section, use the **Standard** list to select the video format for the output.

b. Use the **Colorimetry** list to select the range of colors that can be represented in the color space:

- **<from project>** (appears only when <from project> is selected in the Standard list)
- **ITU-R BT.709 (HD)**
- **ITU-R BT.2020 (WCG)**

c. Use the **Transfer Function** list to select the dynamic range standard to use on the output. The options are:

- **<from project>** (appears only when <from project> is selected in the Standard list)
- **ITU-R BT.1886 (SDR)**
- **ITU-R BT.2100 (HLG)**

d. In the **Keying** section, use the **Mode** list to select a keying mode for the output. The available modes are as follows:

- **Off (Fill-Only)** — select to only output a video signal. In this mode, key is excluded from the output.
- **External** — select to output video and alpha channels.
- **Internal** — select to key XPression scenes to the associated input.

✶ If the output mode is set to **Internal**, the GenLock **Source** in the **Board** tab needs to be set to an SDI input.

e. Use the **Fill** list to select the fill mode. The available fill options are as follows:

- **Shaped (premultiplied)** — select to use an additive key to cut precise holes for the fill.
- **Unshaped** — select to use a multiplicative key based on the gradient values of the alpha.

f. In the **Watchdog** section, select the **Route Input To Output On Application Failure & System Reboot** check box to route the input to an output in the event of application failure or a system reboot.

g. Use the **Key Channel** list to select a transparent or opaque key channel. The available key channels are as follows:

   - **On Failure Set to 0% Key (transparent)** — currently always set at 0%.

h. In the **Hardware Frame Buffer Queue** section, use the **Queue Size** box to enter or select the framebuffer queue size. The framebuffer queue size can be between two and seven.

i. Use the **Pre Queue** box to enter or select the pre-queue size. The pre-queue size can be between one and six.

j. In the **Horizontal Timing Offset (ns)** section, use the **Fill Offset** box to enter or select the offset of the fill.

k. Use the **Key Offset** box to enter or select the offset of the key.

l. In the **Misc** section, select the **Clip Chroma Levels** check box to limit the chroma levels in the output.

m. Select the **Enable Full Range Output** check box to output using the full super black to super white range.

n. Select the **Use GPU Color Space Conversion** check box to use the GPU to perform the fastest possible color space conversion on the output. It is selected by default.

✶ If using the HLG transfer function, the **Use GPU Color Space Conversion** check box should always be selected.

o. Select the **Enable On-Board Compositing** check box to allow use of the low latency material scaler with a Live Source material.

p. In the **Ancillary Data** section, use the **VANC Output** list to set the vertical ancillary data output. The options are:

   - **None** — do not set a vertical ancillary data output.
   - **Input** — pass the vertical ancillary data from an input to the selected output.
   - **Video Shader (Closed Captioning)** — select this option to output 608 closed caption (in a 708 CDP) when a video shader is playing back a file with embedded captioning.

     When the XPression INcoder is set to a target folder, it will extract 608 closed captioning from an MOV file. The INcoder will transcode the MOV file to an XPression AVI file as well as an XMD file that contains the closed caption metadata. When the AVI file is played back from XPression, XPression will look for the XMD file and play out with the AVI file.

✶ Files played back from the Clip Store do not support Closed Captioning.

q. Select the **Send payload ID (SMPTE ST 352)** check box to send the video payload ID (SMPTE ST 352) in the ancillary data.

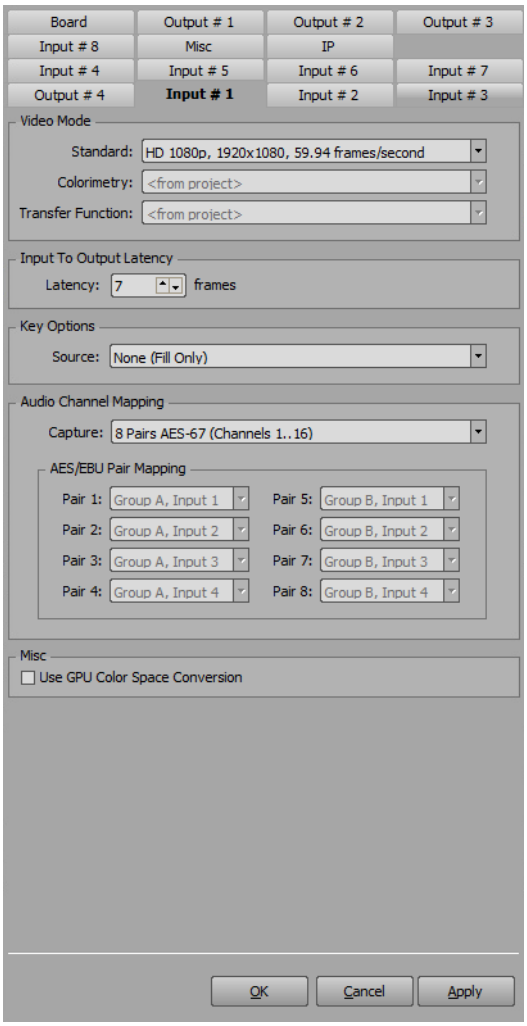
r. Select the **Embedded Audio** check box to include embedded audio in the ancillary data.

s. In the **Audio** section, use the **Channels** list to select the number of audio channels to output in the IP audio stream. The options available are:

   - **2 channel**
   - **4 channel**
   - **8 channel**

✶ The output audio channels are only available when using the DSX LE4 IP, DSX LE5 D25, or X.mio3 IP board in SMPTE 2110 mode.

8. Select an **Input** tab to configure the parameters of the selected input.



a. In the **Video Mode** section, use the **Standard** list to select the video format for the input.

b. Use the **Colorimetry** list to select the range of colors that can be represented in the color space:

- **<from project>** (appears only when <from project> is selected in the Standard list)
- **ITU-R BT.709 (HD)**
- **ITU-R BT.2020 (WCG)**

c. Use the **Transfer Function** list to select the dynamic range standard to use on the output. The options are:

- **<from project>** (appears only when <from project> is selected in the Standard list)
- **ITU-R BT.1886 (SDR)**
- **ITU-R BT.2100 (HLG)**

d. In the **Input To Output Latency** section, use the **Latency** box to enter or select a time interval offset, in frames, between the input and output.

e. In the **Key Options** section, use the **Sources** list to select the keying options for the input. The options are:

- **None (Fill Only)**
- **Paired Input (Fill/Key)**

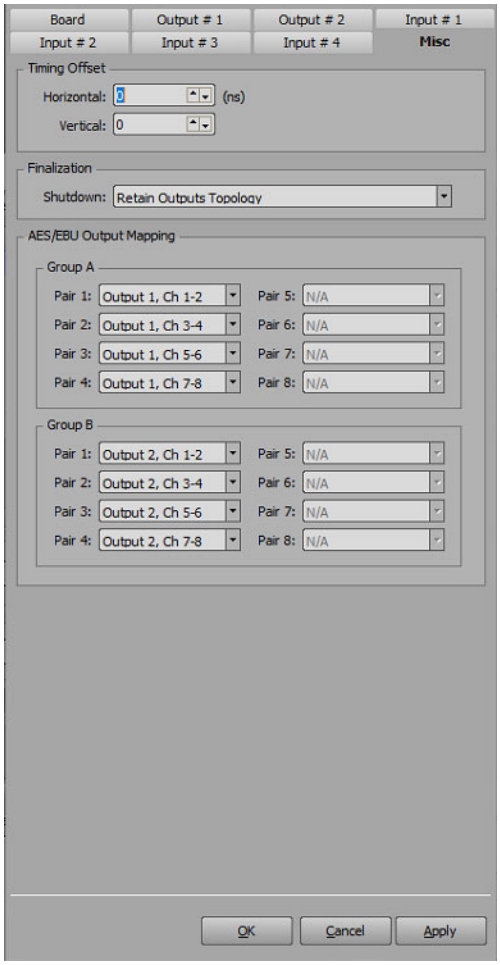
f. In the **Audio Channel Mapping** section, use the **Capture** list to select the audio type for the input.

g. In the **AES/EBU Pair Mapping** area, use the **Pair** lists to define the mapping of the AES/EBU inputs.

h. In the **Misc** section, select the **Use GPU Color Space Conversion** check box to use the GPU to perform the fastest possible color space conversion on the input.

✶ The AES/EBU pair mapping is only available on cards that support AES audio.

9. Select the **Misc** tab to configure the horizontal and vertical offsets.



a. In the **Timing Offset** section, use the **Horizontal** box to enter or select a horizontal delay timing offset (in nanoseconds) with regards to an external reference. This setting is for external reference only.

b. Use the **Vertical** box to enter or select a vertical delay timing offset (in nanoseconds) with regards to an external reference. This setting is for external reference only.

c. In the **Finalization** section, use the **Shutdown** list to select one of the following options for the outputs on shutdown:

- **Retain Outputs Topology** — retain the output topology when XPression is closed.
- **Clear Outputs Topology** — clear the output topology when XPression is closed so that NMOS senders are no longer reported after XPression closes.

d. In the **AES/EBU Output Mapping** section, use the **Pair** lists for **Group A** and **Group B** to define the mapping of the AES/EBU outputs.

The default settings are framebuffer one to AES Group A and framebuffer two to AES Group B.

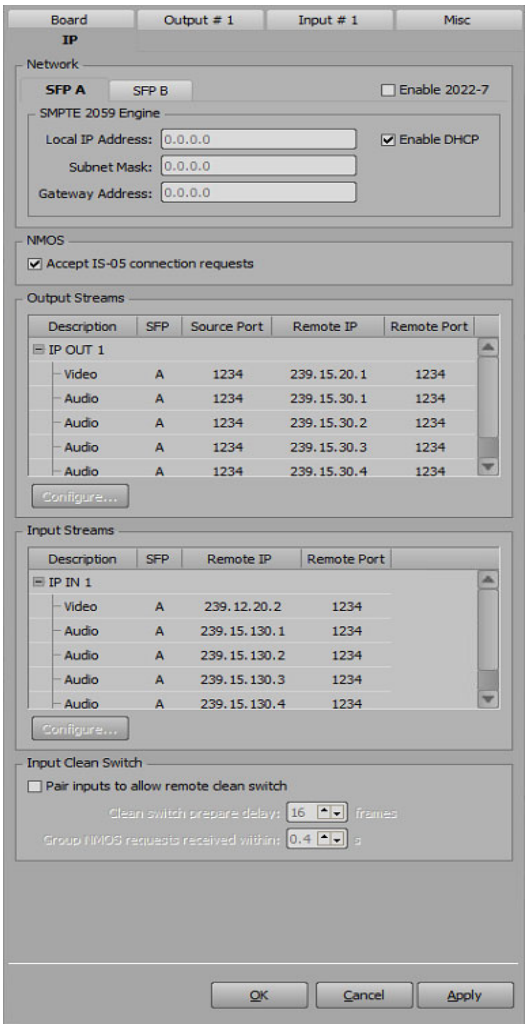
✶ The AES/EBU output mapping is only available if using the DSX LE4 FH card.

10. If configuring a DSX LE4 IP, DSX LE5 D25, X.mio3 or X.mio5 IP card, select the **IP** tab to configure the **SFP** settings.

    Depending on the card configuration, the settings can be available according to SMPTE 2110 or SMPTE 2022-6 protocols. The Matrox DSXLE5 D25 and X.mio5 Q25 only support 2110 protocol and not 2022-6.

    ### SMPTE 2110

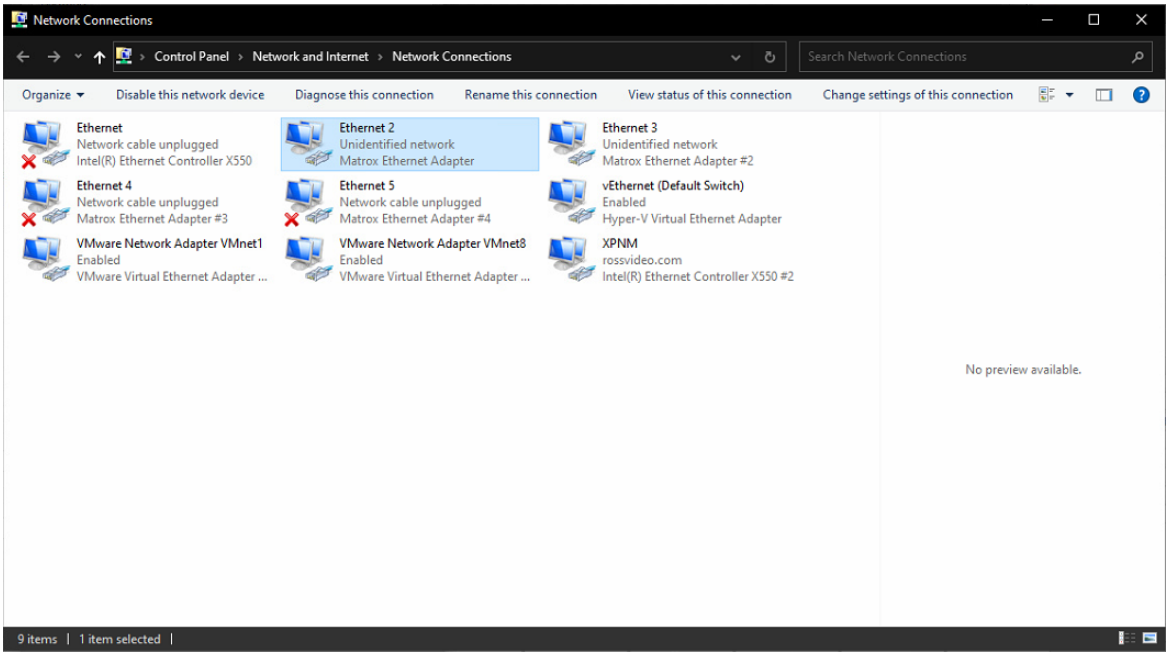
    If the IP card is configured for SMPTE 2110 protocol, the IP tab is displayed as follows:



    a. Use the **SFP A** and **SFP B** tabs in the **Network** section to configure the IP address of the small form-factor pluggable transceiver using the **Local IP Address** box (Matrox DSXLE4 and X.mio3 only).

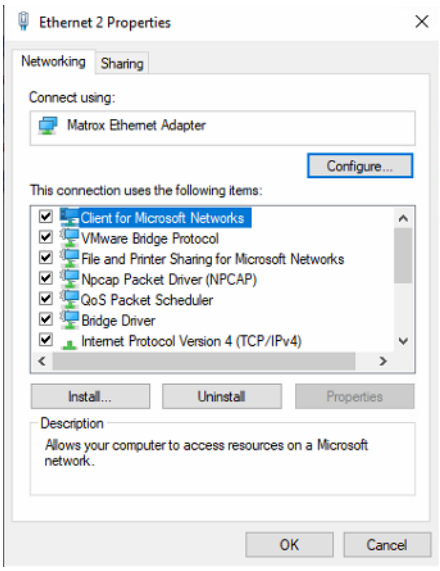
       Select the **Enable 2022-7** check box to use the 2022-7 standard to enable redundancy for the SFP module connection. If using 2022-7 redundancy, see SMPTE 2110 with 2022-7 below for more information.

To configure the SFPs for the Matrox DSXLE5 and X.mio5, open **Network Connections** in Windows. Depending on the configuration, there can be up to four SFPs (SFP A, SFP B, SFP C, and SFP D).



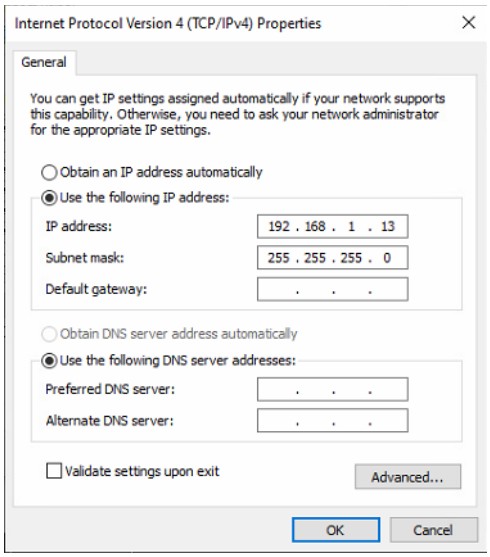
Right-click on the **Matrox Ethernet Adapter** and select **Properties**.

The **Ethernet Properties** window opens.



Select **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties**.

The **Internet Protocol Version 4 (TCP/IPv4) Properties** window opens.



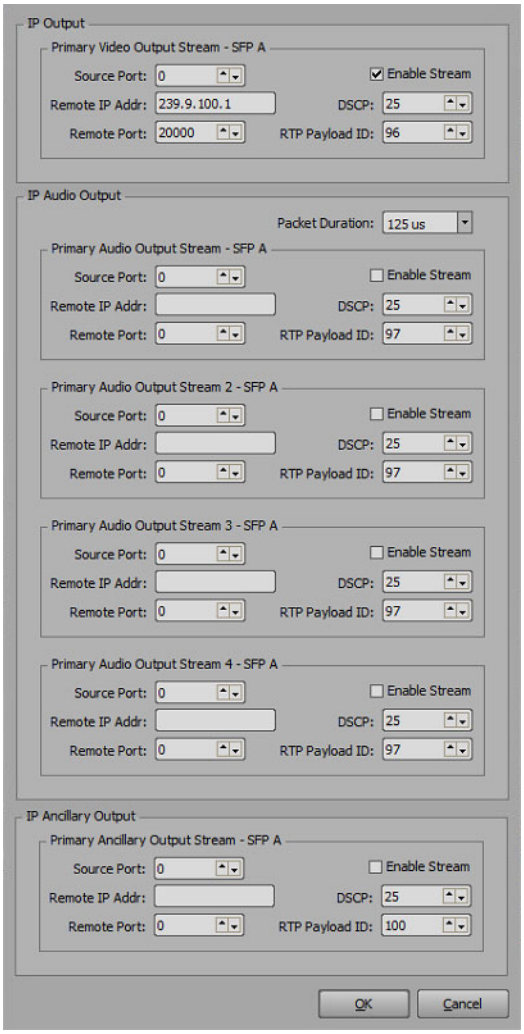
Configure the properties as necessary.

Repeat this procedure for any remaining Matrox Ethernet Adapters.

b. In **NMOS** section, select the **Accept IS-05 connection requests** check box to accept connection requests to use IS-05 via NMOS.

c. In the **Output Streams** section, select an output stream and click **Configure**.

The **Matrox DSX - IP Output Stream Setup** dialog box opens.



d. In the **Primary Video Output Stream** section configure the following settings:

- **Source Port** — use this box to enter or select the local port number of the primary video output stream source.
- **Enable Stream** — select this check box to enable the primary video output stream.
- **Remote IP Addr** — use this box to enter the remote IP address of the primary video output stream.
- **DSCP** — use this box to enter or select the differentiated services code point of the primary video output stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary video output stream.
- **RTP Payload ID** — use this box to enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.

e. In the **Primary Audio Output Stream** section configure the following settings:

- **Source Port** — use this box to enter or select the local port number of the of the primary audio output stream source.
- **Enable Stream** — select this check box to enable the primary audio output stream.
- **Remote IP Addr** — use this box to enter the remote IP address of the primary audio output stream.
- **DSCP** — use this box to enter or select the differentiated services code point of the primary audio output stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary audio output stream.
- **RTP Payload ID** — use this box to enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.
- **Packet Duration** — use this list to select a packet duration in microseconds for the audio information packets.

Repeat step e for any other primary audio output streams.

f. In the **Primary Ancillary Output Stream** section configure the following settings:

- **Source Port** — use this box to enter or select the local port number of the of the primary ancillary output stream source.
- **Enable Stream** — select this check box to enable the primary ancillary output stream.
- **Remote IP Addr** — use this box to enter the remote IP address of the primary ancillary output stream.
- **DSCP** — use this box to enter or select the differentiated services code point of the primary ancillary output stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary ancillary output stream.
- **RTP Payload ID** — use this box to enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.

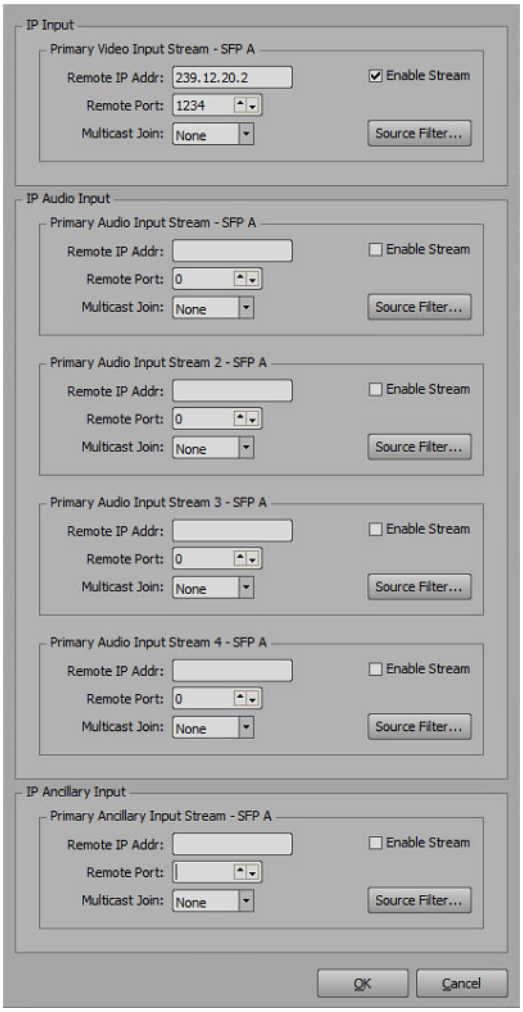
g. Click **OK**.

The **Matrox DSX - IP Output Stream Setup** dialog box closes and the settings are added to the selected output stream.

h. Repeat steps c to g for any other output streams.

i. In the **Input Streams** section, select an input stream and click **Configure**.

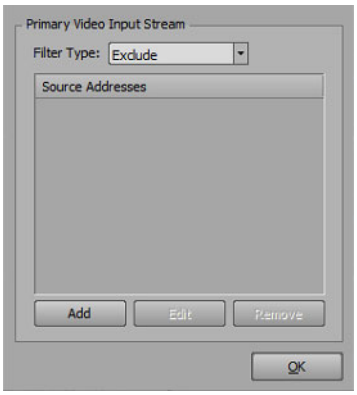
The **Matrox DSX - IP Input Stream Setup** dialog box opens.



j. In the **Primary Video Input Stream** section configure the following settings:

- **Remote IP Addr** — use this box to enter the remote IP address of the primary video input stream.
- **Enable Stream** — select this check box to enable the primary video input stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary video input stream.
- **Multicast Join** — use this list to select an internet group management protocol for joining an IP multicast for the primary video input stream. The options are:
  - › **None** — select this option if not using IP multicast. This is the default setting.
  - › **IGMP v2** — select this option to use internet group management protocol version 2.
  - › **IGMP v3** — select this option to use internet group management protocol version 3.
- **Source Filter** — click this button to configure IP multicast source filtering if using multicast.

  The **Matrox DSX - IGMP Multicast Source Filter** dialog box opens.



  Use the **Filter Type** list to select one of the following filtering options:

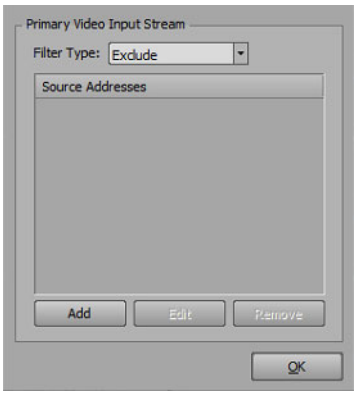
  - › **Exclude** — select this to exclude specific source addresses from the IP multicast.
  - › **Only Include** — select this to only include specific source addresses from the IP multicast.

  Click **Add** to add and enter a source address to either exclude or only include (depending on the filter type selected). Once any necessary addresses have been added click **OK**.

k. In the **Primary Audio Input Stream** section configure the following settings:

- **Remote IP Addr** — use this box to enter the remote IP address of the primary audio input stream.
- **Enable Stream** — select this check box to enable the primary audio input stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary audio input stream.
- **Multicast Join** — use this list to select an internet group management protocol for joining an IP multicast for the primary audio input stream. The options are:
  - › **None** — select this option if not using IP multicast. This is the default setting.
  - › **IGMP v2** — select this option to use internet group management protocol version 2.
  - › **IGMP v3** — select this option to use internet group management protocol version 3.
- **Source Filter** — click this button to configure IP multicast source filtering if using multicast.

  The **Matrox DSX - IGMP Multicast Source Filter** dialog box opens.



  Use the **Filter Type** list to select one of the following filtering options:

  - › **Exclude** — select this to exclude specific source addresses from the IP multicast.
  - › **Only Include** — select this to only include specific source addresses from the IP multicast.

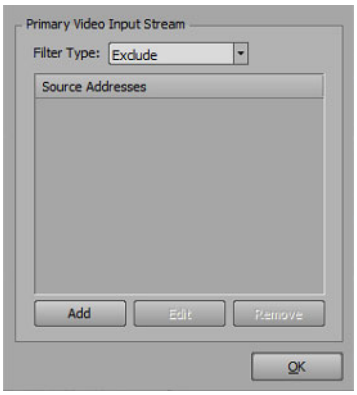
  Click **Add** to add and enter a source address to either exclude or only include (depending on the filter type selected). Once any necessary addresses have been added click **OK**.

Repeat step k for any other primary audio input streams.

l. In the **Primary Ancillary Input Stream** section configure the following settings:

- **Remote IP Addr** — use this box to enter the remote IP address of the primary ancillary input stream.
- **Enable Stream** — select this check box to enable the primary ancillary input stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary ancillary input stream.
- **Multicast Join** — use this list to select an internet group management protocol for joining an IP multicast for the primary ancillary input stream. The options are:
  - › **None** — select this option if not using IP multicast. This is the default setting.
  - › **IGMP v2** — select this option to use internet group management protocol version 2.
  - › **IGMP v3** — select this option to use internet group management protocol version 3.
- **Source Filter** — click this button to configure IP multicast source filtering if using multicast.

  The **Matrox DSX - IGMP Multicast Source Filter** dialog box opens.



  Use the **Filter Type** list to select one of the following filtering options:

  - › **Exclude** — select this to exclude specific source addresses from the IP multicast.
  - › **Only Include** — select this to only include specific source addresses from the IP multicast.

  Click **Add** to add and enter a source address to either exclude or only include (depending on the filter type selected). Once any necessary addresses have been added click **OK**.

m. Click **OK**.

  The **Matrox DSX - IP Input Stream Setup** dialog box closes and the settings are added to the selected input stream.

n. Repeat steps i to m for any other input streams.

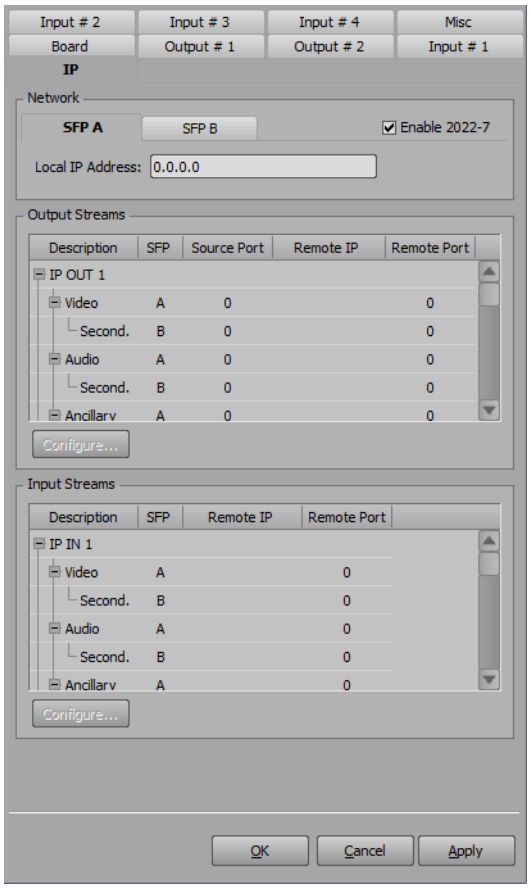
o. If using the DSX LE4 IP, DSX LE5 D25, X.mio3 IP, or X.mio5 Q25, in the **Input Clean Switch** section, select the **Pair inputs to allow remote clean switch** check box to create pairs of inputs (effectively dividing the number of available inputs by two) so that when doing a switch, the 'inactive' input is prepared with the new multicast settings first, then made active when ready.

  If selected, configure the following settings:

- **Clean switch prepare delay** — enter or select an amount of frames to prepare the delay for the IP clean switch option.
- **Group NMOS requests received within** — enter or select an amount of time in seconds to configure a delay to collect any NMOS connection requests (video/audio/ancillary) received for an input within that time period before applying the IP clean switch.

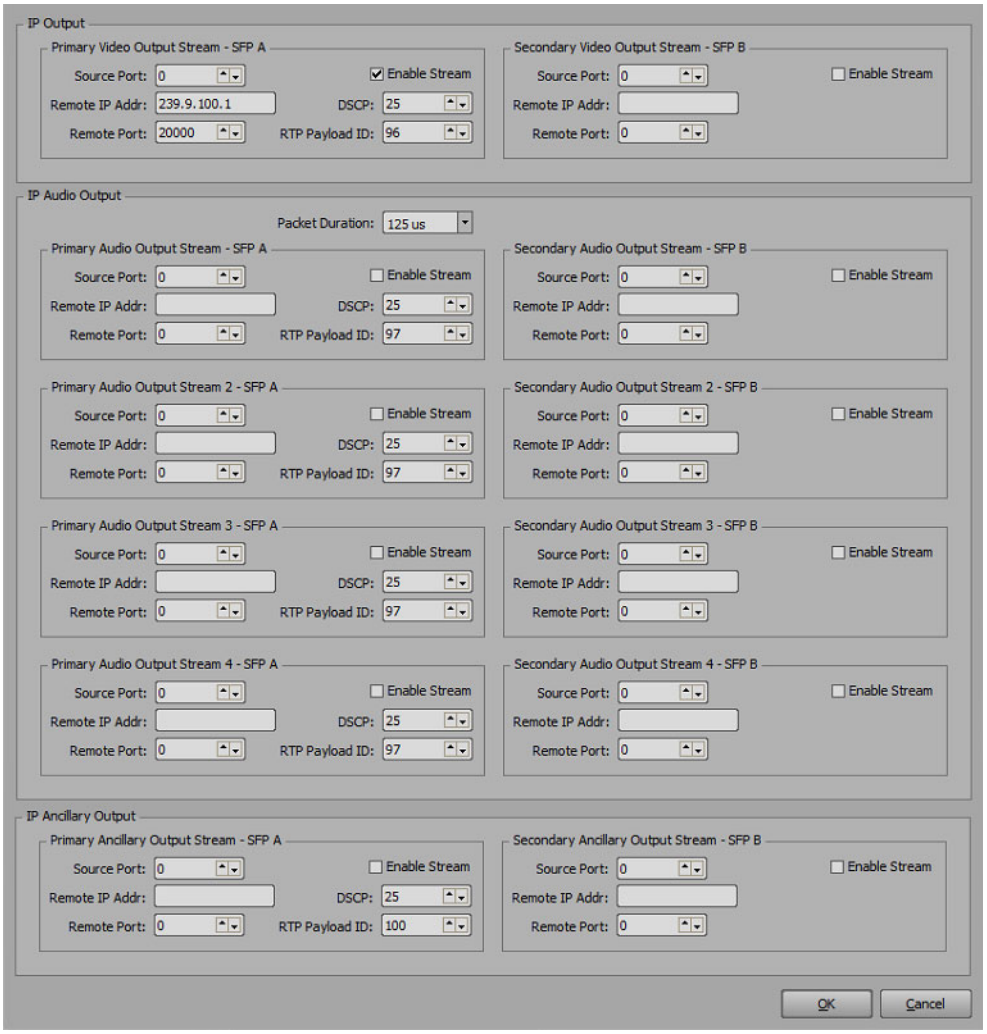
SMPTE 2110 with 2022-7

If the IP card is configured for SMPTE 2110 protocol and the Enable 2022-7 check box is selected, the IP tab is displayed as follows:



a. In the **Output Streams** section, select an output stream and click **Configure**.

The **Matrox DSX - IP Output Stream Setup** dialog box opens.



b. In the **Primary Video Output Stream - SFP A** section configure the following settings:

- **Source Port** — use this box to enter or select the local port number of the primary video output stream source.
- **Enable Stream** — select this check box to enable the primary video output stream.
- **Remote IP Addr** — use this box to enter the remote IP address of the primary video output stream.
- **DSCP** — use this box to enter or select the differentiated services code point of the primary video output stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary video output stream.
- **RTP Payload ID** — use this box to enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.

c. In the **Primary Audio Output Stream - SFP A** section configure the following settings:

- **Source Port** — use this box to enter or select the local port number of the of the primary audio output stream source.
- **Enable Stream** — select this check box to enable the primary audio output stream.
- **Remote IP Addr** — use this box to enter the remote IP address of the primary audio output stream.
- **DSCP** — use this box to enter or select the differentiated services code point of the primary audio output stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary audio output stream.
- **RTP Payload ID** — use this box to enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.
- **Packet Duration** — use this list to select a packet duration in microseconds for the audio information packets.

Repeat step c for any other audio output streams.

d. In the **Primary Ancillary Output Stream - SFP A** section configure the following settings:

- **Source Port** — use this box to enter or select the local port number of the of the primary ancillary output stream source.
- **Enable Stream** — select this check box to enable the primary ancillary output stream.
- **Remote IP Addr** — use this box to enter the remote IP address of the primary ancillary output stream.
- **DSCP** — use this box to enter or select the differentiated services code point of the primary ancillary output stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary ancillary output stream.
- **RTP Payload ID** — use this box to enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.

e. In the **Secondary Video Output Stream - SFP B** section configure the following settings:

- **Source Port** — use this box to enter or select the local port number of the primary video output stream source.
- **Enable Stream** — select this check box to enable the secondary video output stream.
- **Remote IP Addr** — use this box to enter the remote IP address of the primary video output stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary video output stream.

f. In the **Secondary Audio Output Stream - SFP B** section configure the following settings:

- **Source Port** — use this box to enter or select the local port number of the of the primary audio output stream source.
- **Enable Stream** — select this check box to enable the secondary audio output stream.
- **Remote IP Addr** — use this box to enter the remote IP address of the primary audio output stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary audio output stream.

Repeat step f for any other secondary audio output streams.

g. In the **Secondary Ancillary Output Stream - SFP B** section configure the following settings:

- **Source Port** — use this box to enter or select the local port number of the of the primary ancillary output stream source.
- **Enable Stream** — select this check box to enable the secondary ancillary output stream.
- **Remote IP Addr** — use this box to enter the remote IP address of the primary ancillary output stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary ancillary output stream.

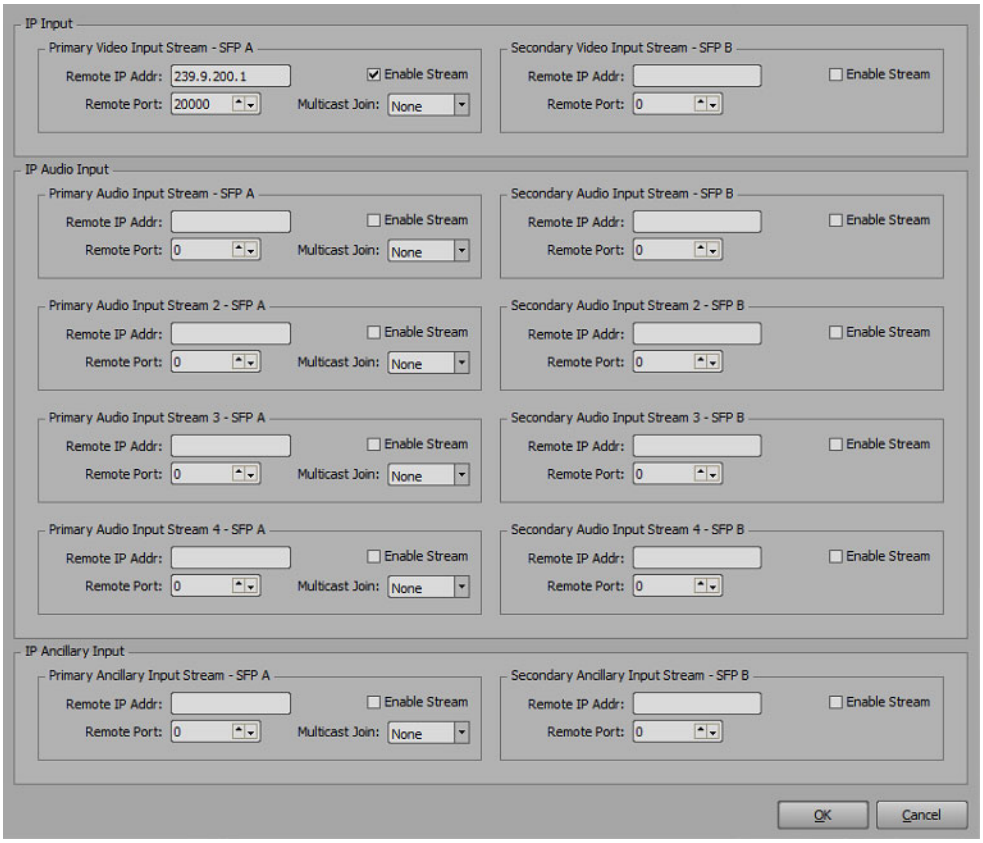
h. Click **OK**.

The **Matrox DSX - IP Output Stream Setup** dialog box closes and the settings are added to the selected output stream.

i. Repeat steps a to h for any other output streams.

j. In the **Input Streams** section, select an input stream and click **Configure**.

The **Matrox DSX - IP Input Stream Setup** dialog box opens.



k. In the **Primary Video Input Stream - SFP A** section configure the following settings:

- **Remote IP Addr** — use this box to enter the remote IP address of the primary video input stream.
- **Enable Stream** — select this check box to enable the primary video input stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary video input stream.
- **Multicast Join** — use this list to select an internet group management protocol for joining an IP multicast for the primary video input stream. The options are:
  - **None** — select this option if not using IP multicast. This is the default setting.
  - **IGMP v2** — select this option to use internet group management protocol version 2.
  - **IGMP v3** — select this option to use internet group management protocol version 3.

l. In the **Primary Audio Input Stream - SFP A** section configure the following settings:

- **Remote IP Addr** — use this box to enter the remote IP address of the primary audio input stream.
- **Enable Stream** — select this check box to enable the primary audio input stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary audio input stream.
- **Multicast Join** — use this list to select an internet group management protocol for joining an IP multicast for the primary audio input stream. The options are:
  - **None** — select this option if not using IP multicast. This is the default setting.
  - **IGMP v2** — select this option to use internet group management protocol version 2.
  - **IGMP v3** — select this option to use internet group management protocol version 3.

Repeat step l for any other primary audio input streams.

m. In the **Primary Ancillary Input Stream - SFP A** section configure the following settings:

- **Remote IP Addr** — use this box to enter the remote IP address of the primary ancillary input stream.
- **Enable Stream** — select this check box to enable the primary ancillary input stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary ancillary input stream.
- **Multicast Join** — use this list to select an internet group management protocol for joining an IP multicast for the primary ancillary input stream. The options are:
  - **None** — select this option if not using IP multicast. This is the default setting.
  - **IGMP v2** — select this option to use internet group management protocol version 2.
  - **IGMP v3** — select this option to use internet group management protocol version 3.

n. In the **Secondary Video Input Stream - SFP B** section configure the following settings:

- **Remote IP Addr** — use this box to enter the remote IP address of the primary video input stream.
- **Enable Stream** — select this check box to enable the secondary video input stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary video input stream.

o. In the **Secondary Audio Input Stream - SFP B** section configure the following settings:

- **Remote IP Addr** — use this box to enter the remote IP address of the primary audio input stream.
- **Enable Stream** — select this check box to enable the secondary audio input stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary audio input stream.

Repeat step o for any other primary audio input stream.

p. In the **Secondary Ancillary Input Stream - SFP B** section configure the following settings:

- **Remote IP Addr** — use this box to enter the remote IP address of the primary ancillary input stream.
- **Enable Stream** — select this check box to enable the seconday ancillary input stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary ancillary input stream.

q. Click **OK**.

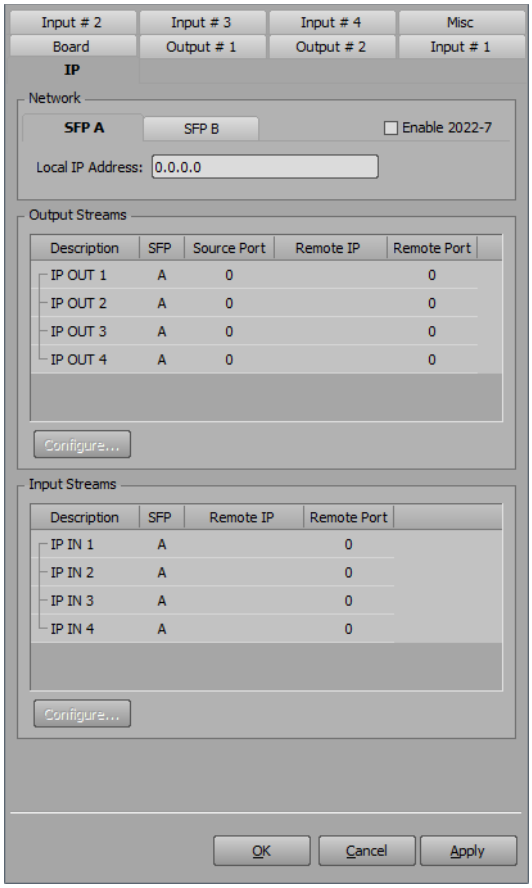
The **Matrox DSX - IP Input Stream Setup** dialog box closes and the settings are added to the selected input stream.

r. Repeat steps j to q for any other input streams.

SMPTE 2022-6

✶ Not supported on the Matrox DSXLE5 D25 and X.mio5 Q25.

If the IP card is configured for SMPTE 2022-6 protocol, the IP tab is displayed as follows:

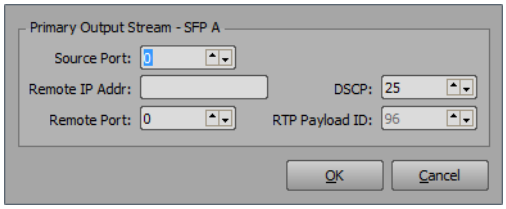


a. Use the **SFP A** and **SFP B** tabs in the **Network** section to configure the IP address the small form-factor pluggable transceiver using the **Local IP Address** box.

Select the **Enable 2022-7** check box to use the 2022-7 standard to enable redundancy for the SFP module connection. If using 2022-7 redundancy, see SMPTE 2022-6 with 2022-7 below for more information.

b. In the **Output Streams** section, select an output stream and click **Configure**.

   The **Matrox DSX - IP Output Stream Setup** dialog box opens.



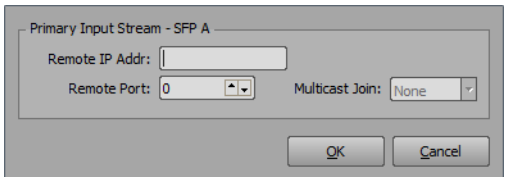
c. In the **Primary Output Stream - SFP A** section configure the following settings:

   - **Source Port** — use this box to enter or select the local port number of the primary video output stream source.
   - **Remote IP Addr** — use this box to enter the remote IP address of the primary video output stream.
   - **DSCP** — use this box to enter or select the differentiated services code point of the primary video output stream.
   - **Remote Port** — use this box to enter or select the remote port number for the primary video output stream.
   - **RTP Payload ID** — use this box to enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.

d. Repeat steps b to c for any other output streams.

e. In the **Input Streams** section, select an input stream and click **Configure**.

   The **Matrox DSX - IP Input Stream Setup** dialog box opens.



f. In the **Primary Input Stream - SFP A** section configure the following settings:

   - **Remote IP Addr** — use this box to enter the remote IP address of the primary video input stream.
   - **Remote Port** — use this box to enter or select the remote port number for the primary video input stream.
   - **Multicast Join** — use this list to select an internet group management protocol for joining an IP multicast for the primary video input stream. The options are:
     - **None** — select this option if not using IP multicast. This is the default setting.
     - **IGMP v2** — select this option to use internet group management protocol version 2.
     - **IGMP v3** — select this option to use internet group management protocol version 3.

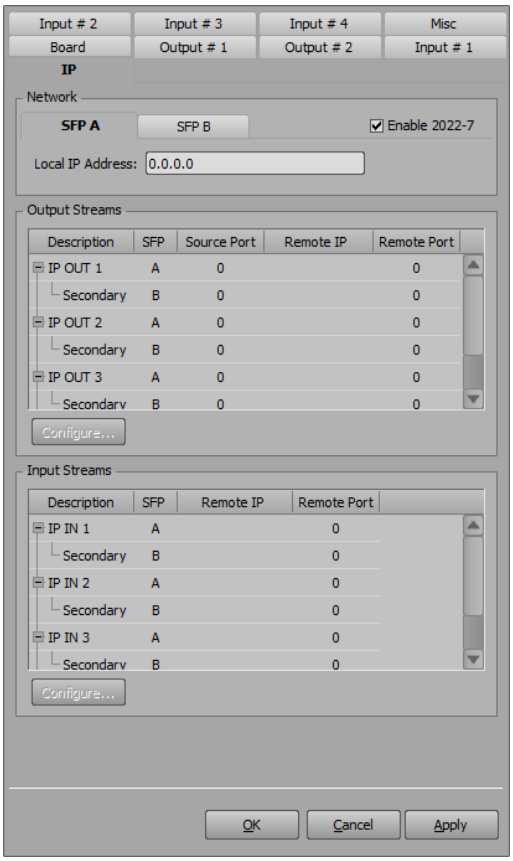
g. Click **OK**.

   The **Matrox DSX - IP Input Stream Setup** dialog box closes and the settings are added to the selected input stream.

h. Repeat steps e to g for any other input streams.

SMPTE 2022-6 with 2022-7

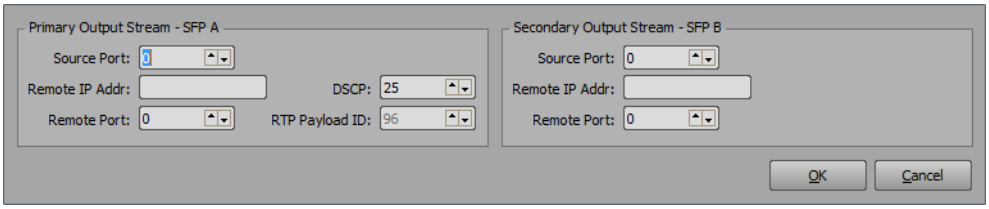
If the IP card is configured for SMPTE 2022-6 protocol and the Enable 2022-7 check box is selected, the IP tab is displayed as follows:



a. Use the **SFP A** and **SFP B** tabs in the **Network** section to configure the IP address the small form-factor pluggable transceiver using the **Local IP Address** box.

b. In the **Output Streams** section, select an output stream and click **Configure**.

The **Matrox DSX - IP Output Stream Setup** dialog box opens.



c. In the **Primary Output Stream - SFP A** section configure the following settings:

- **Source Port** — use this box to enter or select the local port number of the primary video output stream source.
- **Remote IP Addr** — use this box to enter the remote IP address of the primary video output stream.
- **DSCP** — use this box to enter or select the differentiated services code point of the primary video output stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary video output stream.
- **RTP Payload ID** — use this box to enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.

d. In the **Secondary Output Stream - SFP B** section configure the following settings:

- **Source Port** — use this box to enter or select the local port number of the primary video output stream source.
- **Remote IP Addr** — use this box to enter the remote IP address of the primary video output stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary video output stream.

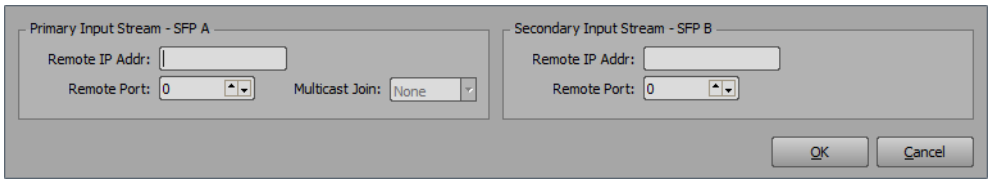
e. Click **OK**.

The **Matrox DSX - IP Output Stream Setup** dialog box closes and the settings are added to the selected output stream.

f. Repeat steps b to e for any other output streams.

g. In the **Input Streams** section, select an input stream and click **Configure**.

The **Matrox DSX - IP Input Stream Setup** dialog box opens.



h. In the **Primary Input Stream - SFP A** section configure the following settings:

- **Remote IP Addr** — use this box to enter the remote IP address of the primary video input stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary video input stream.
- **Multicast Join** — use this list to select an internet group management protocol for joining an IP multicast for the primary video input stream. The options are:
  - **None** — select this option if not using IP multicast. This is the default setting.
  - **IGMP v2** — select this option to use internet group management protocol version 2.
  - **IGMP v3** — select this option to use internet group management protocol version 3.

i. In the **Secondary Input Stream - SFP B** section configure the following settings:

- **Remote IP Addr** — use this box to enter the remote IP address of the primary video input stream.
- **Remote Port** — use this box to enter or select the remote port number for the primary video input stream.

j. Click **OK**.

The **Matrox DSX - IP Input Stream Setup** dialog box closes and the settings are added to the selected input stream.

k. Repeat steps g to j for any other input streams.

11. Click **Apply** to implement the settings.

12. Click **OK**.

The configured Matrox framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog box.

13. In the **Hardware Setup** dialog box, click **Close**.

The **Hardware Setup** dialog box closes.

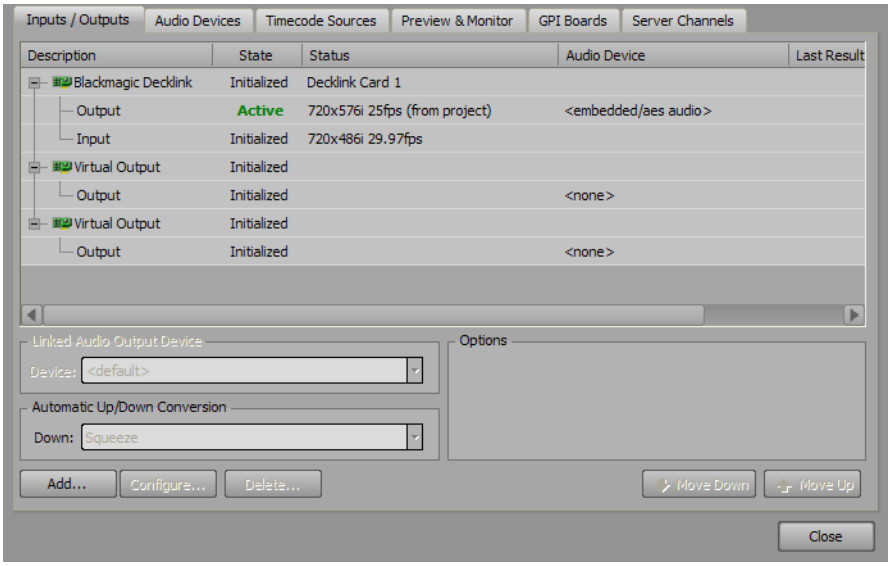
Configure a Matrox Video X.mio2 FrameBuffer

✶ If using Matrox X.mio2 and upgrading to XPression 64-bit, Matrox driver 9.4.2.9297 must be installed.

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

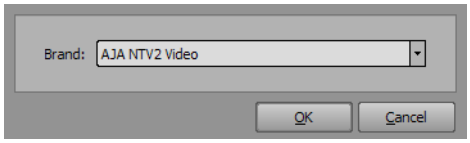
   The **Hardware Setup** dialog box opens.

2. Click the **Inputs / Outputs** tab.



3. Click **Add**.

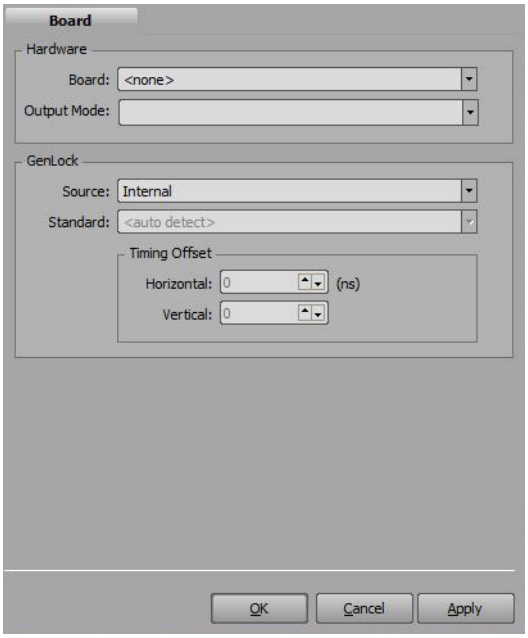
   The **Add New FrameBuffer Board** dialog box opens.



4. Select **Matrox Video X.mio2** from the **Brand** list.

5. Click **OK**.

   The **Matrox XMIO - Framebuffer Setup** dialog box opens.



6. Select the **Board** tab to choose and configure an installed XMIO card.

   a. In the **Hardware** section, use the **Board** list to select the installed XMIO card to configure.

   b. Use the **Output Mode** list to select the output configuration for the card:

   - **2 Fill/Key Outputs**

     The AES outputs will be mapped as follows:

     › Output 1: AES Output A 1-16

     › Output 2: AES Output B 1-16
   - **1 Fill/Key + 2 Fill Outputs**

     The AES outputs will be mapped as follows:

     › Output 1 Fill/Key: AES Output A 1-16

     › Output 2 Fill: AES Output B 1-8

     › Output 3 Fill: AES Output B 9-16
   - **4 Fill Outputs**

     The AES outputs will be mapped as follows:

     › Output 1: AES Output A 1-8

     › Output 2: AES Output B 1-8

     › Output 3: AES Output A 9-16

     › Output 4: AES Output B 9-16

     Select the output configuration for the card from the following options:

   - **1 Fill/Key Output**
   - **2 Fill Outputs**

   c. In the **GenLock** section, use the **Source** list to select the source of the genlock signal with which to synchronize XPression. The available genlock signal sources are as follows:

   - **Internal** — generate internal sync on the video card for all output channels.
   - **Blackburst** — sync to analog black.
   - **SDI Input 1** — sync to SDI Input 1 source signal.
   - **SDI Input 2** — sync to SDI Input 2 source signal.
   - **SDI Input 3** — sync to SDI Input 3 source signal.
   - **SDI Input 4** — sync to SDI Input 4 source signal.

✶ If the output mode is set to **Internal** in the **Output** tab, the GenLock **Source** needs to be set to an SDI input.

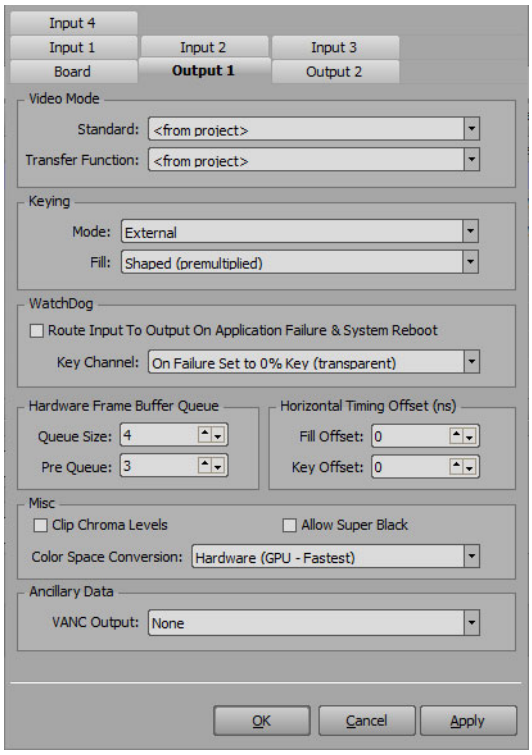
d. Use the **Standard** list to select the format of the incoming genlock signal.

e. In the **Timing Offset** section, use the **Horizontal** box to enter or select the number of nanoseconds for horizontal timing offset with regards an external reference.

f. In the **Vertical** box, enter or select the number of lines for vertical delay timing offset with regards an external reference.

✶ If configuring an XMIO card when using XPression with a switcher, the **Horizontal** timing offset must be set to 9930 and the **Vertical** timing offset must be set to 1124 if using 1080i/29.27 frames per second and a Tri Level Sync reference.

7. Select an **Output** tab to configure the parameters of the selected output.



a. In the **Video Mode** section, use the **Standard** list to select the video format for the output.

b. Use the **Transfer Function** list to select how the physical (linear) light is mapped and encoded. The options are:

- **<from project>** (appears only when <from project> is selected in the Standard list)
- **ITU-R BT.1886 (SDR)**
- **ITU-R BT.2100 (HLG)**

c. In the **Keying** section, use the **Mode** list to select a keying mode for the output. The available modes are as follows:

- **External** — select to output video and alpha channels.
- **Internal** — select to key XPression scenes to the associated input.

✶ If the output mode is set to **Internal**, the GenLock **Source** in the **Board** tab needs to be set to an SDI input.

d. Use the **Fill** list to select the fill mode. The available fill options are as follows:

- **Shaped (premultiplied)** — select to use an additive key to cut precise holes for the fill.
- **Unshaped** — select to use a multiplicative key based on the gradient values of the alpha.

e. In the **Watchdog** section, select the **Route Input To Output On Application Failure & System Reboot** check box to route the input to an output in the event of application failure or a system reboot.

f. Use the **Key Channel** list to select a transparent or opaque key channel. The available key channels are as follows:

- **On Failure Set to 0% Key (transparent)** — select to set the key channel to transparent in the event of failure.
- **On Failure Set to 100% Key (opaque)** — select to set the key channel to opaque in the event of failure.

g. In the **Hardware Frame Buffer Queue** section, use the **Queue Size** box to enter or select the framebuffer queue size. The framebuffer queue size can be between two and seven.

h. Use the **Pre Queue** box to enter or select the pre-queue size. The pre-queue size can be between one and six.

i. In the **Horizontal Timing Offset (ns)** section, use the **Fill Offset** box to enter or select the offset of the fill.

j. Use the **Key Offset** box to enter or select the offset of the key.

k. In the **Misc** section, select the **Clip Chroma Levels** check box to limit the chroma levels in the output.

l. Select the **Allow Super Black** check box to output using the full super black to super white range.

m. Use the **Color Space Conversion** list to select the color space conversion for the outputs. The options are:

- **Hardware (GPU - Fastest)** (default)
- **Hardware (Board)**
- **Software (No Chroma Filter)**

✶ If using the HLG transfer function, the **Hardware (GPU - Fastest)** option should always be selected.

n. Select the **Enable RGBA -> YUV Filter** check box to enhance the conversion from 4:4:4 RGB to 4:2:2 YUV color space by filtering the down-conversion of the chrominance. If running in 1080p video modes, you should not enable this on more than one channel simultaneously. This option is only available with Matrox driver 9.4.2 or higher.

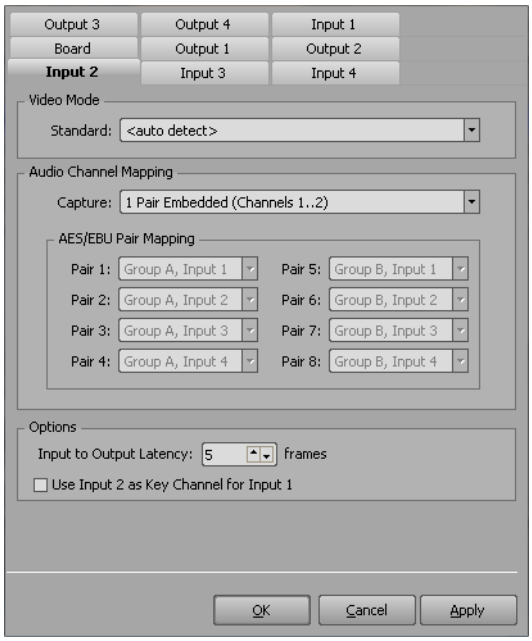
o. In the **Ancillary Data** section, use the **VANC Output** list to set the vertical ancillary data output. The options are:

- **None** — do not set a vertical ancillary data output.
- **Pass VANC from Input 1 to Output 1** — pass the vertical ancillary data from input 1 to output 1
- **Use Closed Captioning from Video Shader** — when using a Matrox card, select this option to output 608 closed caption (in a 708 CDP) when a video shader is playing back a file with embedded captioning.

  When the XPression INcoder is set to a target folder, it will extract 608 closed captioning from an MOV file. The INcoder will transcode the MOV file to an XPression AVI file as well as an XMD file that contains the closed caption metadata. When the AVI file is played back from XPression, XPression will look for the XMD file and play out with the AVI file.

✶ Files played back from the Clip Store do not support Closed Captioning.

8. Select an **Input** tab to configure the parameters of the selected input.



9. Click **OK**.

   The configured Matrox framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog box.

10. In the **Hardware Setup** dialog box, click **Close**.

    The **Hardware Setup** dialog box closes.

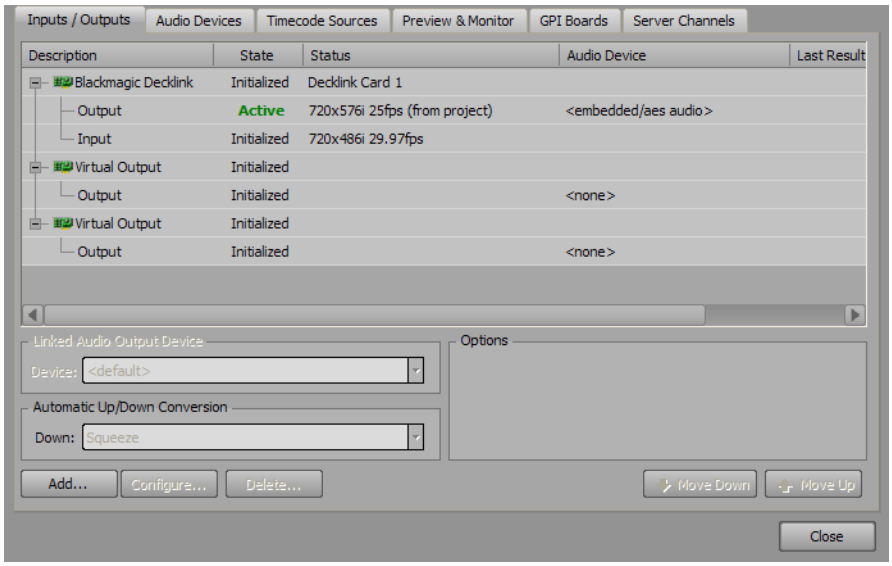
NewTek™ Network Device Interface (NDI™)

- Up to eight channels of audio supported for NDI in version 8.5 build 4518 or higher.
- Only one NDI framebuffer can be created on single channel XPression hardware and up to two NDI framebuffers can be created on two-channel XPression hardware.
- XPression video recordings are in the format and video mode of the input NDI source, not the project mode.

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

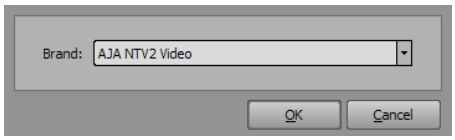
   The **Hardware Setup** dialog box opens.

2. Click the **Inputs / Outputs** tab.



3. Click **Add**.

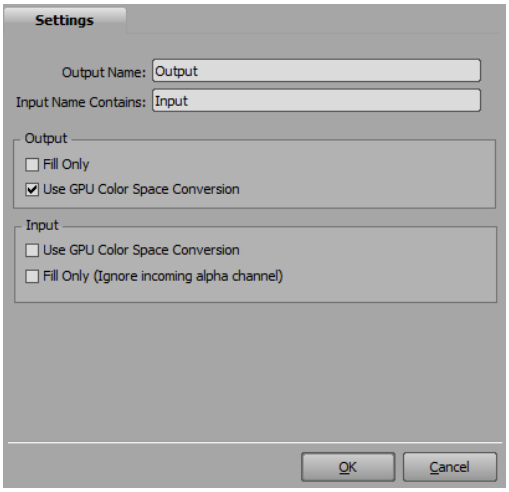
   The **Add New FrameBuffer Board** dialog box opens.



4. Select **NewTek Network Device Interface** from the **Brand** list.

5. Click **OK**.

   The **NewTek™ Device Interface - Framebuffer Setup** dialog box opens.



6. In the **Settings** tab, use the **Output Name** box to enter an output name for the NDI output source (for example, NDI Output 1). This output name will be the source to connect the device receiving the output signal.
7. Use the **Input Name Contains** box to enter an input name or keyword(s) associated with one or multiple inputs to which the external NDI output is directed.
8. Configure the following settings in the **Output** section as necessary:
   - **Fill-Only** — select this check box to output the video signal with no key.
   - **Use GPU Color Space Conversion** — select this check box to use the GPU to perform the color space conversion on the outputs.
9. In the **Input** section, select the **Use GPU Color Space Conversion** check box to use the GPU to perform the color space conversion on the inputs.
10. Select the **Fill Only (Ignore incoming alpha channel)** to view fill only and ignore the incoming alpha channel.
11. Click **OK**.

    The configured NDI framebuffer is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog box.
12. In the **Hardware Setup** dialog box, click **Close**.

    The **Hardware Setup** dialog box closes.
13. Configure a self-contained data source panel for XPression in DashBoard or connect to another XPression as the output for the NDI source:

    ### DashBoard

    a. In DashBoard, create an NDI data source video monitor for XPression using PanelBuilder.

    b. In the **NDI Tag Attributes** section of the **Insert into ABS Component** dialog box, use the **Source Name** list to select an NDI output for the NDI data source video monitor in the DashBoard panel.

    c. Click **OK**.

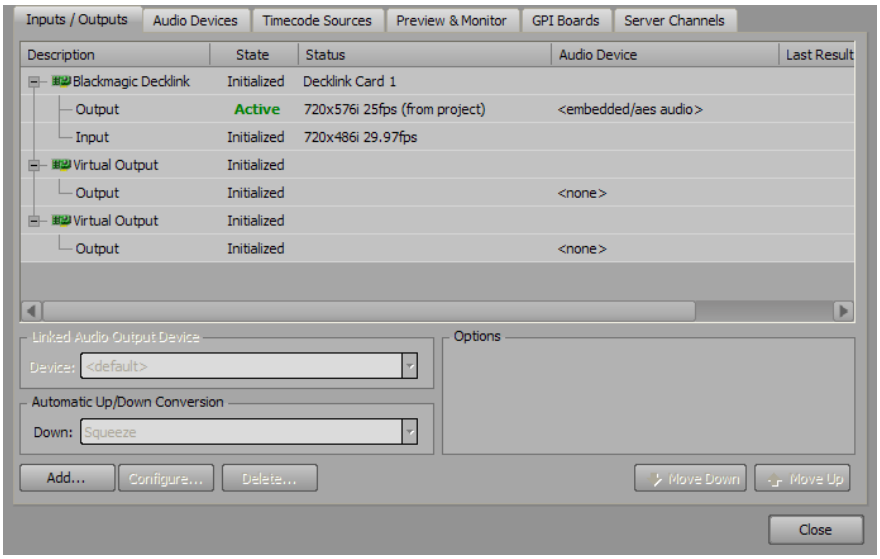
       When the source NDI output is online in the Sequencer in XPression, it will display in the NDI data source video monitor in the DashBoard panel.

    ### XPression

    a. In the second **XPression** machine, use the **Edit** menu to select **Hardware Setup**.

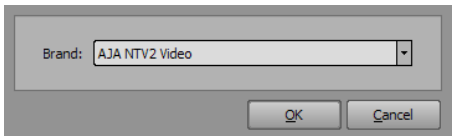
       The **Hardware Setup** dialog box opens.

b. Click the **Inputs / Outputs** tab.



c. Click **Add**.

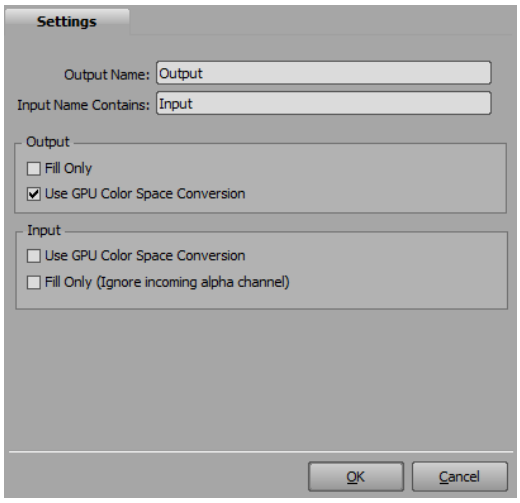
The **Add New FrameBuffer Board** dialog box opens.



d. Select **NewTek Network Device Interface** from the **Brand** list.

e. Click **OK**.

The **NewTek™ Device Interface - Framebuffer Setup** dialog box opens.



f. In the **Settings** tab, use the **Input Name Contains** box to enter the name of the NDI input source to use (for example, NDI Output 1). This input name is the output name from the device outputting the signal.

g. Click **OK**.

The configured NDI framebuffer is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog box.

h. In the **Hardware Setup** dialog box, click **Close**.

The **Hardware Setup** dialog box closes.

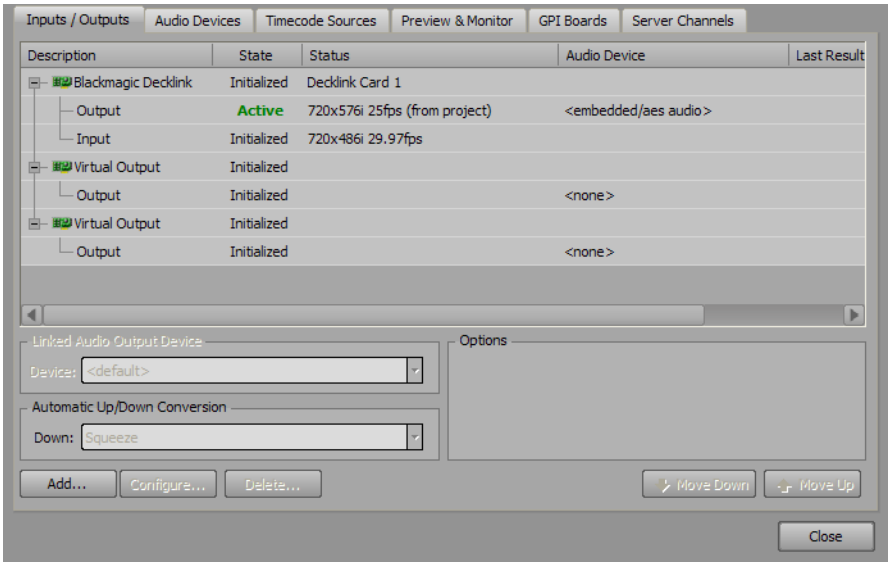
Configure an XPression Desktop Preview Client

The XPression Desktop Preview Server offers an IP based preview server for multi-channel and MOS Remote Sequencer workflows.

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

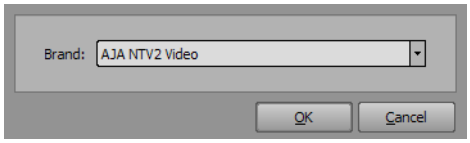
   The **Hardware Setup** dialog box opens.

2. Click the **Inputs / Outputs** tab.



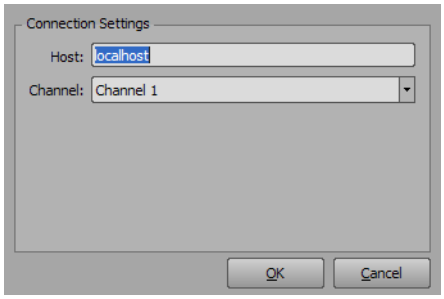
3. Click **Add**.

   The **Add New FrameBuffer Board** dialog box opens.



4. In the **Brand** list, select **XPression Desktop Preview Server Client** from the **Brand** list.
5. Click **OK**.

   The **Desktop Preview Client - Setup** dialog box opens.



6. Use the **Host** box to enter the IP address of the XPression Desktop Preview Server.
7. Use the **Channel** list to select a preview channel in the XPression Desktop Preview Server for the output.
8. Click **OK**.

   A Desktop Preview Client connection is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog box.

9. In the **Hardware Setup** dialog box, click **Close**.

   The **Hardware Setup** dialog box closes.

For More Information on...

- the XPression Desktop Preview Server, refer to the ***XPression Desktop Preview Server User Guide***.

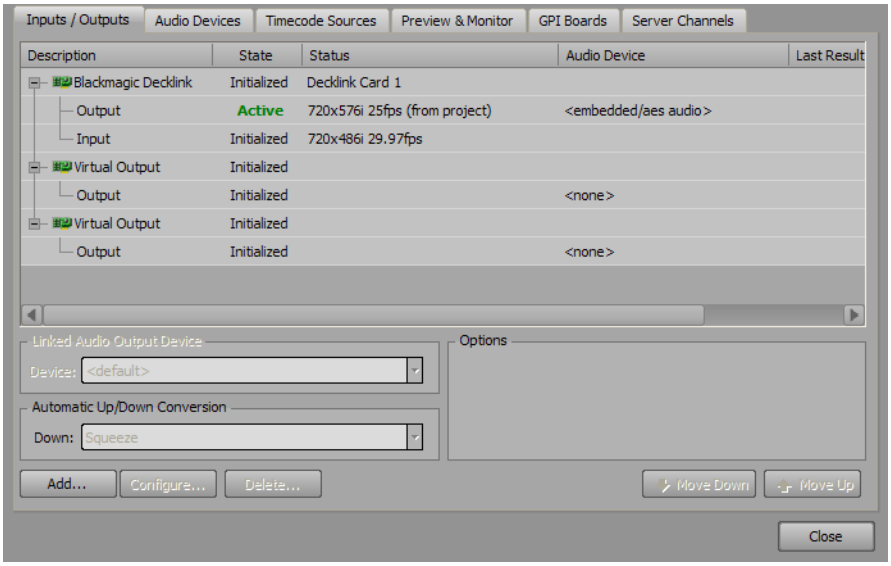
Configure an XPression RossLinq Connector

The RossLinq feature allows you to connect XPression directly to RossLinq compatible devices over ethernet. Have XPression render images and graphics to the RossLinq compatible devices without using any of the video input BNC.

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

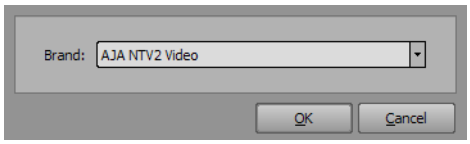
   The **Hardware Setup** dialog box opens.

2. Click the **Inputs / Outputs** tab.



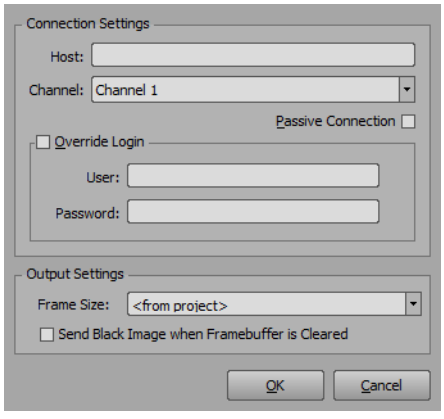
3. Click **Add**.

   The **Add New FrameBuffer Board** dialog box opens.



4. In the **Brand** list, select **XPression RossLinq Connector** from the **Brand** list.
5. Click **OK**.

   The **RossLinq Setup** dialog box opens.



6. Enter the IP address of the RossLinq compatible device in the **Host** box.
7. Use the **Channel** list to select the channel on the device that you want to upload images to.
8. Check the **Passive Connection** box to establish a passive FTP connection.

9. Check the **Override Login** box to override the username and password for the connection.
10. In the **User** box, enter a username for the connection to the RossLinq compatible device.
11. In the **Password** box, enter a password for the connection to the RossLinq compatible device.
12. In the **Output Mode** section, use the **Frame Size** menu to select the resolution of the images rendered and sent to the compatible RossLinq device. The available options are as follows:
    - **<from project>** — select this to use the same format as the project.
    - **PAL, 720x576**
    - **NTSC, 720x486**
    - **HD 720p, 1280x720**
    - **HD 1080i, 1920x1080**
    - **HD 1080p, 1920x1080**
    - **UHD 2160p, 3840x2160**

    Select the **Send Black Image when Framebuffer is Cleared** check box to display a black screen when the framebuffer is cleared.
13. Click **OK**.

    A RossLinq connection is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog box.
14. In the **Hardware Setup** dialog box, click **Close**.

    The **Hardware Setup** dialog box closes.

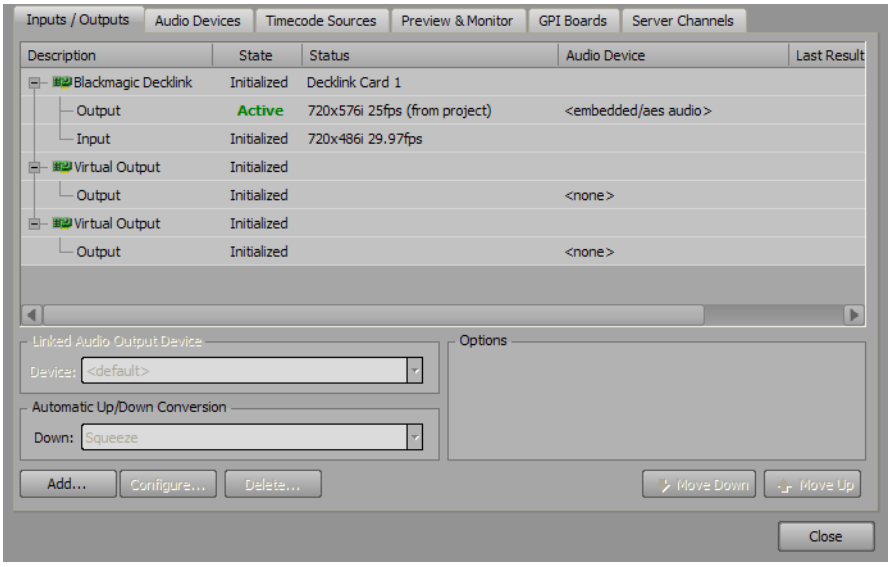
Configure an XPression Virtual Output

The XPression Virtual Output enables XPression software to run without any framebuffer cards installed in the XPression computer. In this case, the Virtual Output is used to display output in a window on the XPression computer.

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

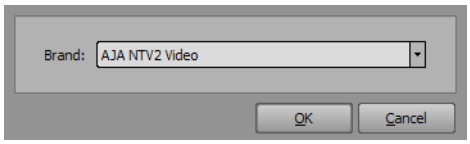
   The **Hardware Setup** dialog box opens.

2. Click the **Inputs / Outputs** tab.



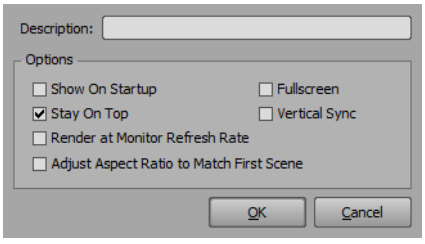
3. Click the **Add**.

   The **Add New FrameBuffer Board** dialog box opens.



4. Select **XPression Virtual Output** from the **Brand** list.
5. Click **OK**.

   The **Virtual Output Settings** dialog box opens.



6. In the **Description** box, enter a name or brief description for the virtual output.

7. In the **Options** section, configure the following:
   - **Show On Startup** — select this check box to have the virtual output open when XPression is launched.
   - **Fullscreen** — select this check box to make the virtual output window fullscreen.
   - **Stay On Top** — select this command to always display the virtual output on top of all other open and/or active windows on the screen.
   - **Vertical Sync** — currently not implemented.
   - **Render at Monitor Refresh Rate** — currently not implemented.
   - **Adjust Aspect Ratio to Match First Scene** — select this check box to change the aspect ratio of the virtual framebuffer to match the scene played on it as opposed to the format of the project.
8. Click **OK**.

   An XPression Virtual Output is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog box.
9. In the **Hardware Setup** dialog box, click **Close**.

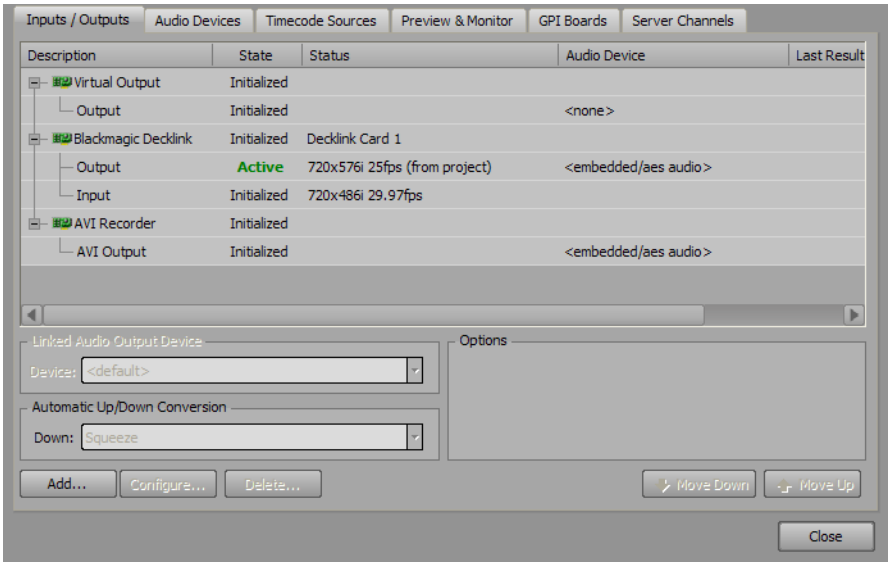
   The **Hardware Setup** dialog box closes.

Change the Order of Video Inputs / Outputs

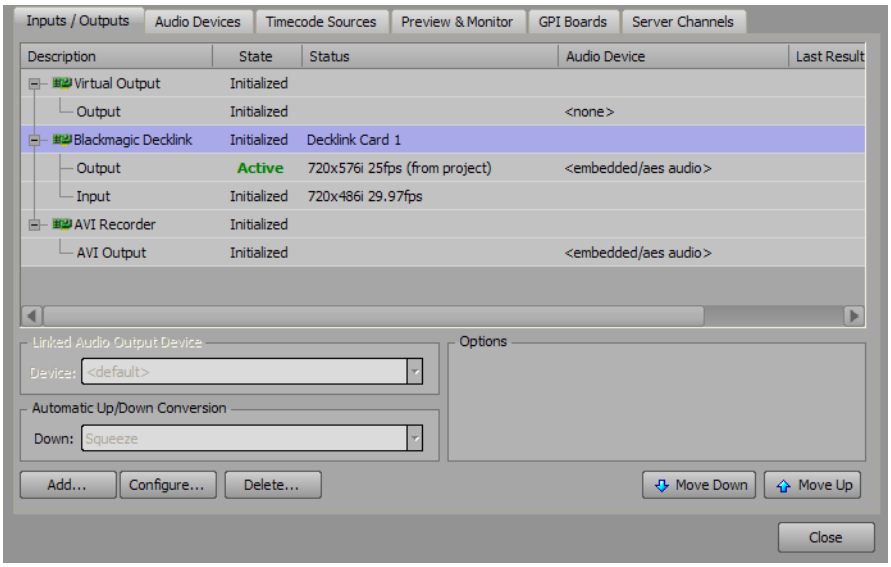
1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

   The **Hardware Setup** dialog box opens.

2. Click the **Inputs / Outputs** tab.



3. In the **Inputs / Outputs** list, select an input or output to move in the list.



4. At the bottom of the dialog box, click **Move Down** to move the selected device down one position in the **Inputs / Outputs** list, or **Move Up** to move up one position in the list.

   The **Move Up** button is not available when the selected device is positioned at the top of the list. The **Move Down** button is not available when the selected device is positioned at the bottom of the list.

5. Click **Close**.

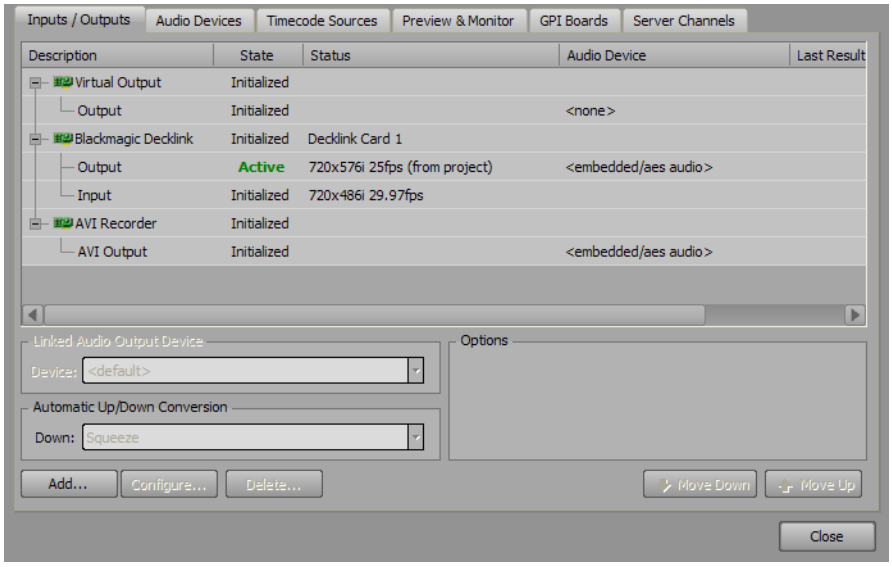
   The **Hardware Setup** dialog box closes.

Delete a Video Input / Output

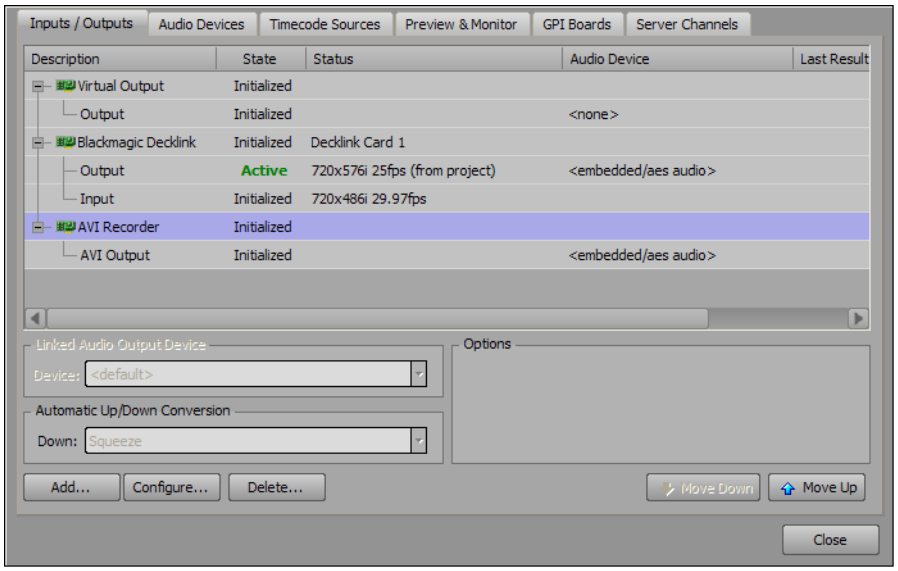
1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

   The **Hardware Setup** dialog box opens.

2. Click the **Inputs / Outputs** tab.



3. In the **Inputs / Outputs** list, select the input or output to delete.



4. Click **Delete** at the bottom of the dialog box.

   A **Warning** dialog box opens.

5. Click **Yes**.

   The selected video device is deleted from **Inputs / Outputs** list.

6. Click **Close**.

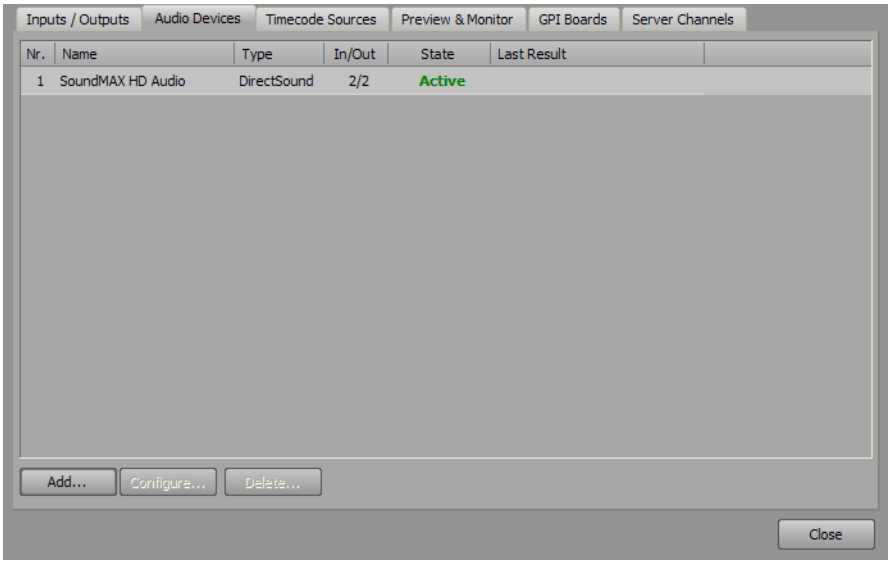
   The **Hardware Setup** dialog box closes.

Configure an Audio Device

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

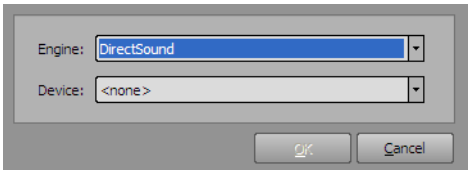
   The **Hardware Setup** dialog box opens.

2. Click the **Audio Devices** tab.



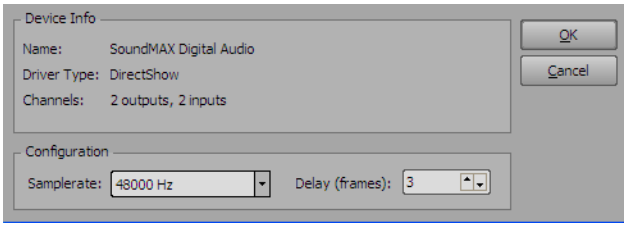
3. Click **Add**.

   The **Add Audio Device** dialog box opens.



4. Use the **Engine** list to select engine used to produce audio.
5. Use the **Device** list to select the sound card to output audio.
6. Click **OK**.

   The **Audio Engine Setup** dialog box opens.



7. In the **Configuration** section, use the **Sample Rate** list to select the sample rate for the audio signal.

   The selected sample rate defines the number of samples per second taken from analog signal to make a digital signal. A sample rate of 48 kHz is the recommended setting, but 44.1 kHz can also be used.

8. In the **Delay (frames)** box, enter or select the number of frames to delay the audio signal.
9. Click **OK**.

   The configured audio device is added to the **Audio Devices** tab of the **Hardware Setup** dialog box.

10. In the **Hardware Setup** dialog box, click **Close**.

    The **Hardware Setup** dialog box closes.

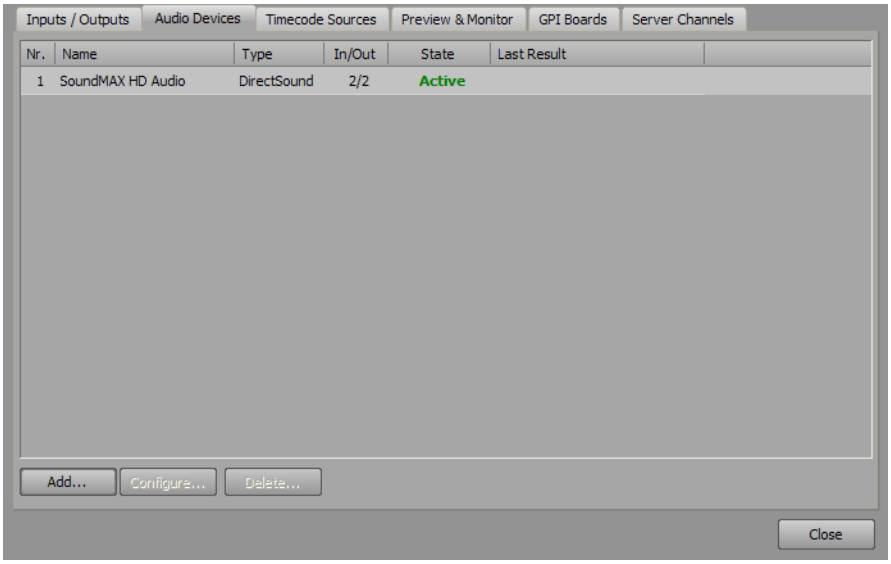
✶ Adding an audio device is not required to output embedded or AES audio.

Delete an Audio Device

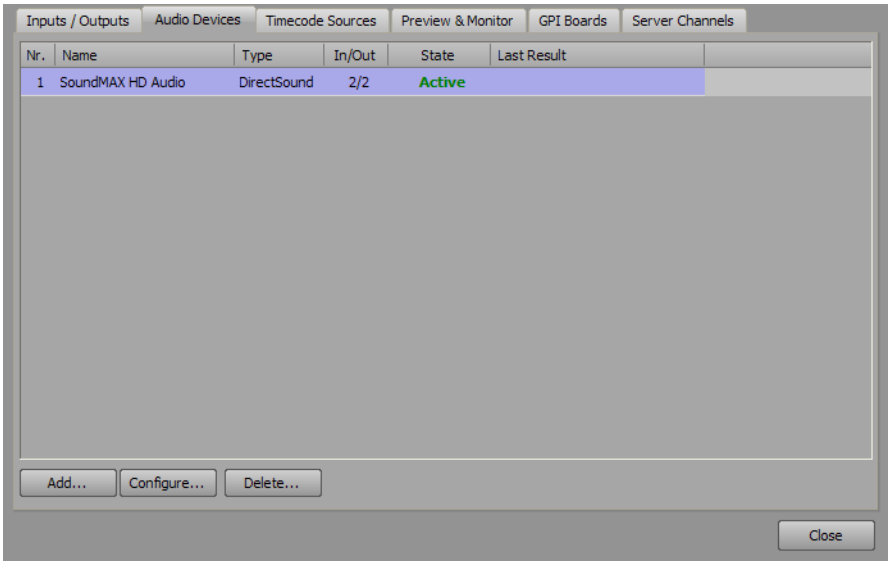
1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

   The **Hardware Setup** dialog box opens.

2. Click the **Audio Devices** tab.



3. In the **Audio Devices** list, select the **Audio Device** to delete.



4. Click **Delete** at the bottom of the dialog box.

   A **Warning** dialog box opens.

5. Click **Yes**.

   The selected audio device is deleted from **Audio Devices** list.

6. Click **Close**.

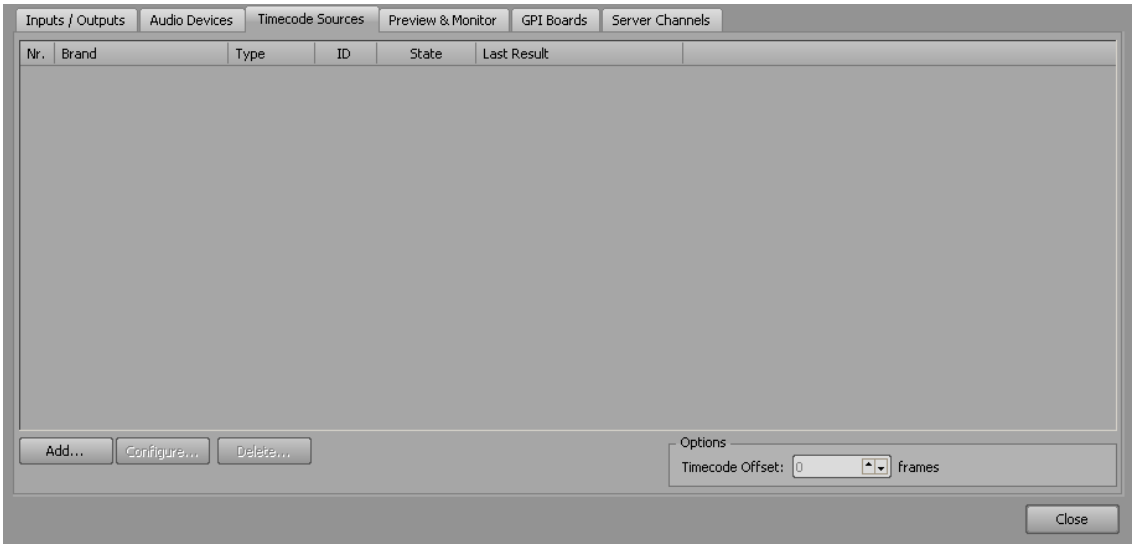
   The **Hardware Setup** dialog box closes.

Add a Timecode Source

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

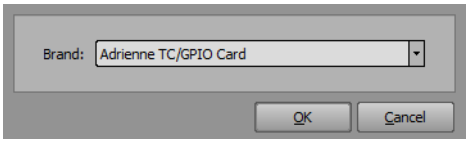
   The **Hardware Setup** dialog box opens.

2. Click the **Timecode Sources** tab.



3. Click **Add**.

   The **Add New TimeCode Source** dialog box opens.

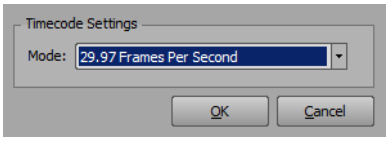


4. In the **Brand** list, select a timecode source. The possible options include:
   - **Adrienne TC/GPIO Card** — if installed, select the Adrienne TC/GPIO card as the timecode source.
   - **Blackmagic Design (Legacy)** — if installed, select the Blackmagic Design (legacy) card as the timecode source.
   - **Countdown Timer Broadcast** — send countdown clocks via UDP to DashBoard or other devices.
   - **Free Running Timecode** — use the system clock of the machine or a custom preset time as the timecode source.
5. Click **OK**.

   The setup dialog box for the selected timecode source opens.

Adrienne TC/GPIO Card

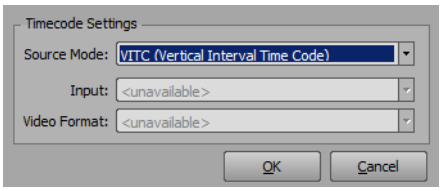
If the Adrienne TC/GPIO card is selected, the **Adrienne Setup (Timecode)** dialog box opens.



   a. In the **Timecode Settings** section, use the **Mode** list to select the frame rate to use for the timecode.

Blackmagic Design (Legacy)

If the Blackmagic Design (legacy) card is selected, the **Blackmagic Design - Timecode Source Setup** dialog box opens.



a. In the **Timecode Settings** section, use the **Source Mode** list to select a source mode for the timecode data. The available options are:

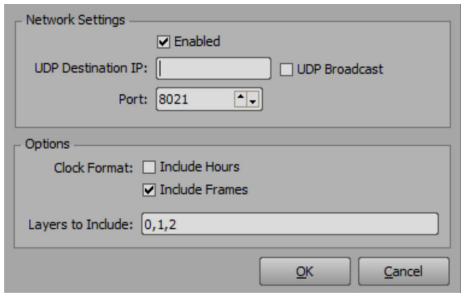
- **VITC (Vertical Interval Time Code)**
- **HANC (Horizontal Ancillary Data)**
- **RS-422 (Serial)**

b. Use the **Input** list to select an input on the card to receive the timecode data.

c. Use the **Video Format** list to select the video format of the received video signal.

Countdown Timer Broadcast

If countdown timer broadcast is selected, the **Countdown Timer Broadcast** dialog box opens.



a. In the **Network Settings** section, select the **Enabled** check box to send countdown clocks via UDP to DashBoard or other devices. It is enabled by default.

b. Use the **UDP Destination IP** box to enter the IP address of the device to receive the countdown timer.

Select the **UDP Broadcast** check box to send UDP countdown timer packets to a range of IP addresses within a subnet. When the UDP Broadcast check box is enabled, the UDP Destination IP box changes to **Broadcast Address**.

c. Use the **Port** box to enter or select the port number to use for the connection.

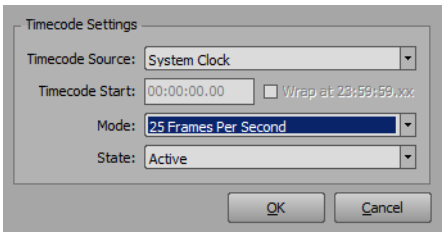
d. In the **Options** section, use the **Clock Format** check boxes to select the format of the timer to send to the receiving device:

- **Include Hours** — select this check box to use hours in the clock format.
- **Include Frames** — select this check box to use frames in the clock format.

e. Use the **Layers to Include** box to enter the framebuffer layers to include in the clock format.

Free Running Timecode

If the free running timecode is selected, the **XPression - Free Running Timecode Source** dialog box opens.



a. In the **Timecode Settings** section, use the **Timecode Source** list to select a source mode for the timecode. The options are:

- **System Clock** — use the internal system clock for the timecode.
- **Preset Time** — use a custom start time for the timecode.

  If using a preset time, use the **Timecode Start** box to enter a start time for the timecode.

  Select the **Wrap at 23:59:59.xx** check box to restart at the configured preset start time when the time has reached `23:59:59:xx`.

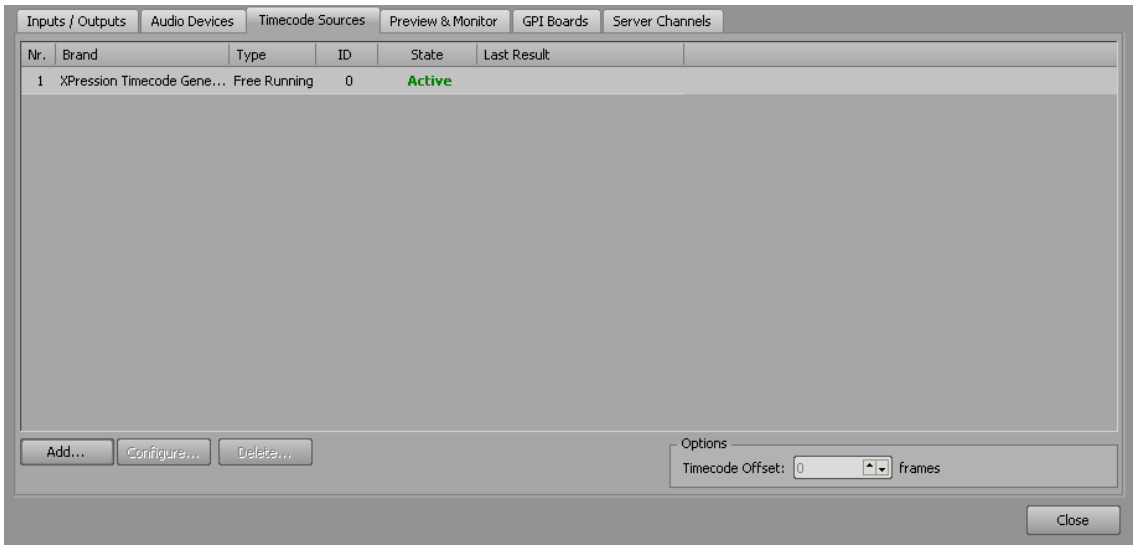
b. Use the **Mode** list to select the frame rate to use for the timecode.

c. Use the State list to select a status for the timecode:

- **Active** — use the selected timecode.
- **Inactive** — disable the selected timecode.

6. Click **OK**.

   The timecode source is added to the list in the **Timecode Sources** tab.



7. In the **Options** section, use the **Timecode Offset** box to enter or select a number of frames to offset the timecode when playing out a scene or a clip.

8. Click **Close**.

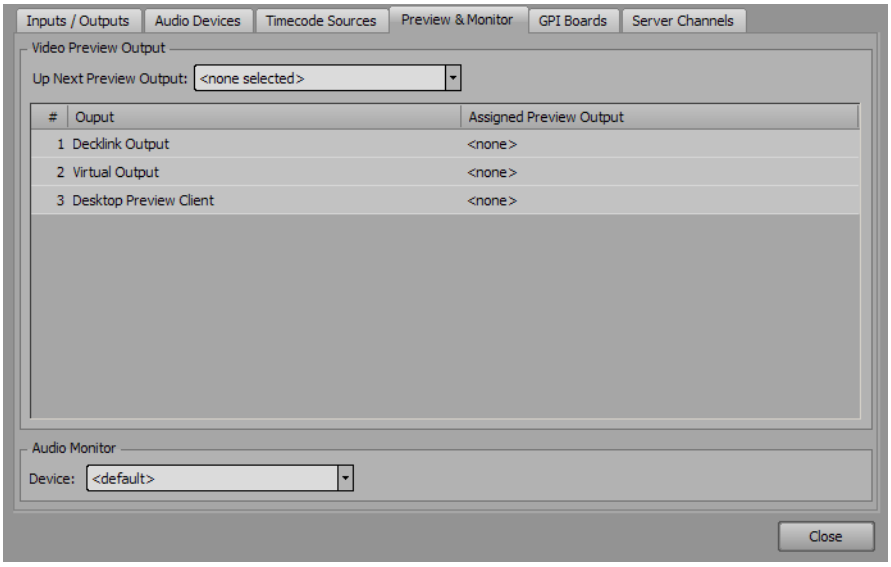
   The **Hardware Setup** dialog box closes.

Configure Video Preview and Audio Monitor

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

   The **Hardware Setup** dialog box opens.

2. Click the **Preview & Monitor** tab.

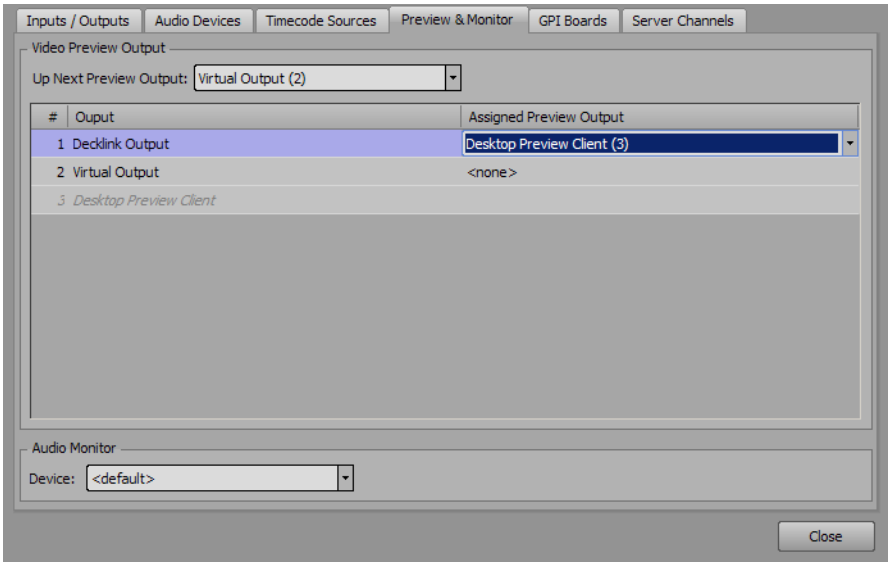


3. In the **Video Preview Output** section, use the **Up Next Preview Output** list to select the video output device on which to preview video. All framebuffers can be used to preview video.

   When **<none selected>** is the selected preview output, video preview is only possible within XPression.

✶ If a configured framebuffer from the Inputs / Outputs tab is used as a preview output, the Hardware Setup dialog box must be closed and reopened before the configured framebuffer is available in the Output list.

4. In the **Output** list, click inside the **Assigned Preview Output** column and use the Assigned Preview Output list to select a framebuffer as the individual preview output for the selected framebuffer in the Output list.



5. In the **Audio Monitor** section, use the **Device** list to select the audio output device from which to monitor audio.

   The audio monitor device monitors audio from the clip editor in the clip or sub clip opened for editing.

6. Click **Close**.

   The **Hardware Setup** dialog box closes.

Configure RS232 CTS/DSR GPI for Contact Closures

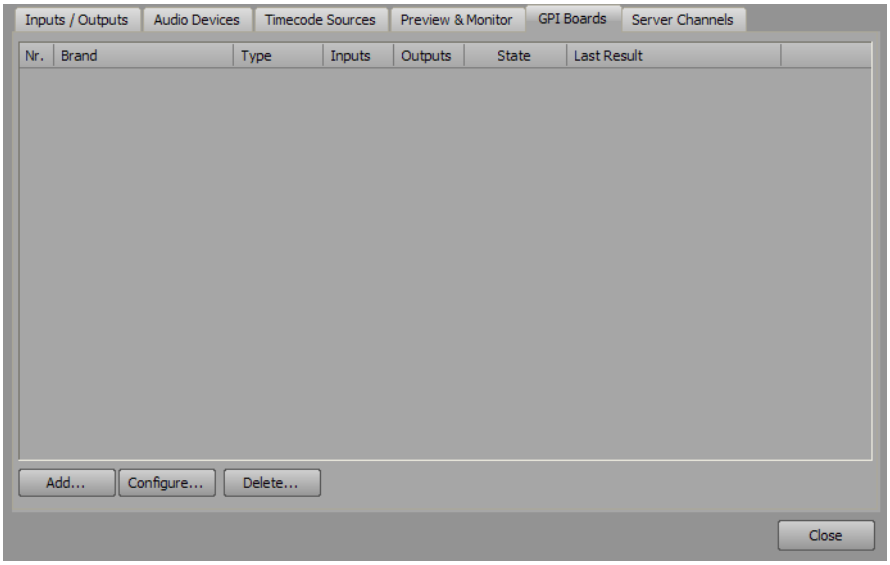
1. Ensure that a USB-232 dongle is installed and assigned to a Communication port or that the system has a built-in RS232 port before configuring GPI for RS232.

✶ Not all USB to serial converters support contact closures.

2. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

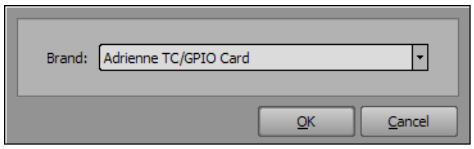
   The **Hardware Setup** dialog box opens.

3. Click the **GPI Boards** tab.



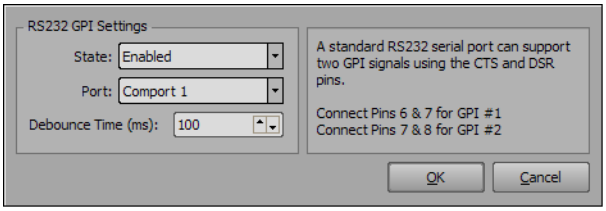
4. Click **Add**.

   The **Add New GPI Board** dialog box opens.



5. Use the **Brand** list to select **Serial GPI (CTS/DSR)**.

   The **Serial GPI Setup** dialog box opens.



6. In the **RS232 GPI Settings** section, select **Enabled** from the **State** list. Select **Disabled** to turn off RS232 GPI.

   When enabled, RS232 GPI (General Purpose Interface) is used to control functions of XPression in sequencer mode. RS232 GPI can trigger the state of the next take of scenes and scene groups from top to bottom of a sequence.

   A standard RS232 serial port can support two GPI signals using the CTS and DSR pins. Connect Pins 6 and 7 for GPI 1 and connect Pins 7 and 8 for GPI 2.

7. Use the **Port** list to select the Communication port that receives RS232 GPI signals.

8. In the **Debounce Time** box, enter or select the amount of milliseconds between sequential GPI pulses.

   When using a contact closure GPI on the CTS/DSR lines, some devices might send GPI signals that are noisy. Connecting the GPI to a mechanical push-button may also exhibit this problem. If the connection is noisy, it could generate multiple triggers that cause the sequence to advance by two or three events at a time. In the **Serial GPI Setup** dialog box, a Debounce Time can be set. This value is the amount of time within which XPression will wait before acting upon a second GPI trigger. A value of around 50-100 milliseconds should be sufficient for filtering out any noise during the GPI trigger.

9. Click **OK**.

   The **Serial GPI Setup** dialog box closes and the configuration appears in the GPI Boards tab list.

For More Information on…

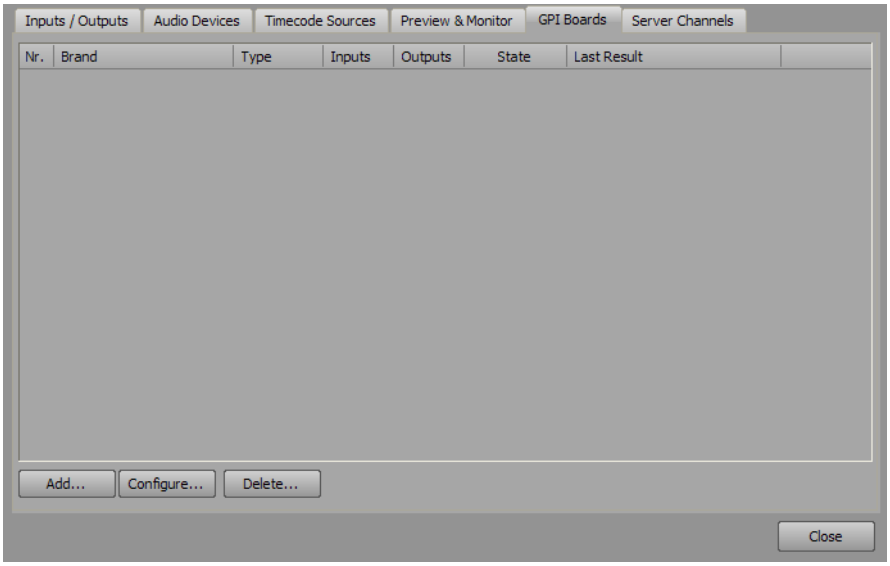
- configuring and working with GPIs, refer to the ***GPI White Paper*** available from Ross Video.

Configure a 25-Pin GPIO Port

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

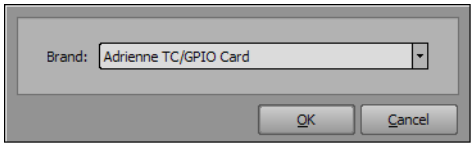
   The **Hardware Setup** dialog box opens.

2. Click the **GPI Boards** tab.



3. Click **Add**.

   The **Add New GPI Board** dialog box opens.

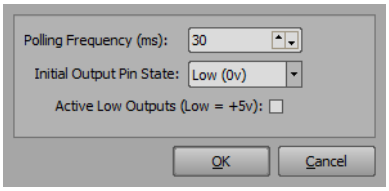


4. Use the **Brand** list to select **Adrienne TC/GPIO Card**.

   The Adrienne TC/GPIO card is installed in Ross Video Turnkey systems. The 25 pin GPIO port can be accessed through .NET applications or by using the **Keyboard / GPI Mapping** dialog box to configure functions.

5. Click **OK**.

   The **Adrienne Setup (GPI)** dialog box opens.



6. In the **Polling Frequency** box, enter or select a polling frequency in milliseconds for checking the GPI inputs.

7. Use the **Initial Output Pin State** list to select the state of the pins when XPression is launched. The options are:

   - **Low (0v)**
   - **High (+5v)**

8. Select the **Active Low Outputs** check box to use the active low status (0v) when the GPI is activated in XPression. If not enabled, the GPI is +5v when the GPI is activated in XPression.

9. Click **OK**.

   The Adrienne TC/GPIO card is displayed in the GPI Board list.

10. Click **Close**.

    The **Hardware Setup** dialog box closes.

For More Information on…

- configuring and working with GPIs, refer to the ***GPI White Paper*** available from Ross Video.
- creating a custom GPI, refer to the section "Create a Custom GPI Map" on page 9-10.

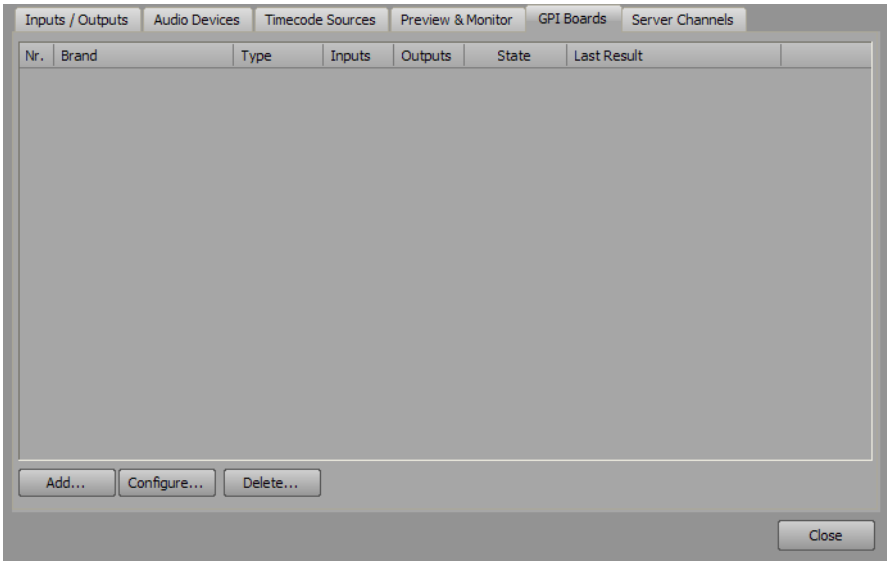
Configure a SeaLevel GPIO Board

✶ SeaLevel 8004e and SeaLevel 8012 GPIO cards are customer-supplied.

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

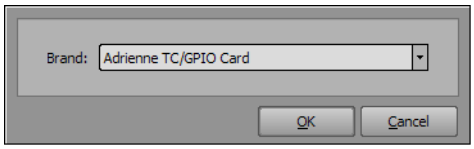
   The **Hardware Setup** dialog box opens.

2. Click the **GPI Boards** tab.



3. Click **Add**.

   The **Add New GPI Board** dialog box opens.

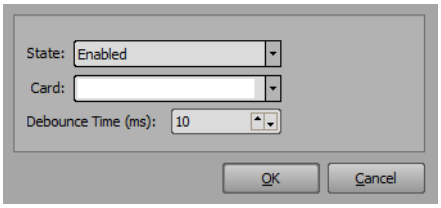


4. Use the **Brand** list to select **Sealevel GPIO**.

   The 32 pin GPIO port can be accessed through .NET applications or by using the **Keyboard / GPI Mapping** dialog box to configure functions.

5. Click **OK**.

   The **SeaLevel I/O Setup** dialog box opens.



6. In the **State** list, select **Enabled** to use the card.
7. In the **Card** list, select the SeaLevel GPIO card to use.
8. Use the **Debounce Time (ms)** box to enter or select the amount of milliseconds between sequential GPI pulses.

9. Click **OK**.

   The SeaLevel 8004e card is displayed in the GPI Board list.

10. Click **Close**.

    The **Hardware Setup** dialog box closes.

For More Information on…

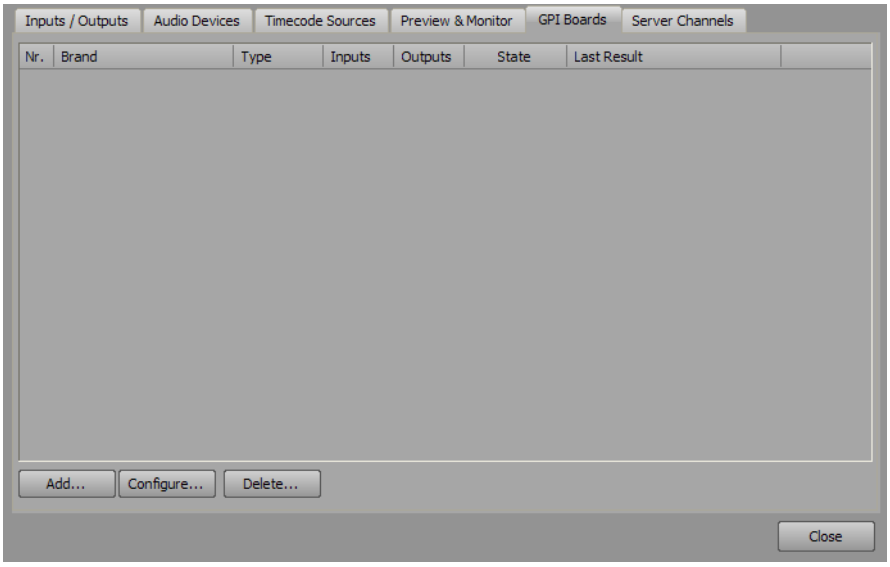
- configuring and working with GPIs, refer to the ***GPI White Paper*** available from Ross Video.
- creating a custom GPI, refer to the section "Create a Custom GPI Map" on page 9-10.

Configure Smart GPI / RossTalk

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

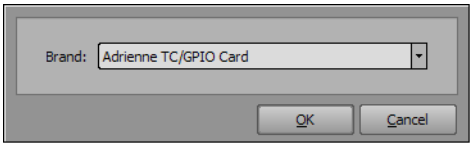
   The **Hardware Setup** dialog box opens.

2. Click the **GPI Boards** tab.



3. Click **Add**.

   The **Add New GPI Board** dialog box opens.

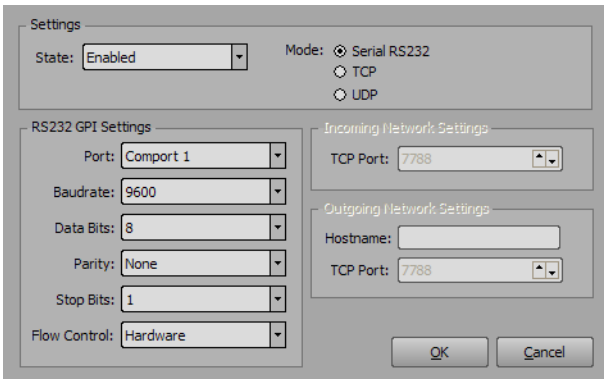


4. Use the **Brand** list to select **Smart GPI / RossTalk**.

   Smart GPI/RossTalk is an ASCII based protocol that can be sent over TCP/IP or RS232 that is used to trigger various actions in XPression.

5. Click **OK**.

   The **Smart GPI / RossTalk Setup** dialog box opens.



6. In the **Settings** section, select **Enabled** from the **State** list. Select **Disabled** to turn off Smart GPI/RossTalk.

7. Select a **Mode** for Smart GPI/RossTalk:
   - **Serial RS232** — select to use RS232 to send Smart GPI/RossTalk signals to XPression.
   - **TCP** — select to use TCP/IP to send Smart GPI/RossTalk signals to XPression.
   - **UDP** — select to use UDP sockets to send Smart GPI/RossTalk signals to XPression.
8. Configure the selected GPI mode.

   Serial RS232

   a. In the RS232 GPI Settings box, use the **Port** list to select the Communication port that receives GPI signals.

   b. Use the **Baudrate** list to select the communication speed for GPI signals.

   c. Use the **Data Bits** list to select the number of bits used to represent one character of data for GPI signals.

   d. Use the **Parity** list to select the method used to check for lost data in a GPI signal.

   e. Use the **Stop Bits** list to select the number of bits used to indicate the end of a byte in a GPI signal.

   f. Use the **Flow Control** list to select the data transmission rate controller for a GPI signal.

      When using Smart GPI/RossTalk, the flow control can be set to **Hardware** or **None**, but it must be set the same in both XPression and the transmitting device.

   TCP

   a. In the **Incoming Network Settings** box, use the **TCP Port** box to enter or select the communication port that receives GPI signals.

   b. In the **Outgoing Network Settings** section, use the **Hostname** box to enter the host name of a remote device that is to receive RossTalk messages.

   c. Use the **TCP Port** box to enter or select the communication port that receives the signals.

   UDP

   a. In the **Incoming Network Settings** box, use the **UDP Port** box to enter or select the communication port that receives GPI signals.

   b. In the **Outgoing Network Settings** section, use the **Hostname** box to enter the host name of a remote device that is to receive RossTalk messages.

   c. Use the **UDP Port** box to enter or select the communication port that receives the signals.
9. Click **OK**.

   The Smart GPI/RossTalk is displayed in the GPI Board list.
10. Click **Close**.

    The **Hardware Setup** dialog box closes.

For More Information on...

- configuring and working with GPIs, refer to the ***GPI White Paper*** available from Ross Video.

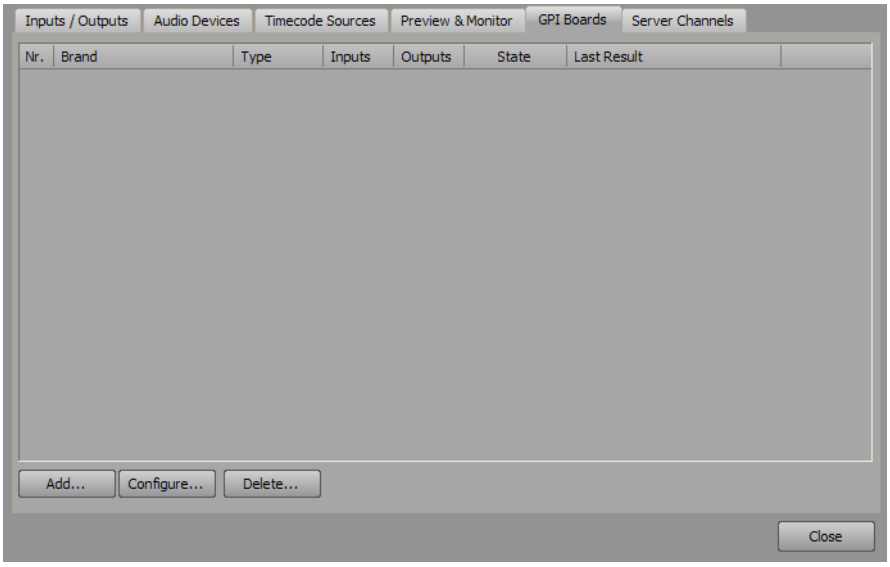
Configure PBus Interface and PBus Recalls

PBus is an industry standard protocol designed to allow production switchers to communicate with external devices.

1. In **XPression**, use the **Edit** menu to select **Hardware Setup**.

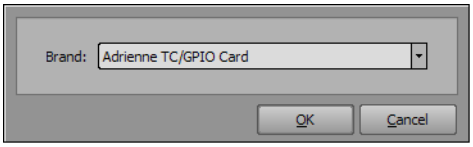
   The **Hardware Setup** dialog box opens.

2. Click the **GPI Boards** tab.



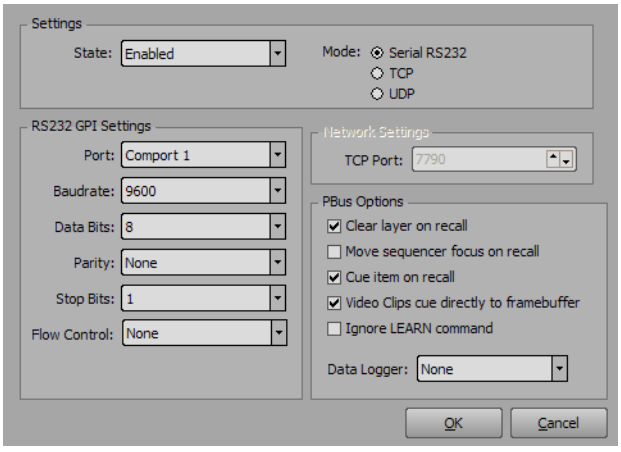
3. Click **Add**.

   The **Add New GPI Board** dialog box opens.



4. Use the **Brand** list to select **PBus**.
5. Click **OK**.

   The **PBus Setup** dialog box opens.



6. In the **Settings** section, select **Enabled** from the **State** list. Select **Disabled** to turn off PBus.

7. Select a **Mode** for PBus:
   - **Serial RS232** — select to use RS232 to send PBus signals to XPression.
   - **TCP** — select to use TCP/IP to send PBus signals to XPression.
   - **UDP** — select to use UDP sockets to send PBus signals to XPression.
8. Configure the selected mode.

   RS232 GPI Settings

   a. Use the **Port** list to select the Communication port that receives the signals.

   b. Use the **Baudrate** list to select the communication speed for the signals.

   c. Use the **Data Bits** list to select the number of bits used to represent one character of data for the signals.

   d. Use the **Parity** list to select the method used to check for lost data in a signal.

   e. Use the **Stop Bits** list to select the number of bits used to indicate the end of a byte in a signal.

   f. Use the **Flow Control** list to select the data transmission rate controller for a signal.

      The flow control can be set to **Hardware** or **None**, but it must be set the same in both XPression and the transmitting device.

   TCP & UDP

   a. In the **Network Settings** section, use the **TCP Port**/**UDP Port** box to enter or select the communication port that receives the signals.
9. In the **PBus Options** section, configure the PBus recall options.

   XPression normally does not perform any action when a PBus recall command is issued. Instead, it stores the recall ID to be used later when a PBus trigger command is issued.

   Configure the following PBus recall options:

   - **Clear layer on recall** — when this option is selected and a PBus recall command is received, XPression will look to see which channel and layer that the take item being recalled has been assigned. It will then immediately clear that layer and channel. However, the take item will not be read to air until such time as a PBus Trigger command is received to put the item on air. This configuration option is recommended to be enabled in situations where XPression might be used to play back clips/graphics and to ensure that as soon the recall command is issued, any previous graphic that might have been left over on the layer will be removed.
   - **Move sequencer focus on recall** — this configuration option can be selected to move the sequencer focus to the item that is being recalled. This can be useful as a means of generating a preview output that will show a rendered frame from the item that will be put on air when the PBus trigger command is received.
   - **Cue item on recall** — selecting this option will place the take item into a cued state when the recall command is received. This is useful when using video clips which might take a few frames to cue.
   - **Video Clips cue directly to framebuffer** — selecting this option will cause the video clips from the Clip Store that are assigned to a PBus register to cue directly onto the hardware output of XPression in a paused state. When the play command is received, they will begin playing.
   - **Ignore LEARN command** — selecting this option will ignore the LEARN command. LEARN stores the clip currently loaded into a server channel into the PBus register list when the LEARN command is received.
10. Use the **Data Logger** list to select an encoding scheme for the data log. The options are:
    - **None** — select this option to use no data logging.
    - **ASCII** — select this option to use ASCII encoding for the data log.
    - **HEX** — select this option to use HEX file formatting for the data log.
    - **Both** — select this option to use both ASCII encoding and HEX file formatting for the data log.
11. Click **OK**.

    The PBus interface is displayed in the GPI Board list.

12. Click **Close**.

    The **Hardware Setup** dialog box closes.

For More Information on...

- configuring and working with GPIs, refer to the ***GPI White Paper*** available from Ross Video.

Set Up Server Channels

The Server Channels are used for previewing and playing out clips.

Before using the Server Channels, they must be configured in the XPression Hardware Setup. Once outputs have been configured in XPression, use the following procedure to set up the server channels.

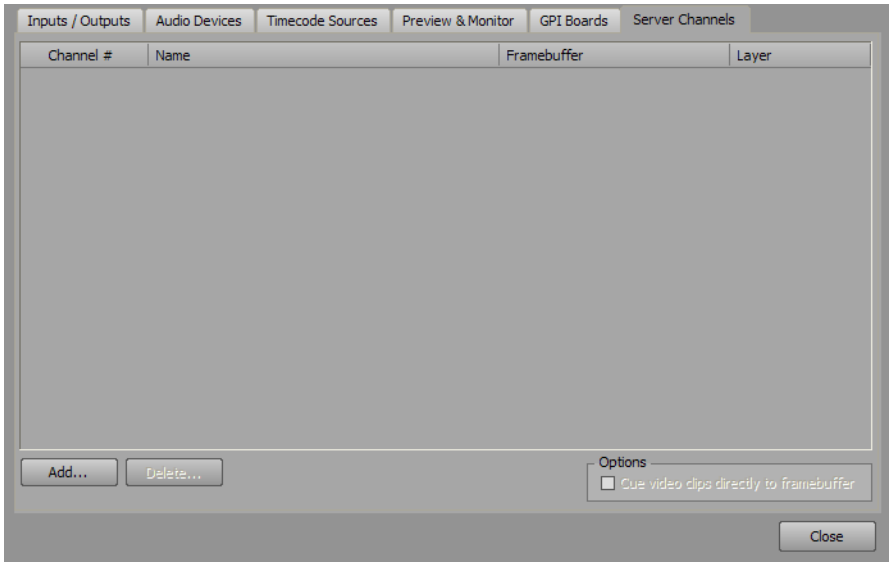
A virtual channel should be assigned a real physical output onto which the clip will be played. It is these virtual channels that the AMP/VDCP Media Control Gateway is controlling.

1. In XPression, click **Edit** > **Hardware Setup**.

   The **Hardware Setup** dialog box opens.

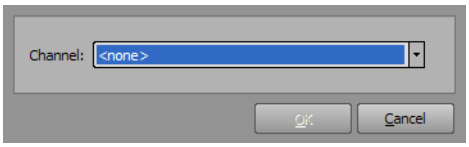
2. Click the **Server Channels** tab.

   The **Server Channels** tab opens.



3. Click **Add** to add a server channel.

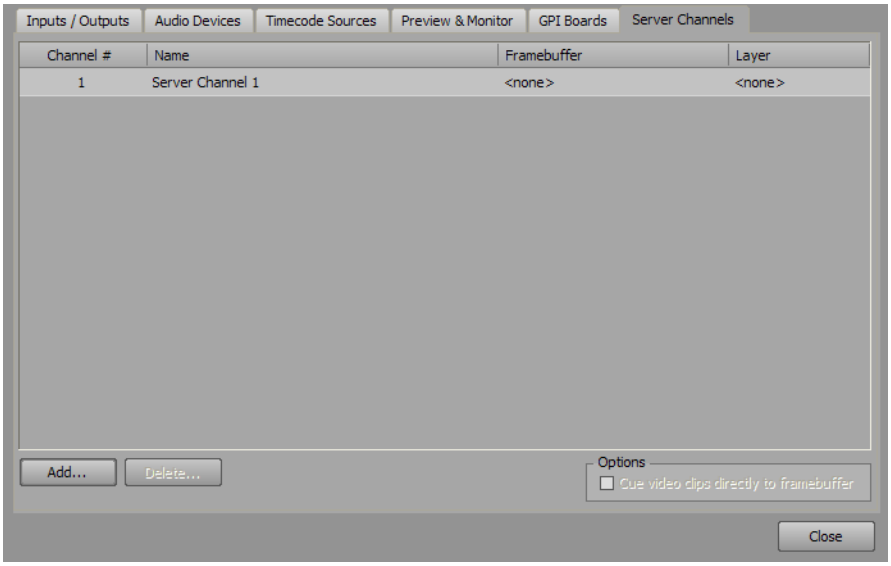
   The **Select Server Channel #** dialog box opens.



4. Use the **Channel** list to select a server channel number.

5. Click **OK**.

   The server channel is added to the list.



6. Configure the following as necessary:
   - In the **Name** column, enter a name for the server channel. The default is Server Channel #.
   - In the **Framebuffer** column, use the list to select an output framebuffer for the server channel.
   - In the **Layer** column, enter or select a layer for rendering. The default is 0 (middle).
   - In the **Server Channel # Options** section, select the **Cue video clips directly to framebuffer** check box to cue clips to air immediately when dropped on a server channel from the Clip Browser.
7. Repeat steps 3 to 6 to add more server channels as necessary.
8. Click **Close**.

   The **Hardware Setup** dialog box closes.

For More Information on…

- configuring outputs, refer to "**Configure an AJA Video FrameBuffer (Legacy)**" on page 3–27, "**Configure a Blackmagic Design FrameBuffer (Legacy)**" on page 3–36, or "**Configure an XPression Virtual Output**" on page 3–79.

Clips

The following topics are discussed in this section:

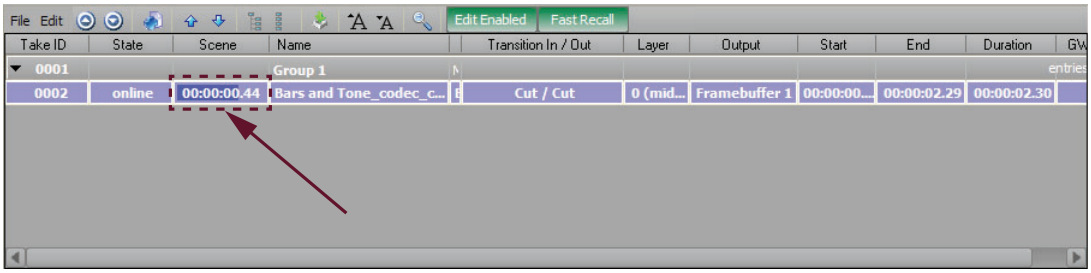
- XPression Clips Playback Overview
- Create a Project
- Loading a Clip in the Server Channels
- Using the Clip Browser
- Using the Server Channels
- Edit Clip/Add Sub Clip
- Updating the Thumbnail in the Clip Browser
- Creating a 4-Point Loop
- Creating a 3-Point Loop

XPression Clips Playback Overview

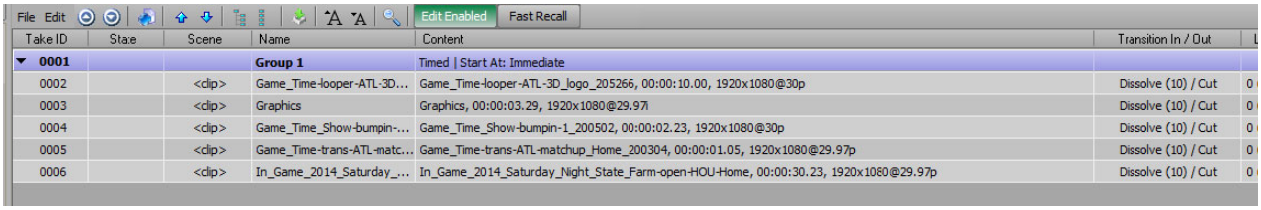
Clip playback within XPression can be performed in many ways. The most basic is to drag clips from the Clip Browser and drop them into the Sequencer. This creates a take item which can be assigned an output framebuffer and layer, or server channel, and then played back as a regular take item or placed into a Cued state using the number pad period key [**Num pad .**].

The number of clips that can be played back simultaneously falls under the same performance limitations as normal XPression scenes with clips (e.g. play back will be dependent on current generation hardware).

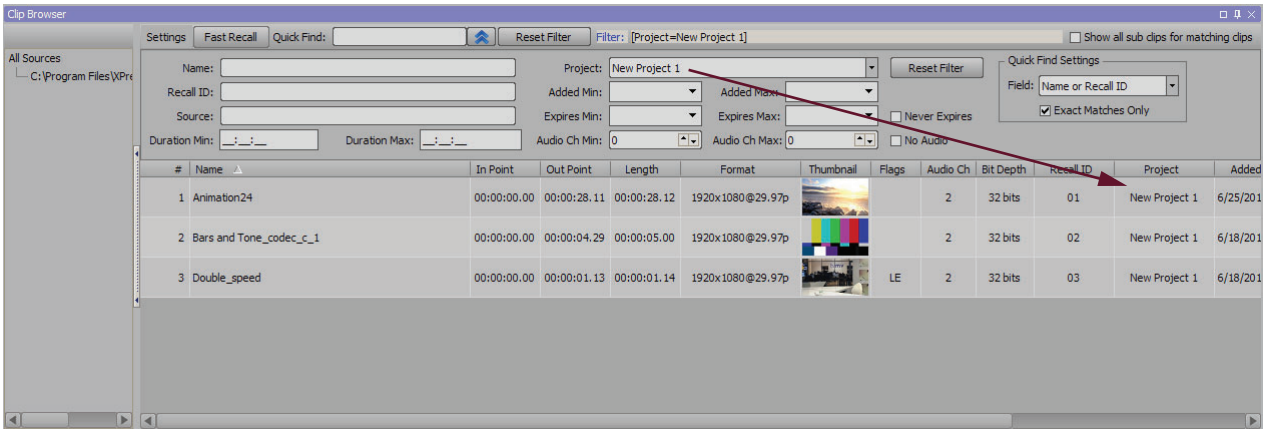
While playing back, a timer counts down the remaining time in the clip and a time bar indicates the playback amount completed:



Many clips can be dragged into a timed sequence group for a pseudo-playlist capability. Dissolves can even be set on the take items for transitions between the playlist items:



Clips within the Clip Browser can be sorted and filtered using the options in the Advanced Search Options. In the example image below they were filtered by Project Name:



Create a Project

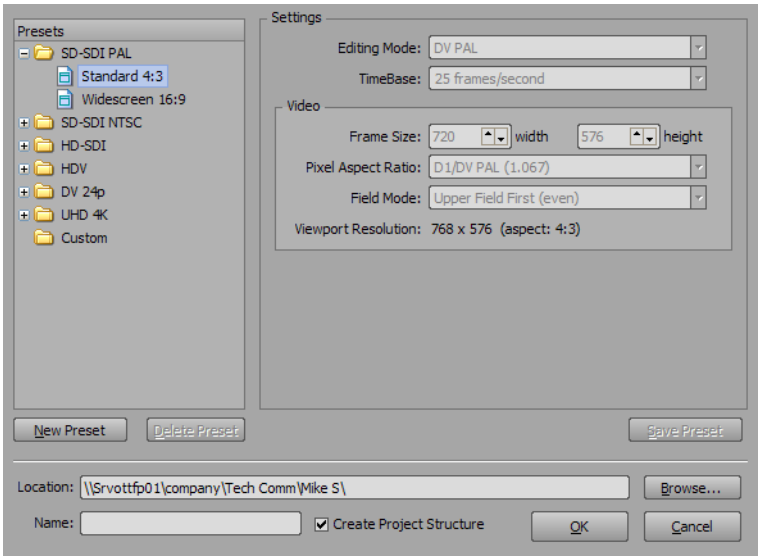
1. In **XPression**, use the **File** menu to select **New**.

   The **Confirm** dialog box opens.

2. Select one of the following options for the current project:

   - **Yes** — save changes to the current project, then close the project.
   - **No** — close the project without saving changes.
   - **Cancel** — continue working on the project.

   After selecting **Yes** or **No**, the **New Project** dialog box opens.



3. In the **Presets** tree view, expand any video format node to view the available settings presets for the selected video format.

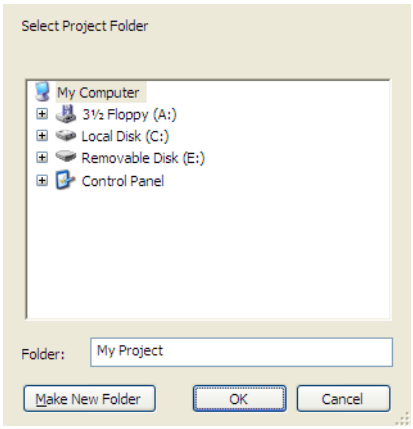
   The available settings presets are displayed for the selected video format.

4. Select a setting preset to define video format setting for the new project.

   The settings in the selected preset are displayed in the **Settings** section.

5. Click **Browse** to the right of the **Location** box to select a folder in which save the new project.

   The **Browse for Folder** dialog box opens.



6. In the **Folder** tree view, locate and select a folder in which save the new project.

7. Click **OK**.

   In the **New Project** dialog box, the full pathname of the selected folder is displayed in the **Location** box.

8. Enter in the **Name** box a name for the new project.

   Project names may only contain letters, numbers, spaces, hyphens, or underscores. Project files are saved with the extension .xpf.

9. Select the **Create Project Structure** check box to create the project folder in the selected Location under the entered Name.

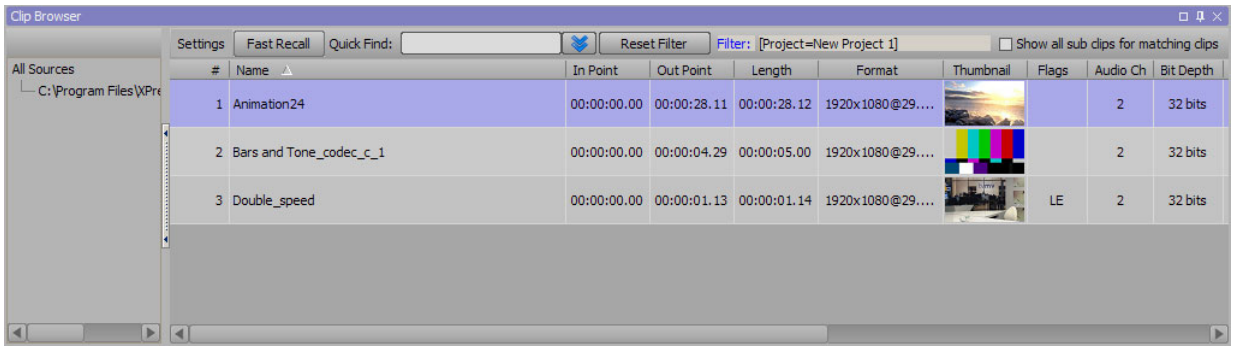
10. Click **OK**.

    The new project is saved in the project folder and the **New Project** dialog box closes.

Loading a Clip in the Server Channels

- For clips to load in the Server Channels window, server channels must be configured in the **Server Channels** tab of the XPression **Hardware Setup**.

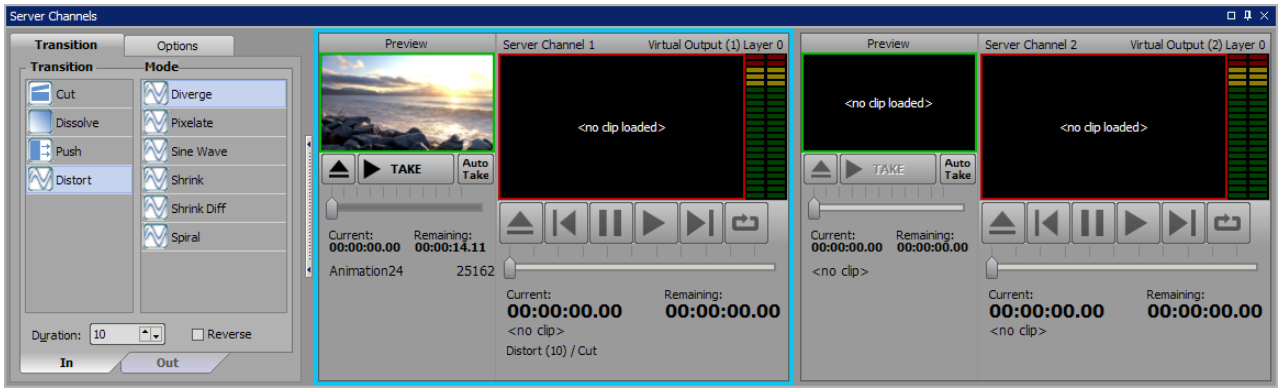
1. Select a clip in the Clip Browser.



If clips have been sent to the Clip Browser from the Record Client, or if clips have been transcoded by the INcoder into the Watch Folder, clips will automatically load into the Clip Browser.

2. Drag and drop a clip from the Clip Browser onto a **Server Channel** in the Server Channels window.

The clip is added to the **Preview** channel for the **Server Channel** (or directly to the **Server Channel** if the preview has been disabled in the options).



The clip will be loaded to its pre-configured in point.

If loaded in the Preview, click **Take** to play the clip on air on the Server Channel. While a clip is on air, clips can be cued on the Preview channel while still allowing the on air clip to be controlled and have its timecode and countdown visible.

Server Channel playback controls are provided or the space bar can be used to pause and start playback.

A realtime proxy of the clip is shown as it plays in the server channel along with audio meters and a time remaining counter.

Take items or timed groups in the Sequencer can also be dragged onto a server channel for playback. To preserve the original server channel assignment of a take item, press and hold **Ctrl** while dragging and dropping from the Sequencer to the a server channel.

- Clips can also be loaded to a channel by double clicking them in the Clip Browser. They will be loaded onto the currently active server channel, as shown by a cyan outline around the channel. Once a clip is loaded to a server channel, it can be dragged and dropped from one server channel to another as a duplicate. The active channel can be changed by double clicking any other server channel.

Clips can also be dragged and dropped directly from Windows Explorer for situations where the clip is not loaded into the Clip Store (or there is no Clip Store present).

3. Click the **Transition** tab to set the in and out transitions for the clip in the active server channel:

   a. In the **In** tab, select a **Transition** style and **Mode**:

      - **Cut** — select this to use an instantaneous transition from the take item to the next take item.
      - **Dissolve** — select this to use a gradual transition where a take item dissolves into the next take item. Configure the mode for the dissolve:
        - **Fade** — select this transition to fade in to, or out from, the clip.
        - **Over Black** — select this transition to fade in or out from black.
        - **Additive** — select this transition to gradually add light to the clip when transitioning in or out.
        - **Saturate** — select this transition to saturate the clip when transitioning in or out.
        - **Desaturate** — select this to transition to desaturate the clip when transitioning in or out.
        - **Invert** — select this transition to invert the clip when transitioning in or out.
      - **Push** — select this to use a sliding transition where the take item pushes out the previous take item. Configure the mode for the push:
        - **Right To Left** — select this transition to push from right to left.
        - **Left To Right** — select this transition to push from left to right.
        - **Top To Bottom** — select this transition to push from top to bottom.
        - **Bottom To Top** — select this transition to push from bottom to top.
        - **Bottom Right** — select this transition to push to the bottom right.
        - **Top Right** — select this transition to push to the top right.
        - **Bottom Left** — select this transition to push to the bottom left.
        - **Top Left** — select this transition to push to the top left.
      - **Distort** — select this to use a transition where a take item is warped out. Configure the mode for the distortion:
        - **Diverge** — select this transition to use multiple splits in the image in the clip.
        - **Pixelate** — select this transition to pixelate the clip.
        - **Sine Wave** — select this transition to apply a sine wave pattern to the clip.
        - **Shrink** — select this transition to expand the clip from a shrunken image.
        - **Shrink Diff** — select this transition to expand the clip from a shrunken image.
        - **Spiral** — select this transition to spin the clip.

        Select the **Reverse** check box to reverse a Dissolve, Push, or Distort transition.

   b. Use the **Duration** box to enter or select the duration of the transition in number of frames.

   c. Click the **Out** tab and repeat steps a to b to configure the **Transition** style and **Mode** for the out transition.

4. Select the **Cue video clips directly to framebuffer** check box to cue clips to air immediately when dropped on a server channel from the Clip Browser or Sequencer.

For More Information on…

- setting up server channels and virtual outputs, refer to "**Set Up Server Channels**" on page 3–102.
- sending clips from the Record Client to the Clip Browser, refer to "**Send a Video or Image to Clip Store**" on page 6–10.
- configuring a Watch Folder for the INcoder, refer to the ***INcoder User Guide***.

Using the Clip Browser

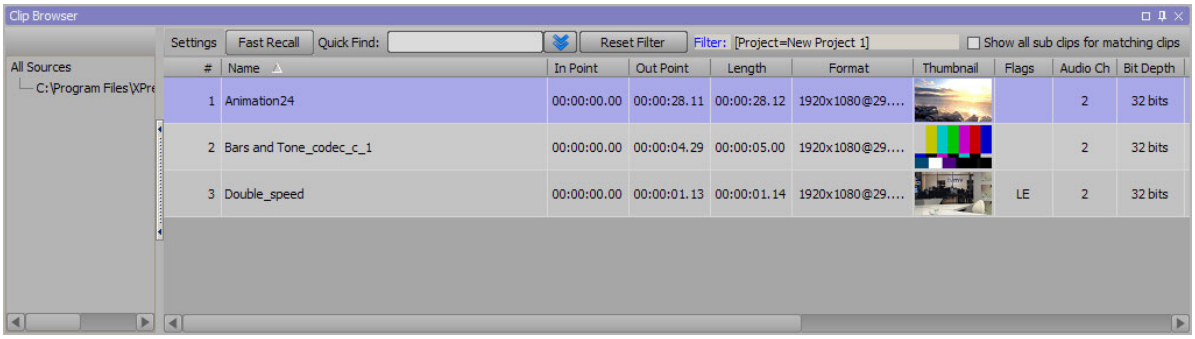
1. In the **Clip Browser**, select a clip in the clip list to playout. To search for a specific clip or sub clip, use the following features:

   - Click the **Fast Recall** button on to use the fast recall feature (the button is green when turned on). When turned on, fast recall enables searching clips by recall ID by simply entering a recall ID number using the number pad on the keyboard.

     The clip will be automatically selected in the Clip Browser. Pressing **Enter** will cue the clip, and pressing **Enter** a second time will play the clip.

     Clear a recall ID from the **Quick Find** box by pressing **Esc**.

     A clip can be cued by entering the recall ID and pressing cue [**.**].
   - Use the **Quick Find** box to enter a clip name or keyword to search for a specific clip in the Clip Browser. Press **Esc** to clear the box.
   - Click the **Show/Hide advanced search options** button ( ) to enter more criteria to search for a specific clip.
   - Select the **Show all sub clips for matching clips** check box to display any sub clips of a clip in the clip list when performing a Quick Find.



2. Right-click on a clip and select one of the following options:

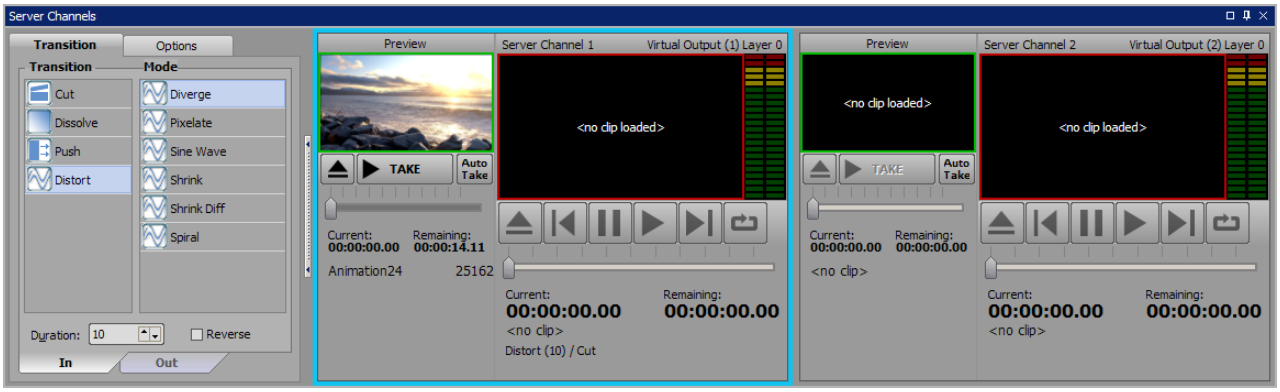
   - **Edit** — select this command to open the **Edit Clip** dialog box to edit the selected clip.
   - **Add Sub Clip** — select this command to open the **Add Sub Clip** dialog box to create a sub clip from the selected clip.
   - **Set Recall ID** — set the recall ID of a selected clip or a range of selected clips in the Clip Browser using the **Set Recall ID** dialog box. Use the Set Recall ID dialog box to enter a recall ID to assign to a selected clip or the starting recall ID for the range of selected clips.
   - **Adjust Loop / Hold Last** > **Enable Looping** — enable looping for a clip or a range of selected clips.
   - **Adjust Loop / Hold Last** > **Disable Looping** — disable looping for the clip or a range of selected clips if looping is enabled.
   - **Adjust Loop / Hold Last** > **Enable Hold Last Frame** — hold the last frame of the clip or a range of selected clips when playout ends. Do not select this function if taking the clip(s) offline automatically using an out transition.
   - **Adjust Loop / Hold Last** > **Disable Hold Last Frame** — disable holding the last frame of the clip or a range of selected clips when playout ends if holding the last frame is already enabled.
   - **Add to Sequencer** — add selected clip or range of clips to the Sequencer.

3. Add the clip to one of the following:

Server Channels

Drag and drop the selected clip onto a **Server Channel** in the **Server Channels** window. Double-clicking the clip, or right-clicking and selecting **Cue on Server Channel**, will also load it onto a selected Server Channel.

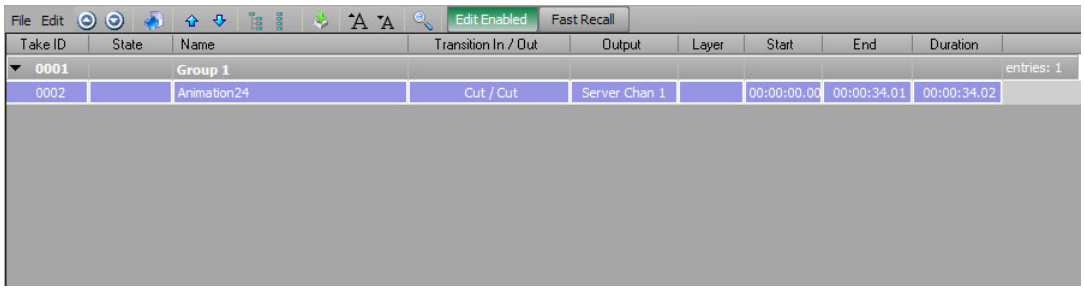
The clip is added to the selected Server Channel.



Sequencer

Drag and drop the selected clip into the **Sequencer**.

The clip is added to the Sequencer.



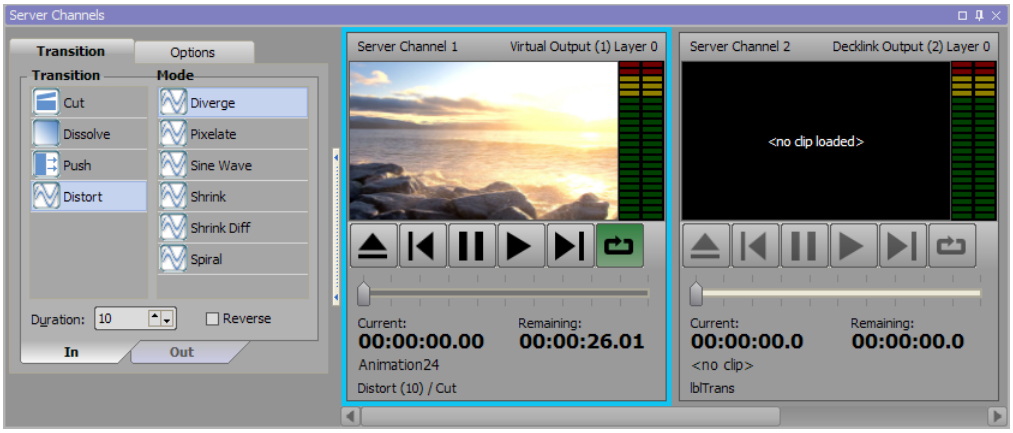
Multiple clips can be selected, dragged, and dropped into the Sequencer by Shift-clicking and Ctrl-clicking. When dragging a clip into the Sequencer from the Clip Browser, the take ID assigned uses the recall ID or the next higher available number.

For More Information on…

- the Sequencer, refer to "**Sequences**" on page 5–1.

Using the Server Channels

1. Load a clip onto a **Server Channel** in the **Server Channels** window.



2. Use the **Transition** tab to select and configure the in and out transition for the clip in the selected Server Channel:

   a. Use the **In** and **Out** tabs to select an in and out transition for the clip:

   - **Cut** — select this to use an instantaneous transition to and from the clip.
   - **Dissolve** — select this to use a gradual transition where a clip dissolves in or out.
   - **Push** — select this to use a sliding transition where the clip pushes in or out.
   - **Distort** — select this to use a transition where a clip is warped in or out.

   b. Use the **Mode** section to configure the **Dissolve**, **Push**, and **Distort** transition mode:

   Dissolve

   - **Fade** — select this transition to fade in to, or out from, the clip.
   - **Over Black** — select this transition to fade in or out from black.
   - **Additive** — select this transition to gradually add light to the clip when transitioning in or out.
   - **Saturate** — select this transition to saturate the clip when transitioning in or out.
   - **Desaturate** — select this to transition to desaturate the clip when transitioning in or out.
   - **Invert** — select this transition to invert the clip when transitioning in or out.

   Push

   - **Right To Left** — select this transition to push from right to left.
   - **Left To Right** — select this transition to push from left to right.
   - **Top To Bottom** — select this transition to push from top to bottom.
   - **Bottom To Top** — select this transition to push from bottom to top.
   - **Bottom Right** — select this transition to push to the bottom right.
   - **Top Right** — select this transition to push to the top right.
   - **Bottom Left** — select this transition to push to the bottom left.
   - **Top Left** — select this transition to push to the top left.

   Distort

   - **Diverge** — select this transition to use multiple splits in the image in the clip.
   - **Pixelate** — select this transition to pixelate the clip.
   - **Sine Wave** — select this transition to apply a sine wave pattern to the clip.
   - **Shrink** — select this transition to expand the clip from a shrunken image.
   - **Shrink Diff** — select this transition to expand the clip from a shrunken image.
   - **Spiral** — select this transition to spin the clip.
   - **Duration** — use this box to enter or select the duration of the transition in number of frames.

- **Reverse** — check this box to reverse the selected transition.

c. In the **Options** tab, select the **Cue video clips directly to framebuffer** check box to cue clips to air immediately when dropped on a server channel from the Clip Browser or Sequencer.

3. Use the playback controls to playout the clip:

- **Eject** — click this button to remove a loaded clip from the server channel.
- **Back** — click this button to return to the beginning of the clip.
- **Pause** — click this button to pause the clip.
- **Play** — click this button to play out the clip.
- **Forward** — click this button to reach the end of the clip.
- **Loop** — click this button to continuously play the clip. When this button is green, the loop function is turned on. Clicking it again will turn off the loop function.
- **Scrub Bar** — click and hold on the marker to drag it forward or backward along the time bar to move the clip position to a particular location.

4. Right-click inside the Server Channel and:

- select **Adjust Clip Volume** to open the **Adjust Clip Volume** dialog box and adjust the clip volume, if necessary.
- select **Edit Clip** to open the **Edit Clip** dialog box and edit a clip, if necessary.

For More Information on…

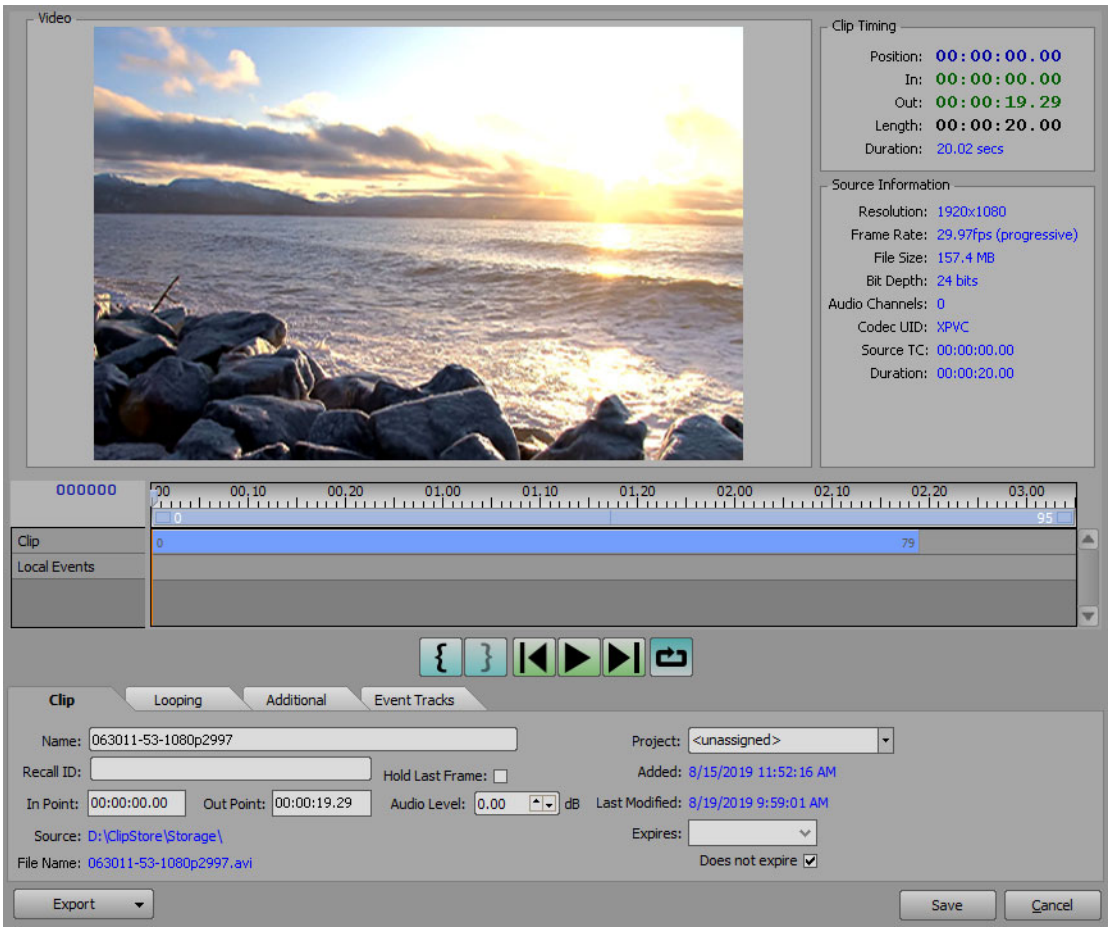
- loading a clip on a server channel, refer to "**Loading a Clip in the Server Channels**" on page 4–5.
- editing a clip, refer to "**Edit Clip/Add Sub Clip**" on page 4–11.

Edit Clip/Add Sub Clip

Use the Edit Clip and Add Sub Clip dialog boxes to configure metadata for a clip. The Add Sub Clip dialog box has the same interface as the Edit Clip dialog box but is used to create a trimmed clip from an existing clip. A video can have multiple sub-clips defined within it, each with distinctive in/out points. Loading a sub-clip for playout is identical to loading a normal clip.

- The **Edit Clip** dialog box can be accessed by right-clicking in the Clip Browser window and Server Channels window.
- The **Add Sub Clip** dialog box can only be accessed by right-clicking in the Clip Browser window.

Edit Clip/Add Sub Clip Interface



Video

This section displays the clip that has been selected for editing or creating a sub clip. The clip is rendered over a checkerboard pattern so that the alpha channel is visible unless the clip is full frame.

The following actions and commands can be performed:

- Use the timeline marker to select a specific frame in the timeline.
- The video can be scrubbed using the timeline bar; or using common NLE shortcuts like H,J,K to play/rewind at different speeds.
- During scrubbing, audio can be heard by configuring an Audio Monitor device in the Hardware Setup.

- Right-click inside the **Clip**, **Local Events**, or **Event Track** timeline to access the shortcut menu.

✶ Event Track timelines are available if global event tracks have been configured in the Clip Store Manager and added as a processor in the INcoder. They will appear in the timeline as named in the Clip Store Manager. They can be assigned as local events by selecting **Preset Event Track** > **Copy Events to Local Event Track** from the shortcut menu.

  › **Looping** > **Set Loop Start** — select this option to select the current position of the timeline marker as the start of the video loop.

  › **Looping** > **Set Loop End** — select this option to select the current position of the timeline marker as the end of the video loop.

  › **Looping** > **Reset Loop** — select this to clear the loop settings.

  › **Clear In Point** — select this clear a configured start time for the clip.

  › **Clear Out Point** — select this clear a configured end time for the clip.

  › **Clear In and Out Points** — select this clear the configured start and end times for the clip.

  › **Update Clip Thumbnail** — select this option to update the thumbnail for the clip to reflect any edits or to use a specific frame as the thumbnail in the Clip Browser.

  › **Add Event** > **Rosstalk Event** — select this option to directly add a RossTalk event onto the clip timeline.

  › **Add Event** > **Scene Director Trigger** — select this option to directly add a Scene Director trigger event onto the clip timeline.

  › **Rename Event** — select this option to rename a selected RossTalk or Scene Director trigger event on the clip timeline.

  › **Delete Event** — select this option to delete a selected RossTalk or Scene Director trigger event on the clip timeline.

Set In Point — click this button to set the start time of the clip where the timeline marker has been positioned. Keyboard shortcut 'I' can be used to mark an in point.

Set Out Point — click this button to set the end time of the clip where the timeline marker has been positioned. Keyboard shortcut 'O' can be used to mark an out point.

Move current position to in point — click this button to return to the in point of the clip.

Start play back — click this button to play back the clip.

Move current position to end point — click this button to reach the end of the clip.

Loop — click this button to loop the playback of the clip. Click it a second time to turn off looped playback.

For More Information on...

- using global event tracks, refer to the ***XPression Clips Workflow User Guide***.
- setting up an audio monitor device, refer to "**Configure Video Preview and Audio Monitor**" on page 3–89.
- updating the thumbnail in the Clip Browser, refer to "**Updating the Thumbnail in the Clip Browser**" on page 4–15.
- looping, refer to "**Looping Tab**" on page 4–13.

Clip Timing (read-only)

Position — indicates the position of the timeline marker in the timeline for the clip.

In — displays the in point for the clip.

Out — displays the displays the out point for the clip.

Length — displays the total duration of the clip in frames.

Duration — displays the time length of the clip.

Source Information (read-only)

Resolution — displays the video format of the source clip.

Frame Rate — displays the frame rate of the source clip.

File Size — displays the file size of the source clip.

Bit Depth — displays the quality of the signal quantization of the source clip.

Audio Channels — displays the amount of embedded audio channels used in the source clip.

Codec UID — displays the type of encoding used for the source clip.

Source TC — displays the timecode of the source clip.

Duration — displays the total duration in frames of the source clip.

Clip Tab

Name — use this box to enter or edit a name for the clip.

Recall ID — use this box to enter an ID number for the clip when it is recalled.

Hold Last Frame — select this check box to hold the last frame of the clip when playout ends. Do not select this check box if taking the clip offline automatically using an out transition.

In Point — use this box to enter a starting point for the clip.

Out Point — use this box to enter an ending point for the clip.

Audio Level — use this box to enter or select a volume level for the clip in decibels. Changing the audio level in the Edit Clip dialog box will not affect live clips on a Server Channel. However, it will apply to the audio monitor if an audio monitor is configured in the Hardware Setup.

Source (read-only) — lists the location where the clip is stored.

File Name (read-only) — lists the name and file extension of the clip.

Project — use this list to select a project for the clip.

Added (read-only) — lists the date the clip was added to the clip store.

Last Modified (read-only) — lists the date the clip was last edited.

Expires — use the calendar to select an expiry date for the clip, if necessary.

Does not expire — select this check box to use no expiry date for the clip.

Looping Tab

Enable Looping — select this check box to enable looping for the clip.

Multi-Point — if looping has been enabled, select this check box to enable the multi-point loop settings.

Multi-Point Loop Settings

Use the multi-point loops to create free running 4-point and 3-point loops:

- 4-point loops use a frame in point, a loop section of start and end frames, and a frame out point.
- 3-point loops use a loop section of start and end frames with either a frame in point the same as the loop start frame or a frame out point the same as the loop end frame.

Loop Start — use this box to enter a starting frame for the loop within the clip time.

Loop End — use this box to enter an end frame for the loop within the clip time.

Loop Count — use this box to enter or select an amount of playbacks the clip will loop before stopping. Use 0 for infinite looping.

— click this button to set the start time or end time of the loop at the position of the timeline marker.

— click this button to skip to the start of the loop.

— click this button to skip to the end of the loop.

For More Information on...

- creating a 4-point loop, refer to "**Creating a 4-Point Loop**" on page 4–17.
- creating a 3-point loop, refer to "**Creating a 3-Point Loop**" on page 4–19.

Additional

Original File Name (read-only) — displays the original name of the file as uploaded.

Premultiplied / Shaped — select this check box to multiply/shape the fill signal color information by the luminance information in the key signal.

Event Tracks

Event tracks are configured in the Clip Store Manager, added as processors in the INcoder, and then available to use when editing clips from the Clip Browser. The Event Tracks tab provides a list of available global event tracks.

Assigned Event Tracks — lists the event tracks assigned to the clip.

Available Event Tracks — lists the available event tracks that can be assigned to the clip.

Add Track — select an available event track and click this button to assign it to the clip.

Remove Track — select an assigned event track and click this button to remove it from the clip.

For More Information on...

- using global event tracks, refer to the ***XPression Clips Workflow User Guide***.

Other

Export — use this list to select one of the following options for exporting a clip:

- **To Video** — open the **Export to Video** dialog box to save the clip as an AVI or MOV video file.
- **Still to Disk** — open a save dialog to save a still as a Targa (.TGA), Targa (RLE Compressed) (.TGA), Portable Network Graphic (.PNG), or JPEG (.JPG) format image file.
- **Still to Clipstore** — open the **Send to Clip Store** dialog box to send a still to the Clip Store database to be used within the Clips workflow.
- **Interlaced Settings** > **Frame Based** — select this to capture the image file without deinterlacing. This setting only works best for scenes with minimal motion.
- **Interlaced Settings** > **Field (line doubled)** — select this to capture the image file with each line doubled. For example, it will replace field two with a duplicate of field one.
- **Interlaced Settings** > **Field (line interpolated)** — select this to capture the image file by interpolating between odd lines to form even lines.

Save — click this button to save the edited clip or sub clip.

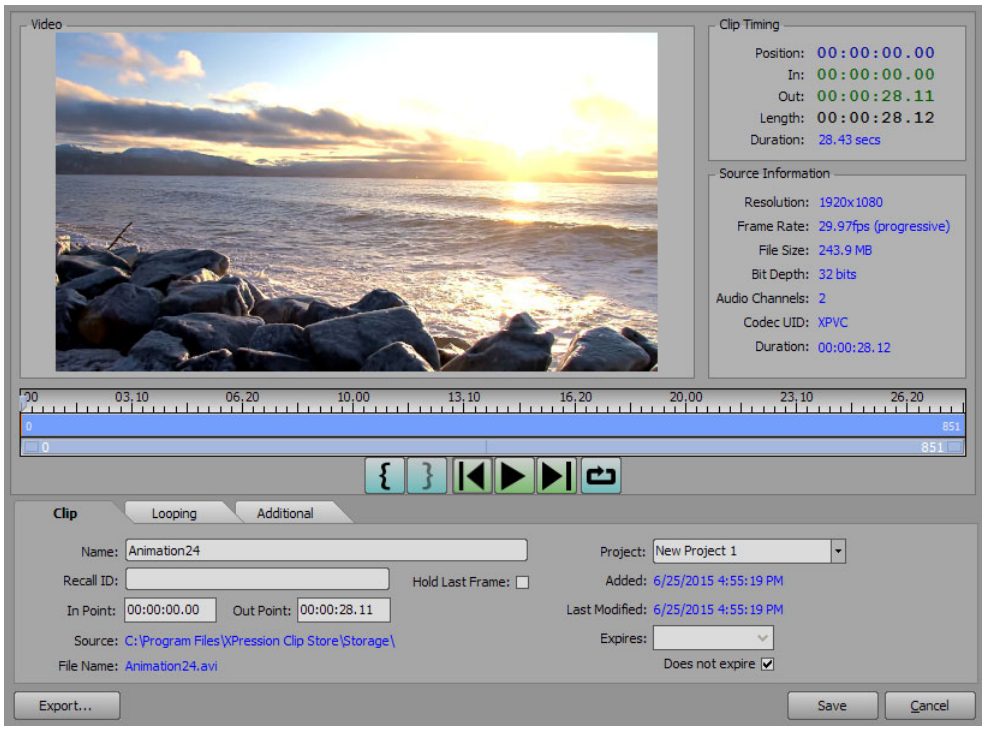
Cancel — click this button to exit the dialog box without saving any changes.

Updating the Thumbnail in the Clip Browser

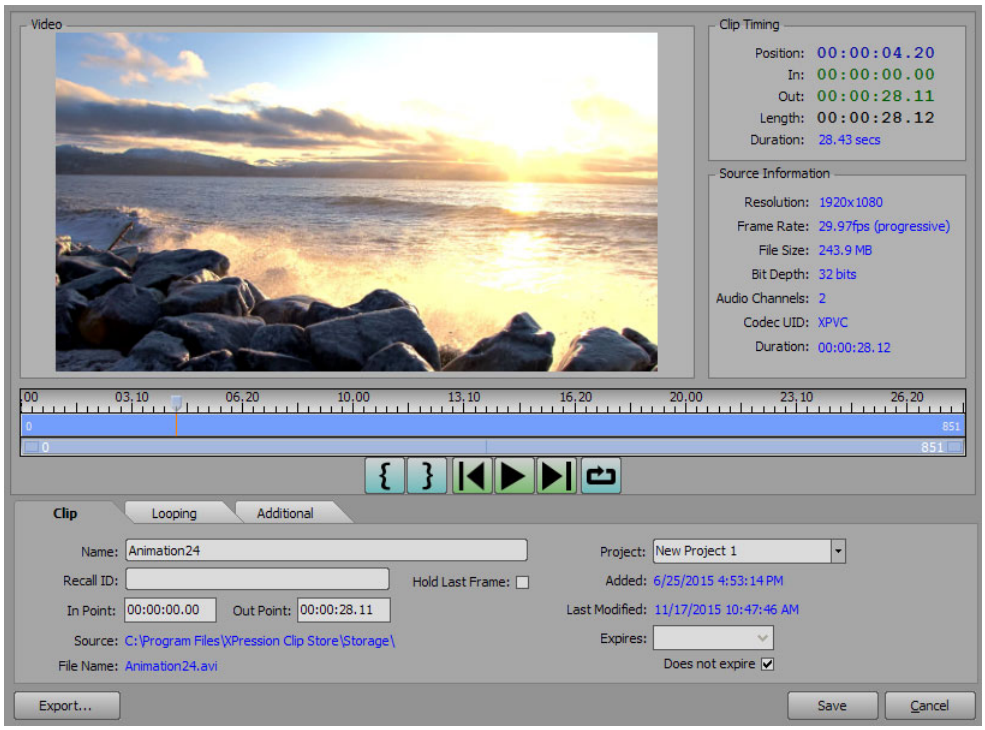
Update the thumbnail in the Clip Browser to provide a more representative or preferred image to illustrate the content of the clip.

1. In the **Clip Browser**, right-click on a clip and select **Edit Clip** or **Add Sub Clip**.

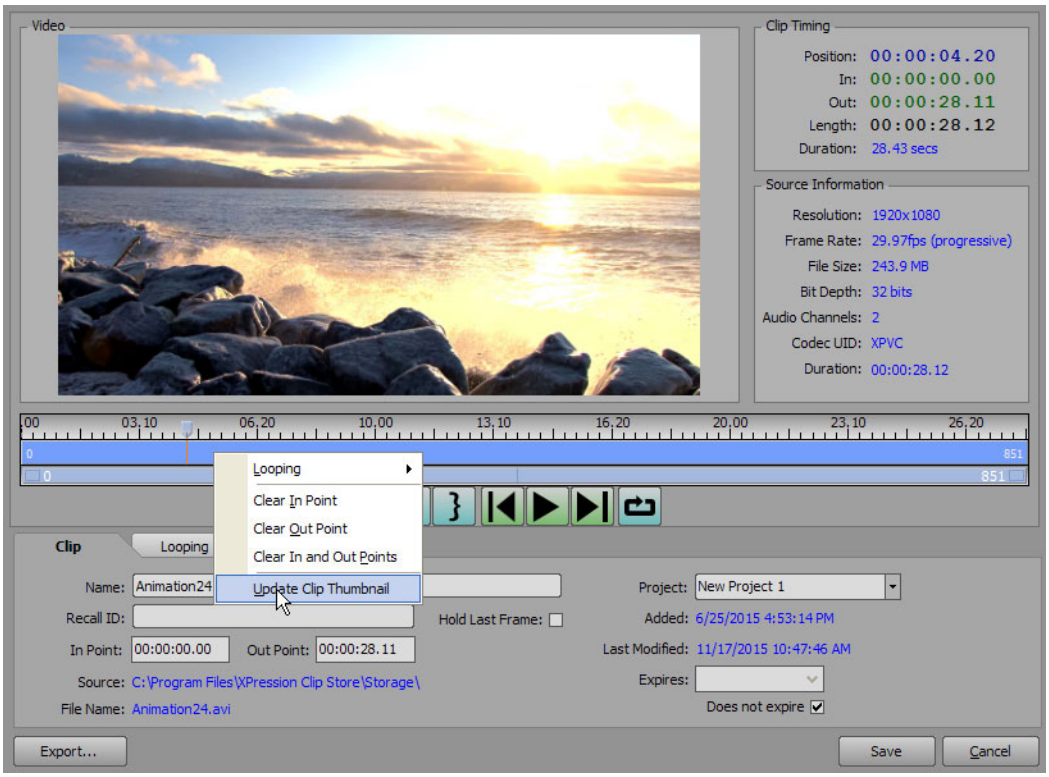
   The **Edit Clip** / **Add Sub Clip** dialog box opens.



2. In the **Edit Clip** or **Add Sub Clip** dialog box, move the timeline marker to a desired frame in the timeline.

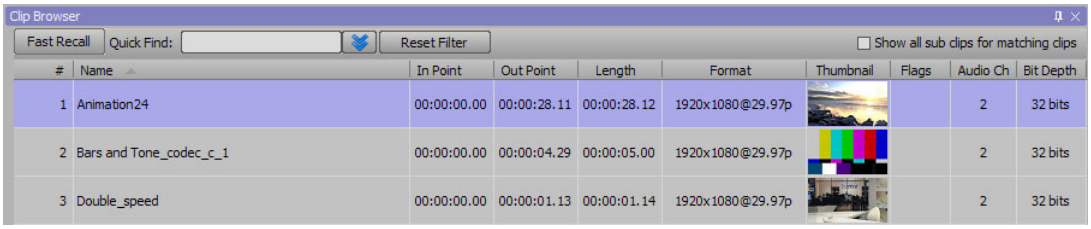


3. Right-click inside the timeline and select **Update Clip Thumbnail** from the shortcut menu.



4. Click **Save**.

   The thumbnail for the clip is updated in the Clip Browser.

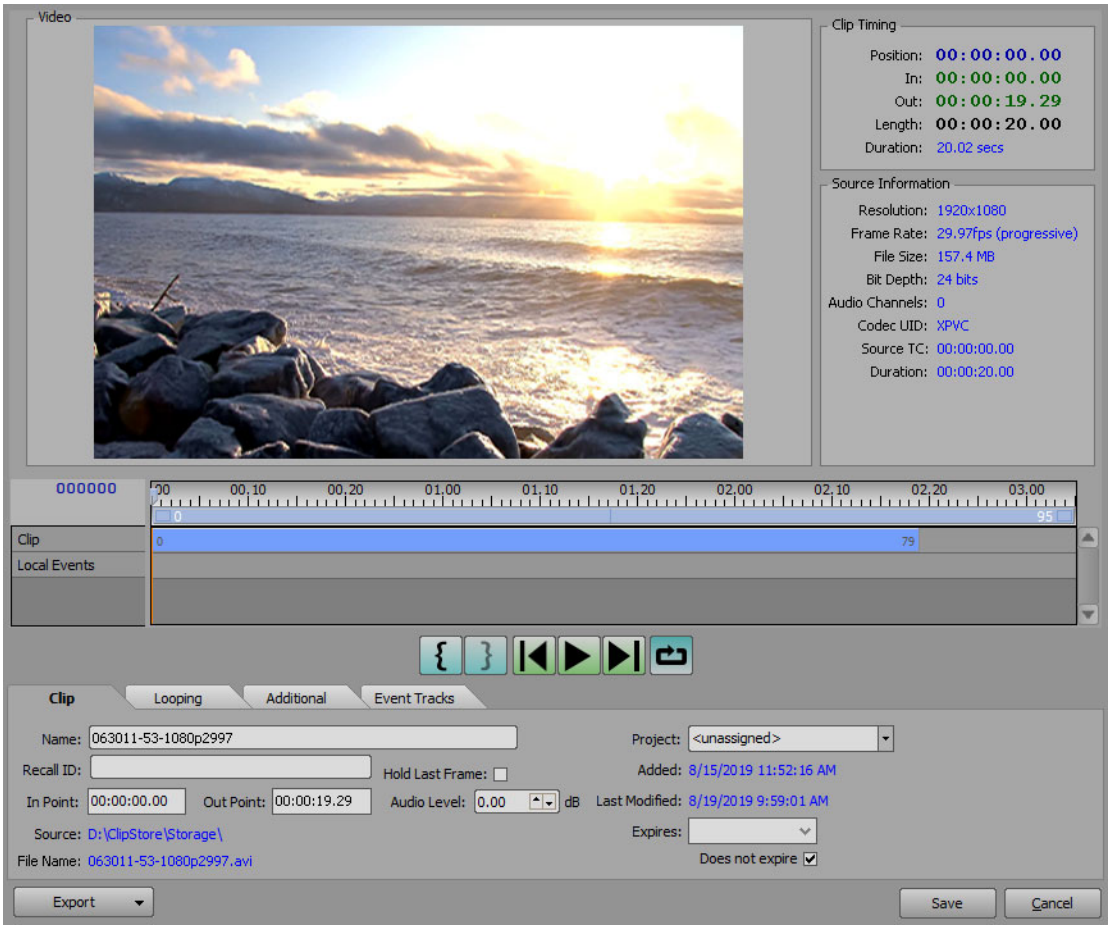


Creating a 4-Point Loop

4-point loops use a frame in point, a loop section of start and end frames, and a frame out point.

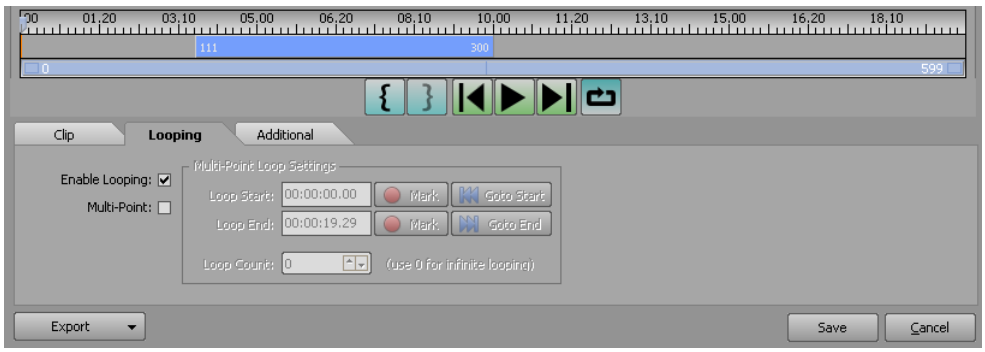
1. In the **Edit Clip** / **Add Sub Clip** dialog box, click the **Clip** tab.

   The **Clip** tab opens.



2. In the **In Point** box, enter a frame in point.
3. In the **Out Point** box, enter a frame out point.
4. Click the **Looping** tab.

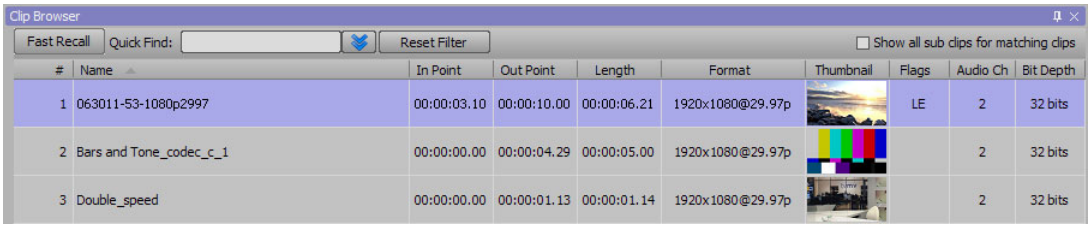
   The **Looping** tab opens.



5. In the **Looping** tab, select the **Enable Looping** check box.
6. Select the **Multi-Point** check box.

7. In the **Multi-Point Loop Settings** section:
   a. Use the **Loop Start** box to enter a frame start for the loop.
   b. Use the **Loop End** box to enter a frame stop for the loop.
   c. Use the **Loop Count** to enter or select a number of times to playout the loop.
8. Click **Save**.

   The edited clip is updated in the **Clip Browser**.

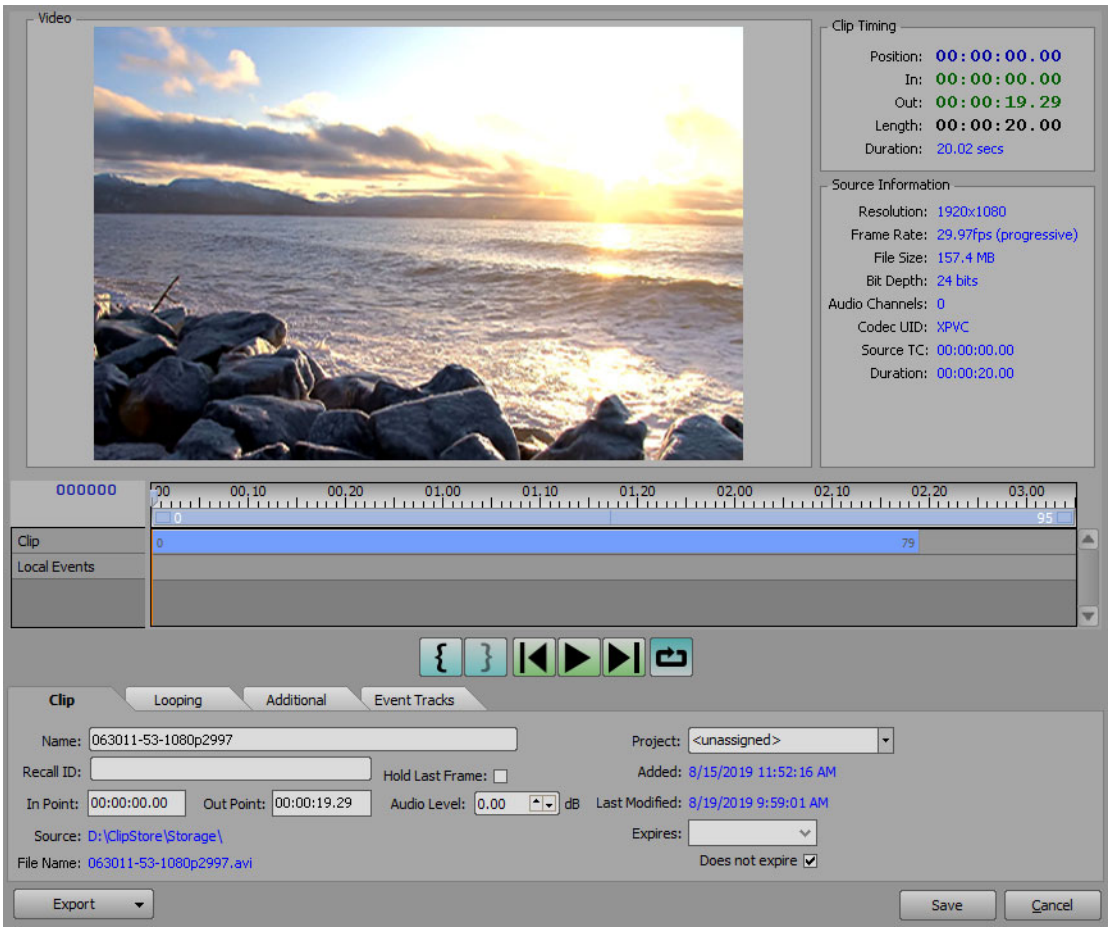


Creating a 3-Point Loop

3-point loops use a loop section of start and end frames with either a frame in point the same as the loop start frame or a frame out point the same as the loop end frame.

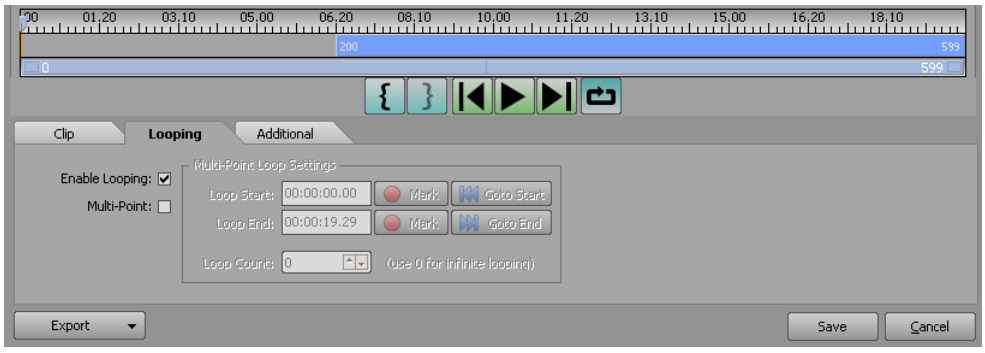
1. In the **Edit Clip** / **Add Sub Clip** dialog box, click the **Clip** tab.

   The **Clip** tab opens.



2. In the **Clip** tab, enter a frame in point in the **In Point** box or enter a frame out point in the **Out Point** box.
3. Click the **Looping** tab.

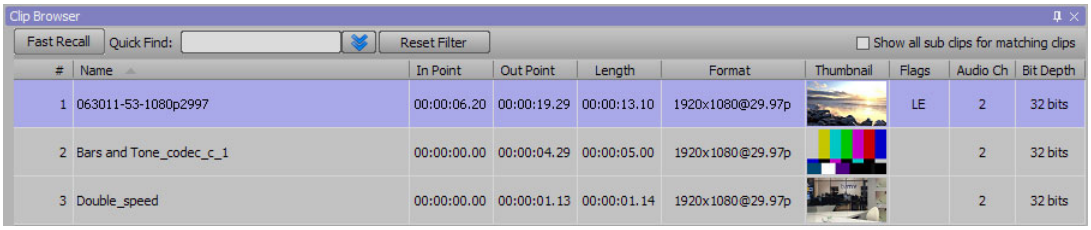
   The **Looping** tab opens.



4. In the **Looping** tab, select the **Enable Looping** check box.
5. Select the **Multi-Point** check box.

6. In the **Multi-Point Loop Settings** section:
   a. Use the **Loop Start** box to enter a frame start for the loop.
   b. Use the **Loop End** box to enter a frame stop for the loop.
   c. Use the **Loop Count** to enter or select a number of times to playout the loop. Use 0 for infinite looping.
7. Click **Save**.

   The edited clip is updated in the **Clip Browser**.



Sequences

XPression uses the Sequencer to playout the scenes in a project.

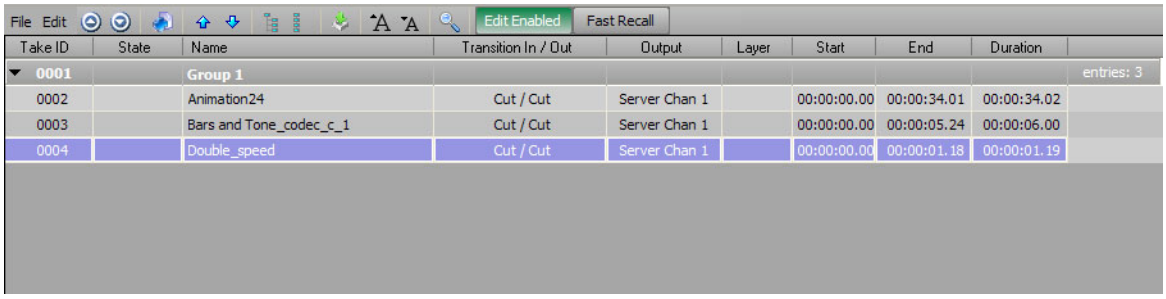
The following topics are discussed in this section:

- Create a Sequence
- Control Sequence Playout
- Playout a Sequence in Manual Mode
- Playout a Sequence in Automatic Mode
- Playout a Take Item or Take Item Group Using Timecode
- Render Take Items to Video

Create a Sequence

1. Load clips into the **Clip Browser** from which to build a sequence.
2. In the **Clip Browser**, click and drag the clips to playout into the **Sequencer**.

   Each clip added to the Sequencer list is given a Take ID and becomes a take item.



3. To reorder take items in the Sequencer list, click and drag a take item to a new position in the list.

   Toolbar tools, shortcut menu commands, and keyboard shortcuts can also be used to reorder take items.
4. Organize take items by adding a take item group to the Sequencer list. A group can be configured to automatically playout the take items contained in the group.

   ### Steps

   a. Click the **Create a New Group** button in the toolbar.

      A take item group is added to the Sequencer.

   b. Click in the **Name** column for the group to enter a new name for the group.

   c. Click and drag take items from the Sequencer list into the new group.
5. Highlight take items by adding color to the Sequencer list.

   ### Steps

   a. Select one or more take items and/or take item groups to highlight with a colored background.

   b. Right-click and select **Color**.

      The **Color** menu opens.

   c. Select a highlight color from the **Color** menu.

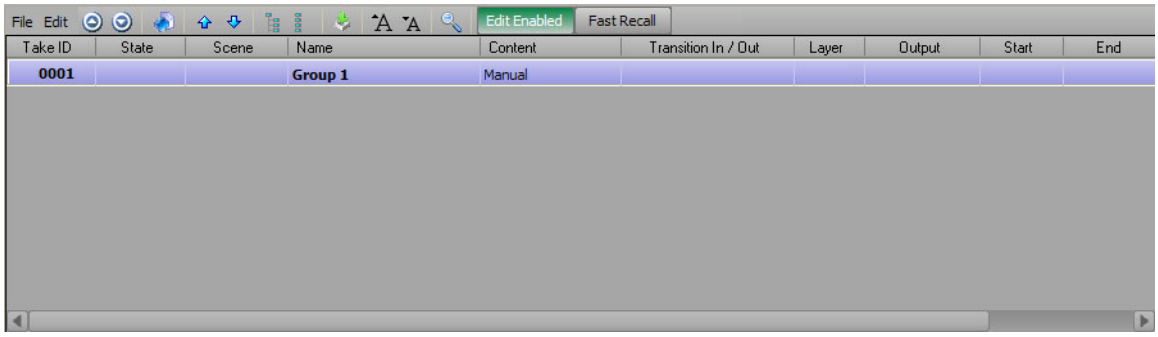
      The background of the selected take items in the Sequencer list is shaded with the selected color. Coloring the background of a take item group also colors each take item in the group.
6. Adjust the font size of the take items by clicking the **Increase the size of the sequencer font** button to make the font size larger or the **Decrease the size of the sequencer font** button to make the font size smaller.

For More Information on...

- controlling sequence playout, refer to the procedure "**Control Sequence Playout**" on page 5–3.

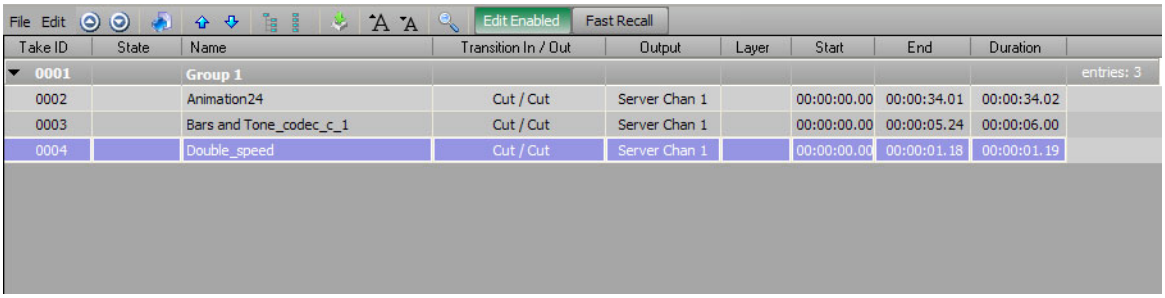
Control Sequence Playout

1. In the **Sequencer**, click the **Create a New Group** button in the toolbar to create a take item group to contain the take items to playout.

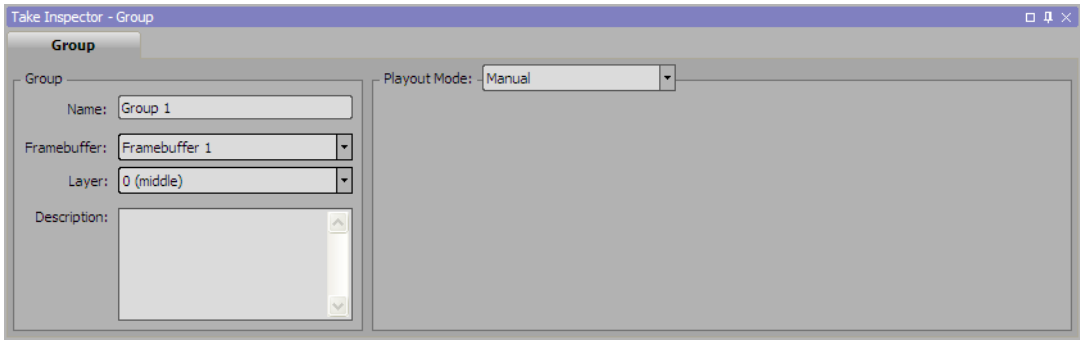


2. In the **Clip Browser**, click and drag the take items to playout into the new take item group in the **Sequencer**.

   The selected take items are added to the take item group as take items.



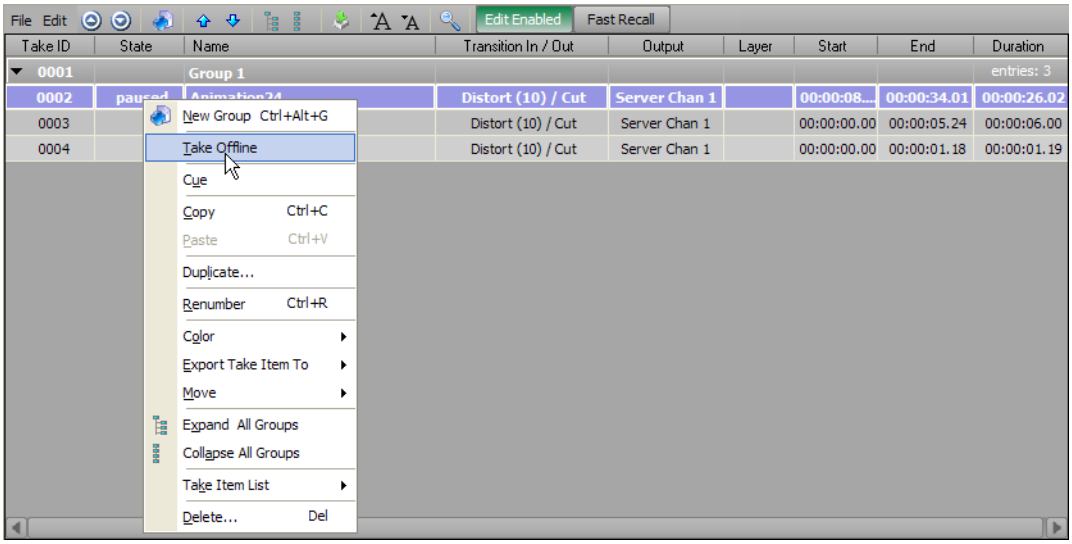
3. To reorder a take item in a take item group, click and drag a take item to a new position in the group.
4. Select the take item group that contains the take items to playout.
5. In the **Take Inspector - Group** window, select **Manual** from the **Playout Mode** list.



6. In the **Sequencer**, double-click a take item to playout the selected take item.

   The selected take item plays out through the default output, and the **State** changes to **online** for take items or **Active** for take item groups.

7. To stop playout of an online or Active take item, right-click the take item and select **Take Offline** from the shortcut menu.



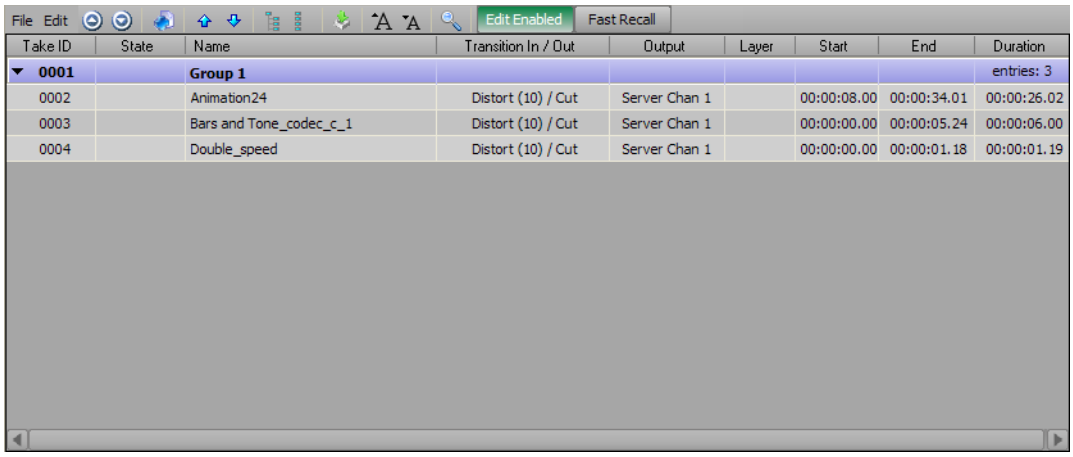
Keyboard Control

The keyboard number pad can also be used to control the playout of a sequence. The following keyboard shortcuts are available in the Sequencer:

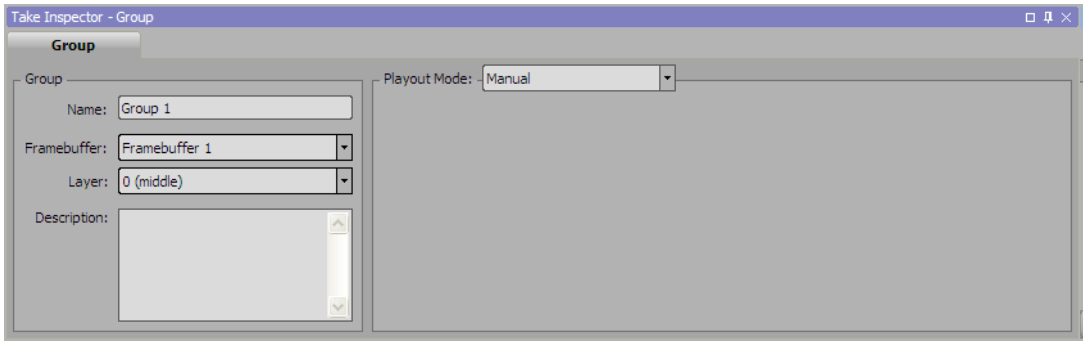
- **Cursor Up Arrow** — select the previous take item in the sequence.
- **Cursor Down Arrow** — select the next take item in the sequence.
- **Cursor Left Arrow** — collapse an expanded sequence group.
- **Cursor Right Arrow** — expand a collapsed sequence group.
- **Home** — select the first take item in the sequence.
- **End** — select the last take item in the sequence.
- **Ctrl-Cursor Up Arrow** — move the selected take item up one position in the sequence.
- **Ctrl-Cursor Down Arrow** — move the selected take item down one position in the sequence.
- **Delete** — remove the selected take item from the sequence.
- **Number Pad Enter** — playout the selected take item. This shortcut requires the **Fast Recall** button to be enabled.
- **Number Pad +** — playout the selected take item and select the next take item in the sequence.
- **Number Pad -** — take the current take item offline if it is online.
- **Number Pad .** — cue a selected take item prior to putting them online by pressing the decimal key on the number pad. Cueing them will pre-cache all video clips in the scene. Multiple items can be cued and brought to air simultaneously.
- **Number Pad *** — focus a take item. This shortcut requires the **Fast Recall** button to be enabled.

Playout a Sequence in Manual Mode

1. In the **Sequencer**, select the take item group that contains the take items to playout.



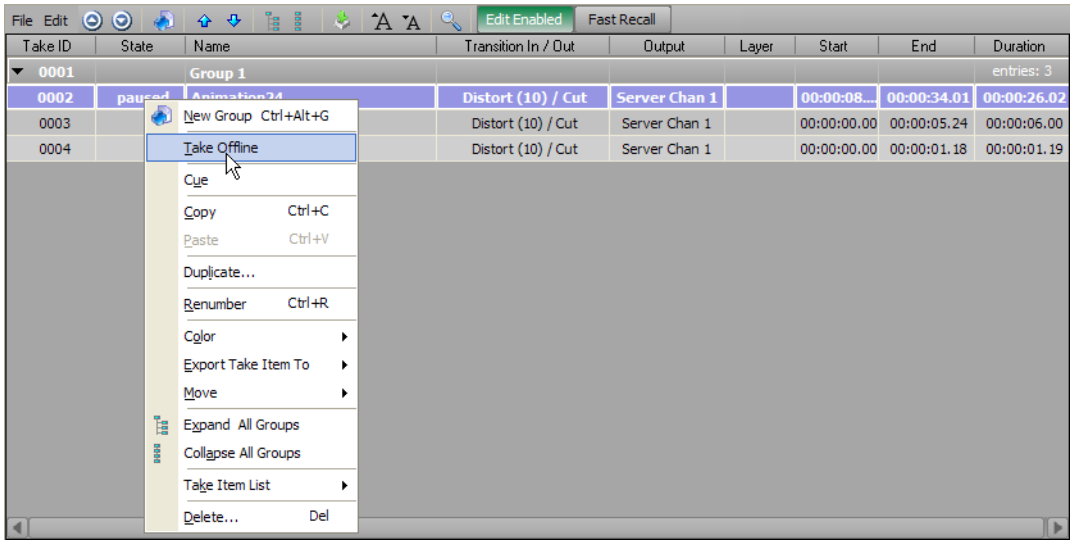
2. In the **Take Inspector - Group** window, select **Manual** from the **Playout Mode** list.



3. In the **Sequencer**, click the take item to playout.

   The selected take item plays out through the default output.

4. To stop playout of a take item, right-click the take item and select **Take Offline** from the shortcut menu.

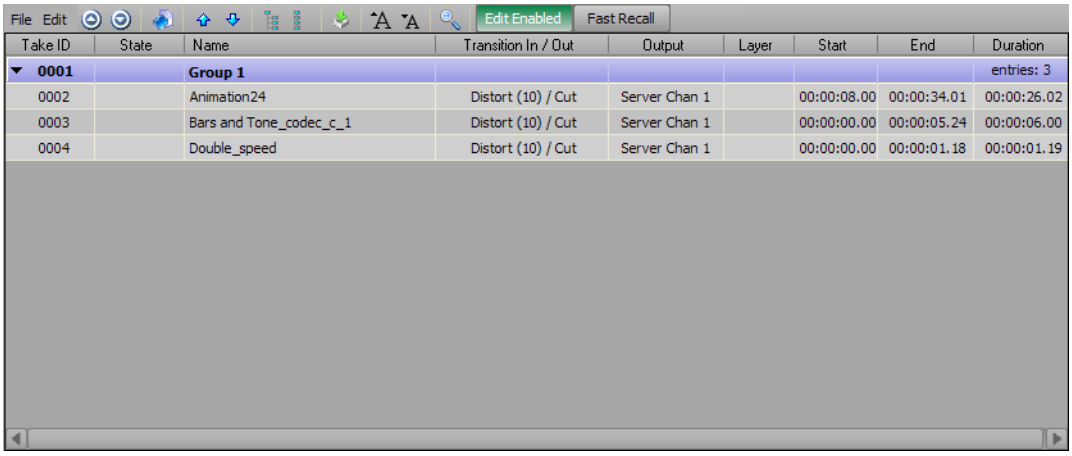


For More Information on...

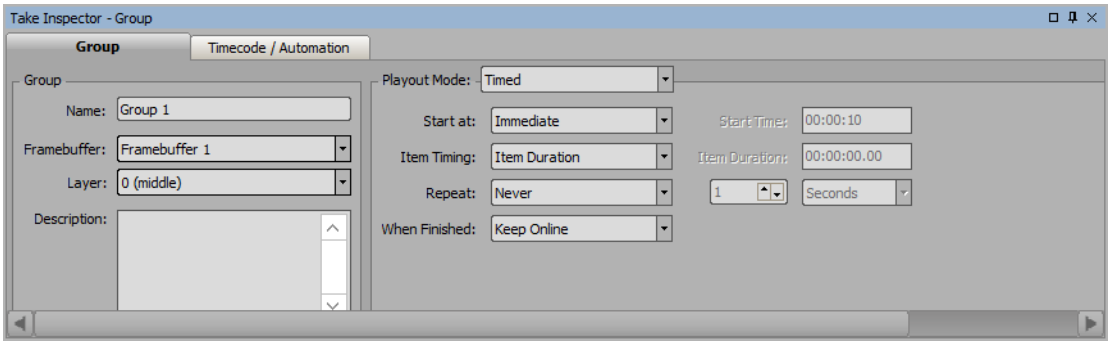
- creating sequences, refer to the procedure "**Create a Sequence**" on page 5–2.
- controlling sequence playout, refer to the procedure "**Control Sequence Playout**" on page 5–3.

Playout a Sequence in Automatic Mode

1. In the **Sequencer**, select the take item group that contains the take items to playout.



2. In the **Take Inspector - Group** window, select **Timed** from the **Playout Mode** list.



3. Use the **Start at** list to set the playout start time for the take item group. The available options are as follows:
   - **Immediate** — start playout immediately upon selecting a take item group for playout.
   - **Clock Time** — start playout at the time set in the **Start Time** box after selecting a take item group for playout.
4. Use the **Item Timing** list to select the item level on which to base playout duration. The available options are as follows:
   - **Item Duration** — use the playout durations set for the items in the item group. The playout duration for the item group equals the total of all the item durations.
   - **Group Duration** — set a playout duration for the entire item group. The duration is set in the **Group Duration** box.
   - **Fixed Item Duration** — use a fixed playout duration for each of the items in the item group regardless of the durations of the individual take items. The duration for each item is set in the **Item Duration** box.
   - **Scene Director** — use the default scene director of a scene to control when an item group should advance.
   - **Advance Manually** — double click the scene group or use a script to advance the item group manually.

5. Use the **Repeat** list to set the number of times to repeatedly playout the item group. The available options are as follows:
   - **Never** — do not repeat playout, only playout the item group once.
   - **When Done** — repeat the playout of an item group when the playout ends. With this option, playout continually repeats until it is manually stopped.
   - **After** — repeat the playout of an item group after the time set using the **Time Value** box and **Time Unit** list. With this option, playout continually repeats until it is manually stopped.
   - **Every** — repeat the playout of an item group at a time interval set using the **Time Value** box and **Time Unit** list.
6. Use the **When Finished** list to set the action to complete after finishing the playout of the take item group. The available options are as follows:
   - **Keep Online** — leave the take item group status as Active, making the group available for immediate playout.
   - **Take Offline** — change the take item group status to Offline.
7. In the **Sequencer**, double-click the take item group that contains the take items to playout.

   The selected take item group plays out through the default output, and the **State** changes to **Active**.

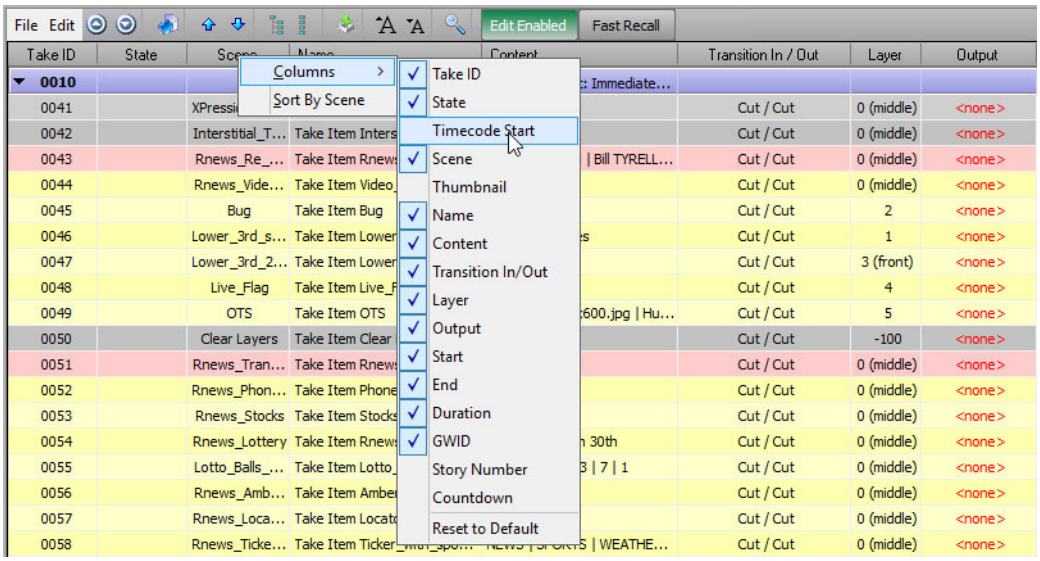
For More Information on…

- creating sequences, refer to the procedure "**Create a Sequence**" on page 5–2.
- controlling sequence playout, refer to the procedure "**Control Sequence Playout**" on page 5–3.

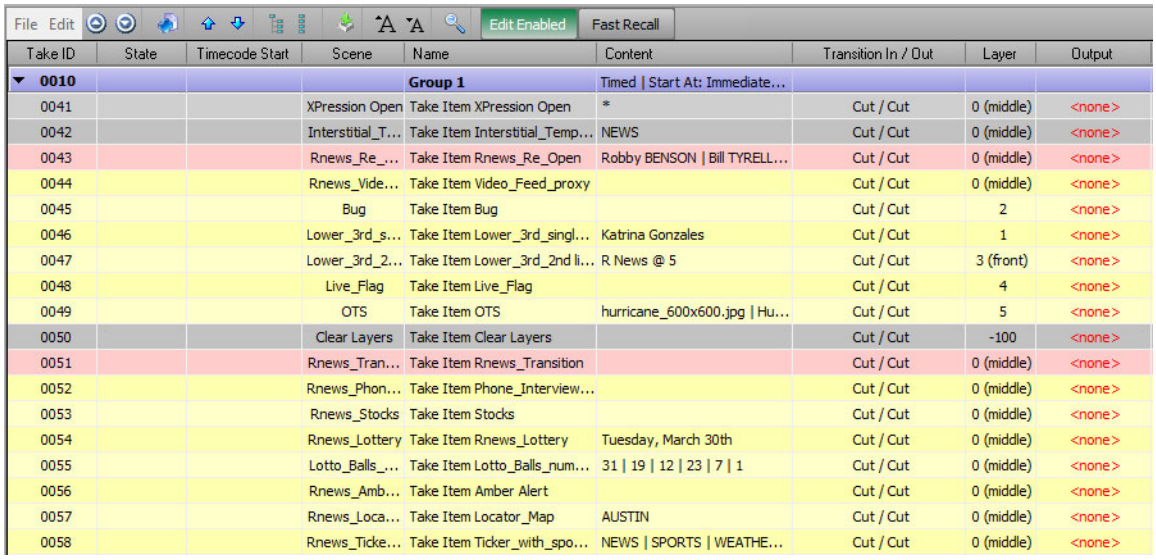
Playout a Take Item or Take Item Group Using Timecode

Play take items or take item groups in the Sequencer using a timecode source.

1. In the **Sequencer**, enable timecode by right-clicking inside the column headers of the sequence list and selecting **Columns** > **Timecode Start**.



The **Timecode Start** column is added to the displayed columns of the sequence list.



2. Select a take item or take item group in the sequence list.

Take Item

If a take item is selected, do the following:

a. In the **Take Inspector - Item** window, click the **Scene Control** tab.

   The **Scene Control** tab opens.

b. In the **Timecode / Automation** section, select the **Play at Timecode** box to enable a timecode start for the selected take item.

   Use the timecode box to enter or select a specific timecode start time for the selected take item.

Take Item Group

✶ A timecode source needs to be configured in the Hardware Setup before using timecode with Sequencer take item groups.

If a take item group is selected, do the following:

a. In the **Take Inspector - Group** window, click the **Timecode / Automation** tab.

   The **Timecode / Automation** tab opens.

b. In the **Timecode Settings** section, select the **Enabled** check box to enable a timecode source for the selected take item group.

c. Use the **Timecode Source** list to select an available timecode source.

   This menu is populated with the internal clock of the XPression system and the timecode sources that have been configured in the Timecode Sources tab of the Hardware Setup dialog box.

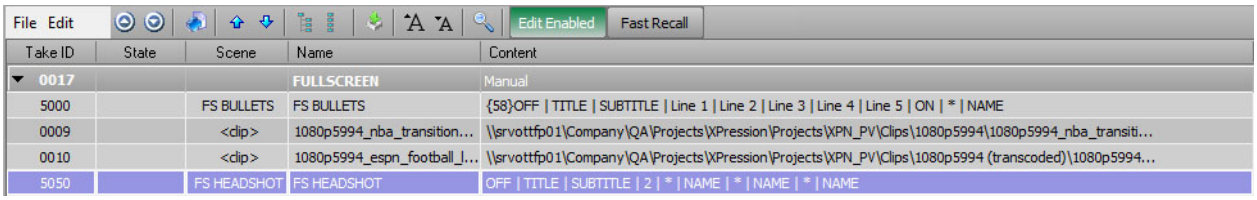
For More Information on...

- configuring a timecode source, refer to "**Add a Timecode Source**" on page 3–86.

Render Take Items to Video

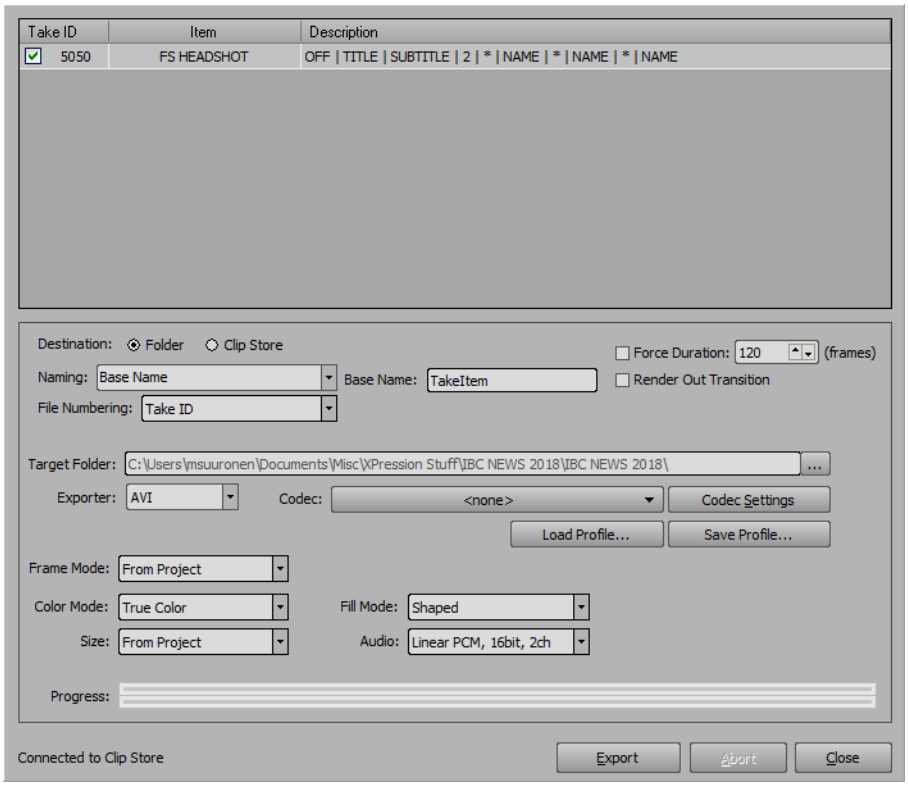
Export take items in the Sequencer to video to store in a folder or the Clip Store.

1. Select a take item or take items in the **Sequencer**.



2. Click **File** > **Export Take Item To** > **Video**.

   The **Export to Video** dialog box opens.



3. In the **Export to Video** dialog box, select the check box of the **Take ID** to export. Select the respective check boxes of Take IDs if exporting multiple videos.
4. Select a **Destination** for the video(s):
   - **Folder** — select this option to save the video(s) to a target folder.
   - **Clip Store** — select this option to save the video(s) to the Clip Store for use within a clips workflow.

   ### Folder

   a. Use the **Naming** list to select whether to use a fixed base name or the sequence item name for the video. The available options are:
      - **Base Name** — select this to use a fixed base name for the video.

        If selected, use the **Base Name** text box to enter a central name for the file or files to be exported. Unicode is supported for filenames.
      - **Use Item Name** — select this to use the sequence item name(s) for the file(s) to be exported.

b. Use the **File Numbering** list to select the numbering convention for the file or files to be exported. The available options are:

- **Take ID** — select this to save the file or files by Take ID number.
- **Incremental** — select this to save the file or files by incremental numbers.

c. Use the **Target Folder** box to enter a file path for the target folder where the take item is to be exported as a video, or click the **Browse** button to select a folder.

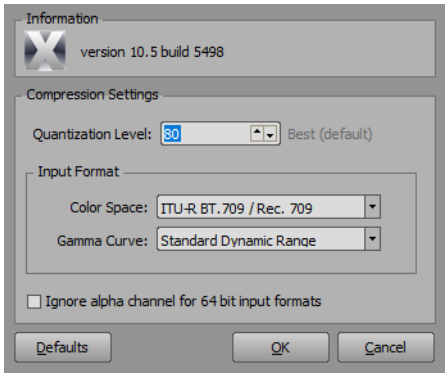
d. Use the **File Format** list to select the video format for the file or files. The available options are:

- **MOV** (QuickTime encoder required)
- **AVI**

e. Use the **Codec** list to select an encoder.

f. If **XPression Codec** is selected, click **Codec Settings**.

The **XPression Video Codec 2** dialog box opens.



g. In the **Compression Settings** section, use the **Quantization Level** box to enter or select the percentage of the color sampling. The higher the percentage, the better the color sampling quality. The default of 80 is recommended.

h. In the **Input Format** section, use the **Color Space** list to select the specific organization of colors for the compression. The options are:

- **Standard RGB (sRGB)**
- **ITU-R-BT.601 / Rec. 601**
- **ITU-R BT.709 / Rec. 709**
- **ITU-R BT.2020 / Rec. 2020**

i. Use the **Gamma Curve** list to select the method for optimizing the usage of bits for encoding the video. The options are:

- **Standard Dynamic Range**
- **Hybrid Log Gamma (HLG)**
- **Perceptual Quantization (PQ)**

j. Select the **Ignore alpha channel for 64 bit input formats** check box to ignore the alpha channel in the encoding when using 64-bit input formats.

k. Click **OK**.

The **XPression Video Codec 2** dialog box closes.

✶ The video settings can be saved to a file by clicking the **Save Profile** button. Click **Load Profile** to open a file browser to locate and select previously saved video settings.

Clip Store

a. Use the **Naming** list to select whether to use a fixed base name or the sequence item name for the video. The available options are:

- **Base Name** — select this to use a fixed base name for the video.

  If selected, use the **Base Name** text box to enter a central name for the file or files to be exported. Unicode is supported for filenames.
- **Use Item Name** — select this to use the sequence item name(s) for the file(s) to be exported.

b. Use the **File Numbering** list to select the numbering convention for the file or files to be exported. The available options are:

- **Take ID** — select this to save the file or files by Take ID number.
- **Incremental** — select this to save the file or files by incremental numbers.

c. Use the **Project** list to select a project in the Clip Store in which to save the video, or enter a new project name to add to the Clip Store.

   Select the **Looping** check box to save the video with looping enabled by default.

   Select the **Hold Last Frame** check box to hold the last frame of the saved the video by default.

5. Use the **Frame Mode** list to select the frame mode for the video(s). The available options are:

- **From Project** — select this to use the project frame mode.
- **Upper Field First** — select this to override the project frame mode and render in upper field first video.
- **Lower Field First** — select this to override the project frame mode and render in lower field first video.
- **Frame Based** — select this to render the video(s) as frame based.

6. Use the **Color Mode** list to select a color mode for the video file. The available options are:

- **True Color** — select this to use 24-bit color.
- **True Color + Alpha** — select this to use 24-bit color with alpha.

7. Use the **Fill Mode** list to select the method used to process fill before output. The available processing methods are as follows:

- **Shaped** — shape the fill signal color information by the luminance information in the key signal.
- **Unshaped** — output the fill and key signals "as is".

8. Use the **Size** list to select a frame size for the video(s). The available options are:

- **From Project** — select this to use the project dimensions.
- **From Project (virtual)** — select this to use the viewport resolution. This is only applicable to video formats with non-square pixels.
- **From Scene** — select this to use the scene dimensions.

9. Use the **Audio** list to select an audio setting for the video(s). The available options are:

- **None**— select this to use no audio for the video(s).
- **Linear PCM, 16bit, 2ch** — select this to export with two channel audio.

10. Click **Export**.

    The take item is exported to video. The **Progress** bar displays the progress of the video(s) being saved.

Record Client

Use the Record Client dialog box to record an input as a video file or as a still image.

The following topics are discussed in this section:

- Recording a Video from an Input
- Capturing a Still Image from an Input
- Using Multiple Records Clients
- Using Fill/Key Simultaneously
- Send a Video or Image to Clip Store

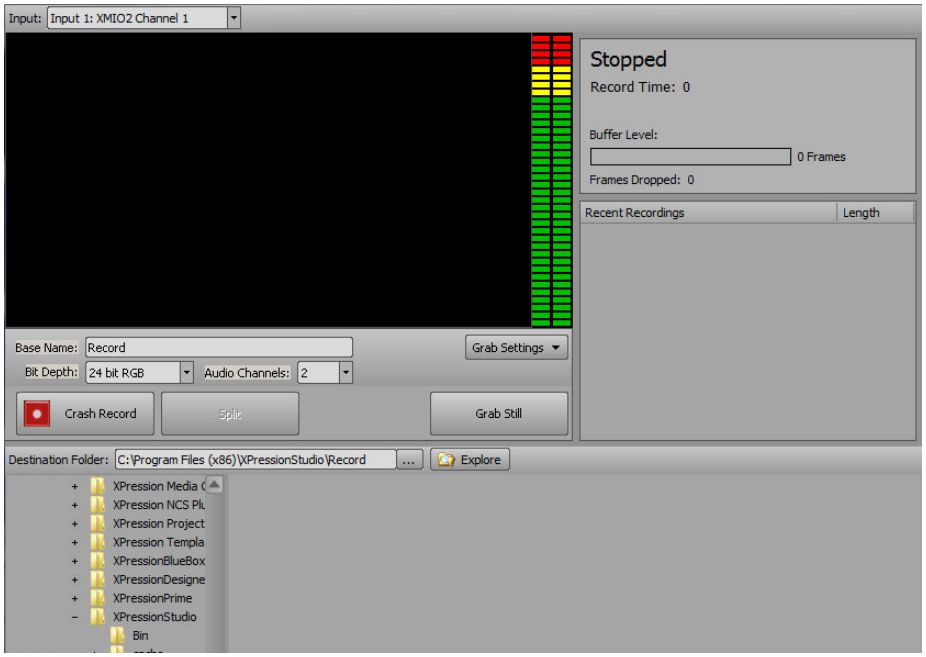
Recording a Video from an Input

Use the Record Client to record and save input video as a video file. The recordings will be made into the XPression Video Codec AVI format.

✶ When using a NewTek™ Network Device Interface (NDI™), XPression video recordings are in the format and video mode of the input NDI source, not the project mode.

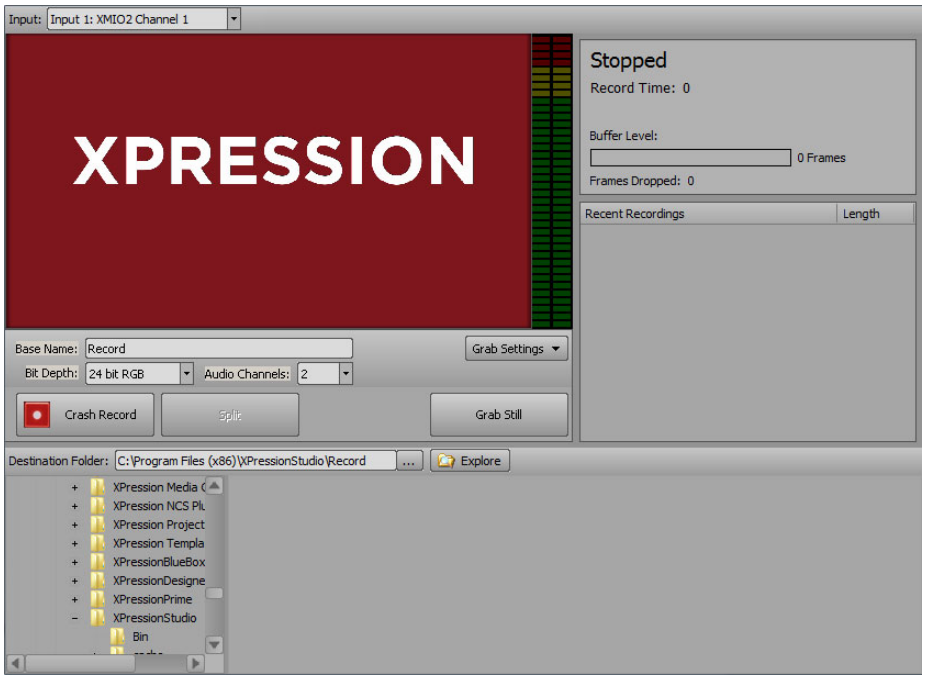
1. In XPression, click the **Record Client** ( ) toolbar icon.

   The **Record Client** dialog box opens.



2. Use the **Input** list to select the input that contains the source video for the file to be recorded.

   The video loads in the preview window.



3. In the **Base Name** box, enter a name for the video file to be recorded.

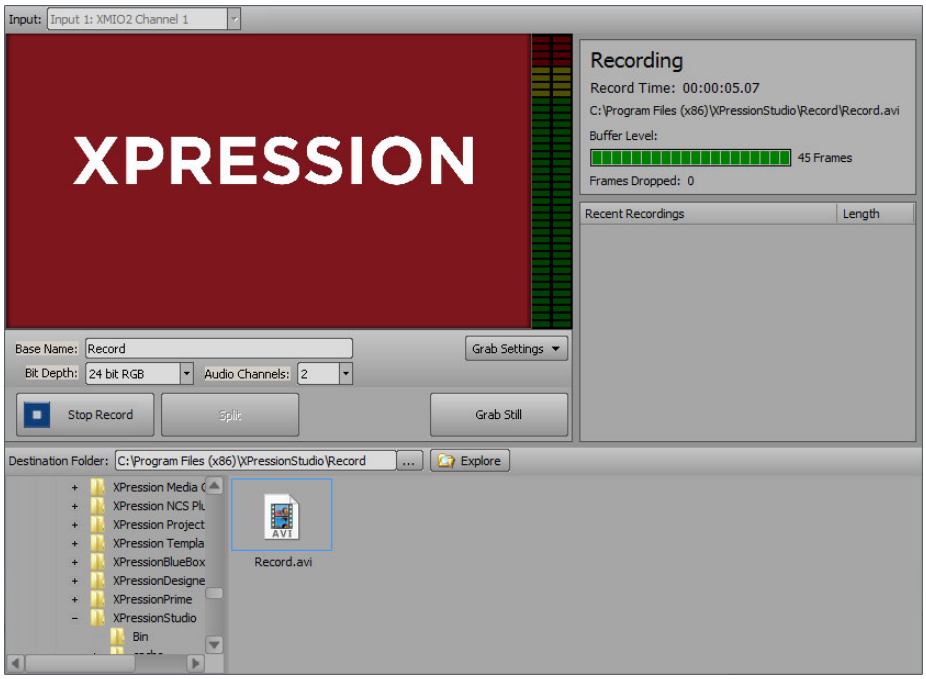
4. Use the **Bit Depth** list to select the quality of the signal quantization for the clip:
   - **24 bit RGB** or;
   - **32 bit RGBA** to include the alpha.
5. Use the **Audio Channels** list to select the number of active audio channels to use with the recording.
6. Use the **Destination Folder** box to enter a file path for the destination folder where the video will be stored or click **Browse** (**...**) to open a file browser and select a file path.

   Any videos or images that have been previously stored in the selected destination folder will appear as AVI and TGA thumbnails next to the folder tree.

✶ A default record folder can be configured in the **Folders** section of the **Preferences** dialog box.

7. Click **Crash Record** to start recording the video.

   The video begins recording and a .avi video file thumbnail is displayed.



An indicator appears at the top of XPression that lists the active recording.

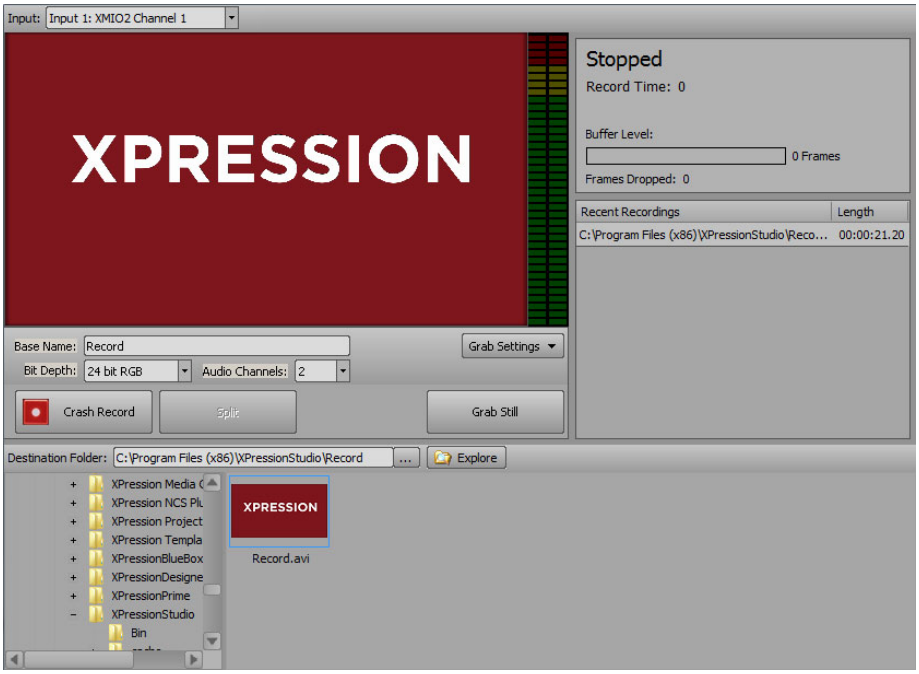
If the Record Client dialog box has been closed or minimized, click the **Active Recording** indicator to open the Record Client dialog box.

If using the XPression Clip Server option, multiple Record Clients can be active and the Active Recording indicator will display multiple active recordings. In this case, clicking the Active Recording indicator will open the **Record Monitor** window where the multiple recordings can be tracked and managed.

✶ Click the **Split** button to stop the recording and begin recording a new video from the input. This is helpful when recording a lengthy video feed, such as a live feed. The filename for the new recording increments automatically.

8. Click **Stop Record** to stop recording the video.

   The .avi video thumbnail is completed and the video is added to the **Recent Recordings** list.



✶ Click **Explore** to locate and open the video file for viewing in a media player.

For More Information on…

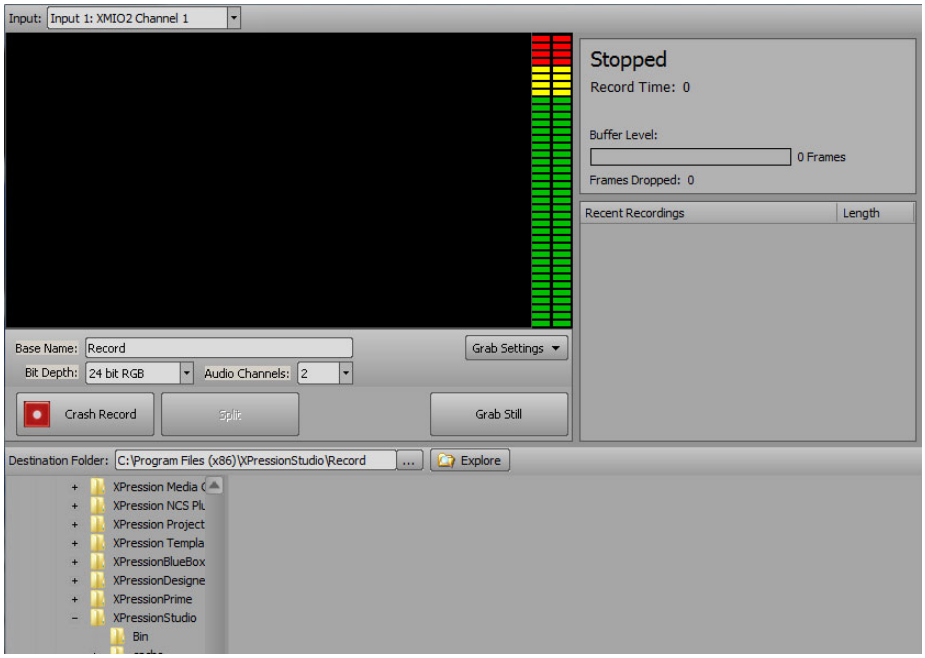
- using multiple Record Clients, refer to "**Using Multiple Records Clients**" on page 6–8.
- configuring a default record folder, refer to "**Set Preferences**" on page 3–3.

Capturing a Still Image from an Input

Use the Record Client to capture and save input video as a still image.

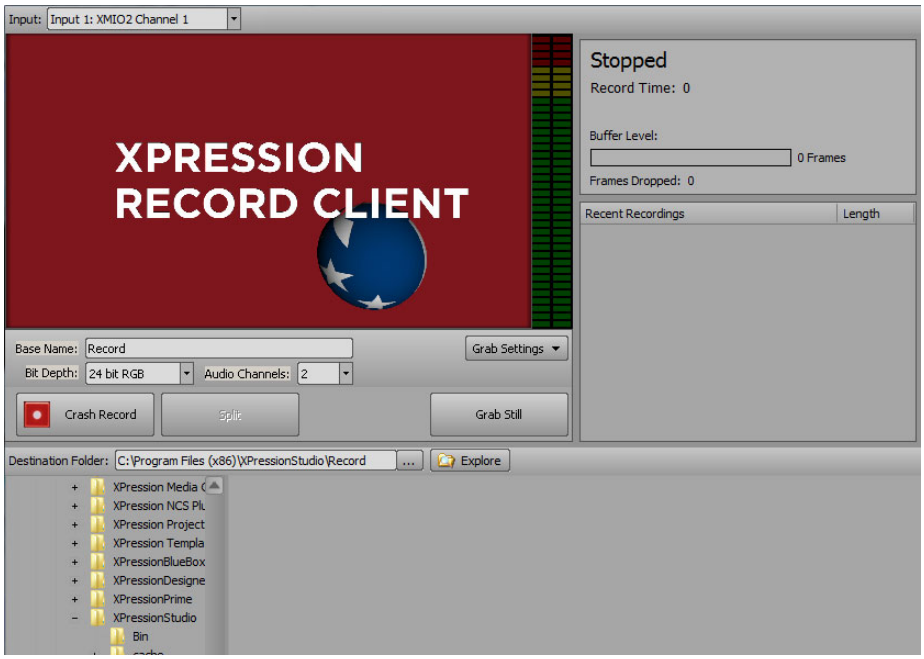
1. In XPression, click the **Record Client** ( ) toolbar icon.

   The **Record Client** dialog box opens.



2. Use the **Input** list to select the input that contains the video to be captured as a still image file.

   The video loads in the preview window.



3. In the **Base Name** box, enter a name for the image file to be captured.
4. Use the **Bit Depth** list to select the quality of the signal quantization for the image:
   - **24 bit RGB** or;
   - **32 bit RGBA** to include the alpha.

5. Use the **Grab Settings** menu to select one of the following interlace options for the image file:
   - **Interlaced Settings** > **Frame Based** — select this to capture the image file without deinterlacing. This setting only works best for scenes with minimal motion.
   - **Interlaced Settings** > **Field (line doubled)** — select this to capture the image file with each line doubled. For example, it will replace field two with a duplicate of field one.
   - **Interlaced Settings** > **Field (line interpolated)** — select this to capture the image file by interpolating between odd lines to form even lines.
6. Use the **Grab Settings** menu to select one of the following image file formats for the image:
   - **TGA** (Targa)
   - **PNG** (Portable Network Graphic)
   - **JPG**
7. Use the **Destination Folder** box to enter a file path for the destination folder where the image will be stored or click **Browse** (**...**) to open a file browser and select a file path.

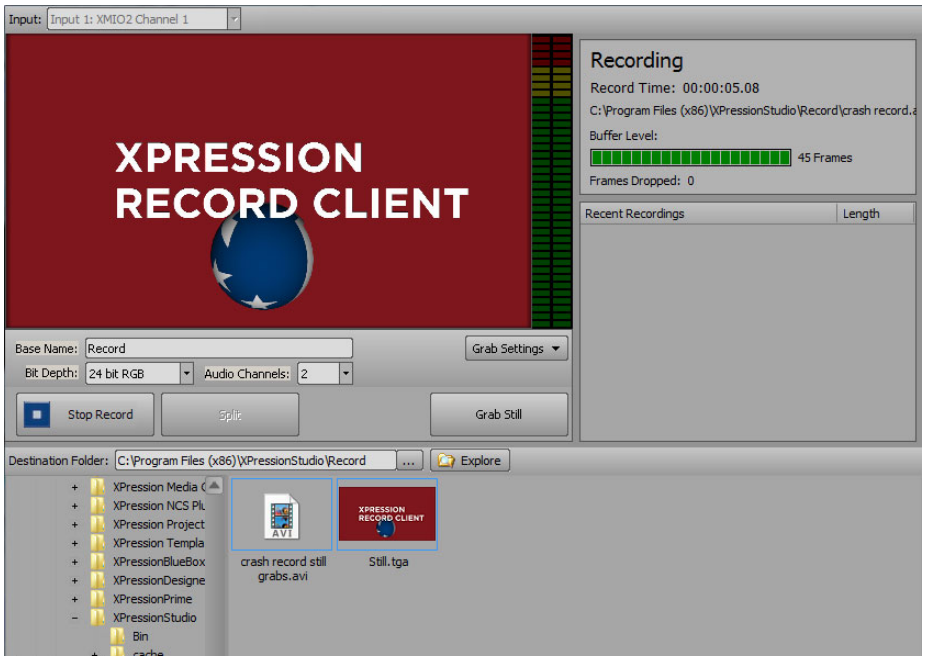
   Any videos or images that have been previously stored in the selected destination folder will appear as AVI and TGA, PNG, or JPG thumbnails next to the folder tree.

✶ A default record folder can be configured in the **Folders** section of the **Preferences** dialog box.

8. Click **Grab Still** to capture a frame from the input video as a still image. Still images can be captured without recording the video or while the video is being recorded. Field-based still images can also be captured.

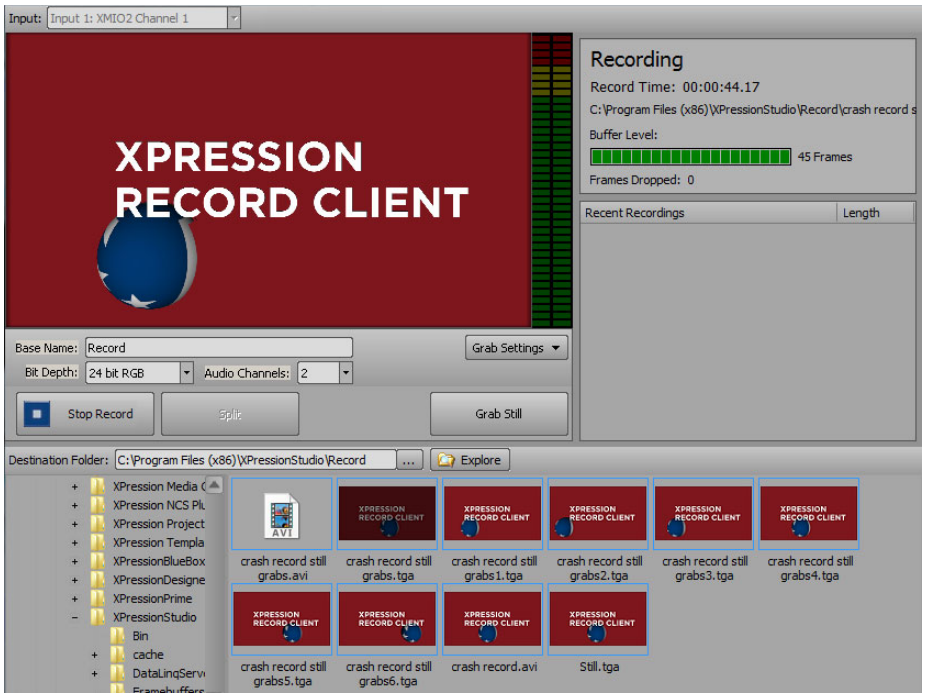
   A .tga, .png, or .jpg image thumbnail is displayed.

   In this procedure, the **Base Name** for the recording and still images has been changed to "crash record still grabs" for demonstrative purposes.



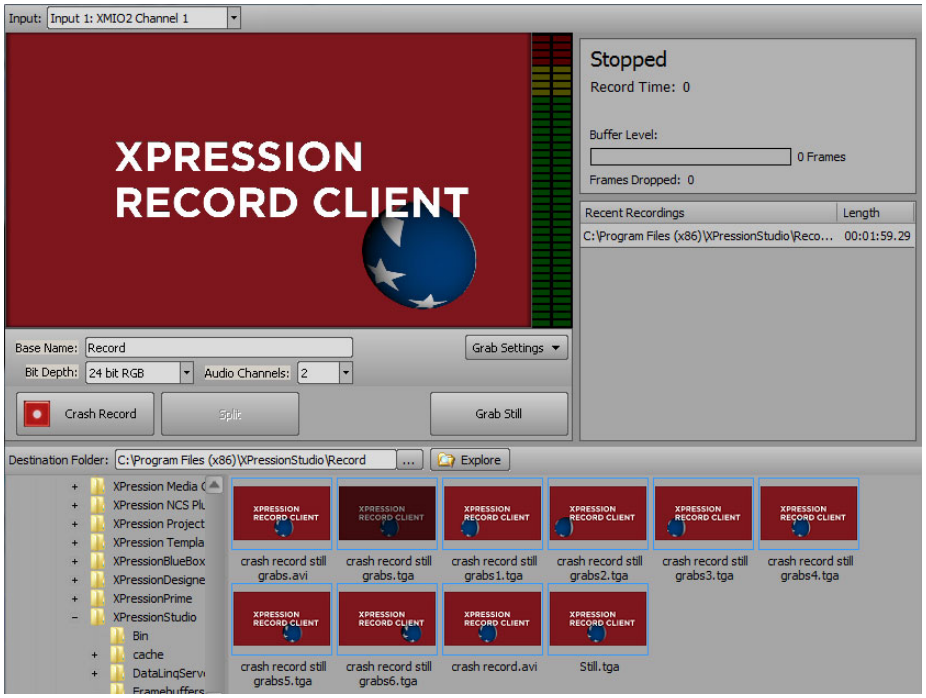
9. If recording the input video while creating still images, click **Grab Still** as many times as necessary for any other desired still images.

   Multiple .tga, .png, or .jpg image thumbnails are displayed.



10. If recording the input video while creating still images, click **Stop Record** to stop recording the video once finished grabbing still images.

    The .avi video thumbnail is completed and the video is added to the **Recent Recordings** list.



✶ Click **Explore** to locate and open an image file or video file for viewing.

For More Information on...

- configuring a default record folder, refer to "**Set Preferences**" on page 3–3.

Using Multiple Records Clients

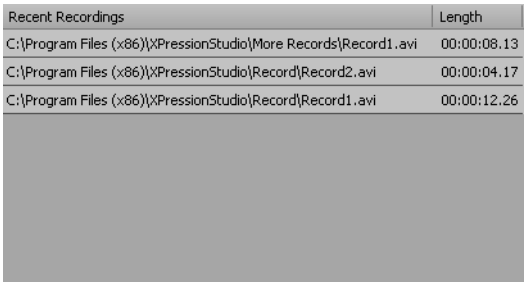
If using XPression Clips, multiple Record Clients can be opened and used simultaneously to record videos and capture still images.

- There is no limit to how many Records Clients can be open, but it is highly recommended that no more than four recordings occur at a time providing there is nothing being sent to output during recording. Otherwise, performance issues could occur. Recording to network locations (NAS/SAN) may or may not be possible depending on the bandwidth available.

To open multiple Record Clients, click the **Record Client** ( ) toolbar icon in **XPression** to open the **Record Client** dialog box. Click the **Record Client** ( ) toolbar icon again to open a second **Record Client** dialog box, click it a third time to open a third, etc.

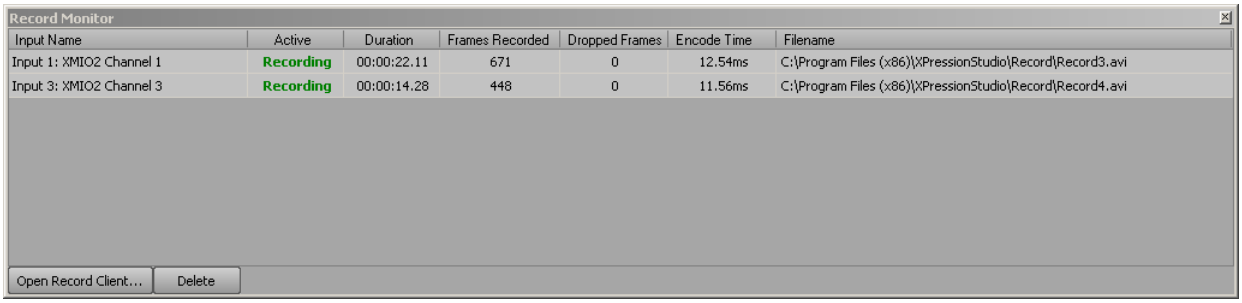
When selecting a **Destination Folder** to store videos and images, if the selected folder already has stored videos or images, these previously created files will appear next to the folder tree as AVI and TGA thumbnails. If the same folder has been selected across multiple Record Clients, these files will appear in the area next to the folder tree in all the open Record Clients that are using that file path, as well as any currently recording video using that file path.

All recent recordings, regardless of the selected file path, will appear in each of the open Record Clients in the **Recent Recordings** list:



When recording a video using the Record Client, an indicator appears at the top of XPression that lists the number of active recordings.

Click the **Active Recordings** indicator to open the **Record Monitor** window to view all active recordings in all open Record Clients:



- Select an active recording and click **Open Record Client** to open the Record Client used for recording the selected recording.
- Select an active recording and click **Delete** to discard the selected recording.
- If a selected recording has been stopped in its respective Record Client, the **Active** status will be listed as **Stopped**.

For More Information on...

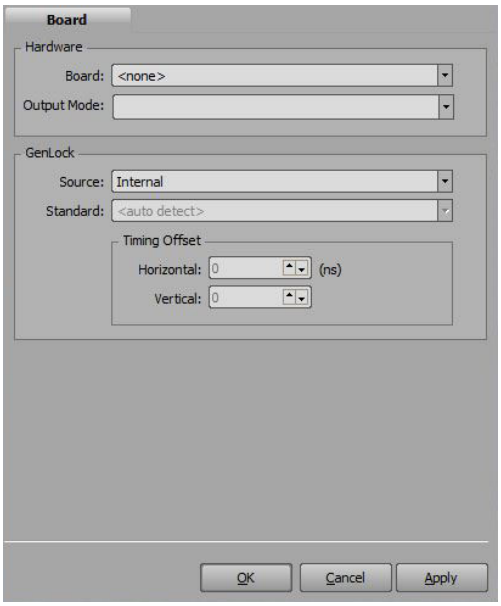
- recording an input video, refer to "**Recording a Video from an Input**" on page 6–2.
- capturing an input still image, refer to "**Capturing a Still Image from an Input**" on page 6–5.

Using Fill/Key Simultaneously

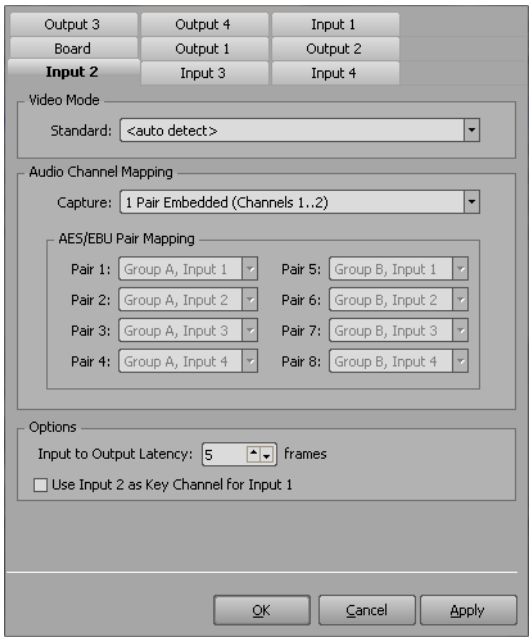
✶ This option is only available if using the Matrox XMIO board with XPression.

Using the Record Client, a video plus alpha can be recorded simultaneously by configuring the option in the **Input** tab in the **Matrox XMIO - Framebuffer Setup** dialog box.

1. In **XPression**, use the **Hardware Setup** to configure a Matrox XMIO board in the **Matrox XMIO - Framebuffer Setup** dialog box.



2. In the **Matrox XMIO - Framebuffer** dialog box, select the **Input 2** tab.



3. In the **Options** section, select the **Use Input 2 as Key Channel for Input 1** check box to use key/fill simultaneously.

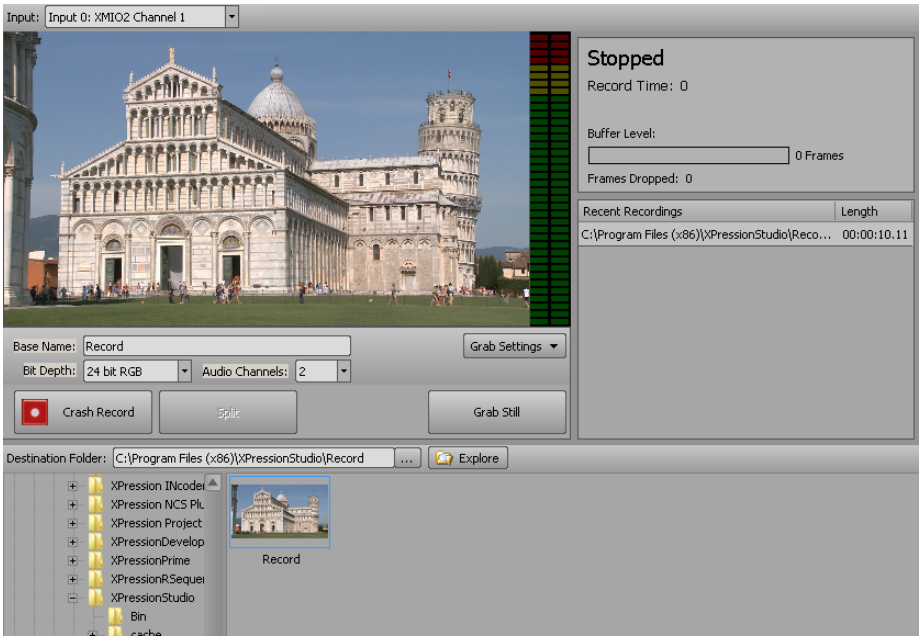
For More Information on...

- configuring the Matrox XMIO board, "**Configure a Matrox Video X.mio2 FrameBuffer**" on page 3–67.

Send a Video or Image to Clip Store

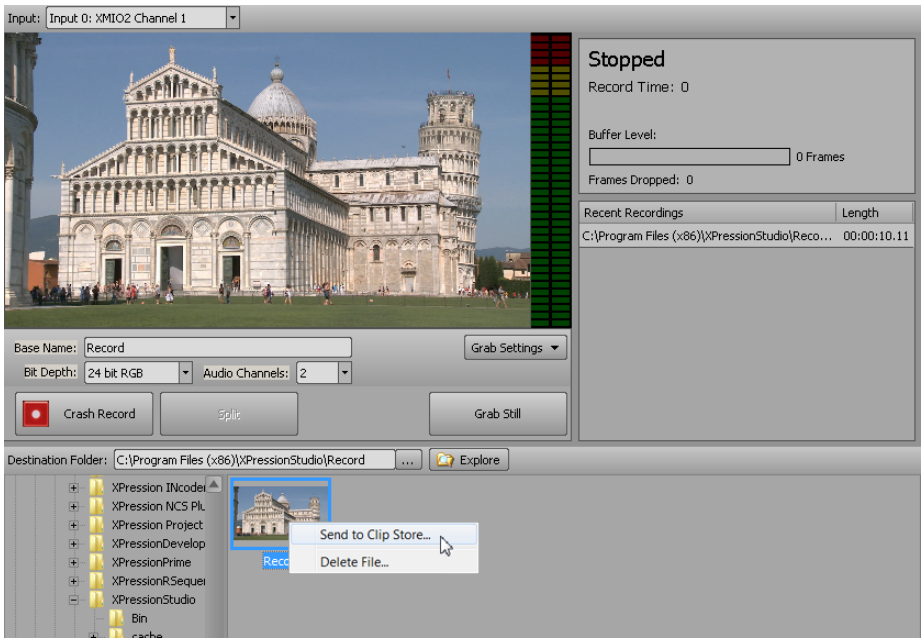
Once a recording has been completed it can be sent to the Clip Store database to be used within the Clip workflow.

1. Create a video or image in the **Record Client**.

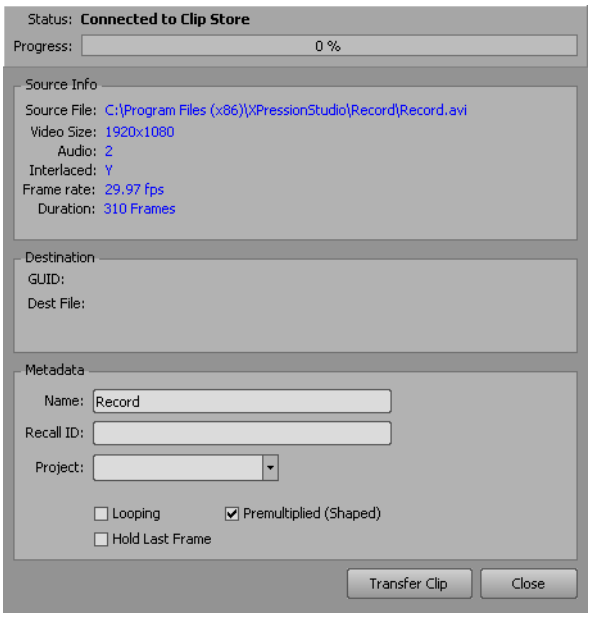


2. Right-click on a video or image thumbnail and select **Send to Clip Store** from the shortcut menu. Multiple videos and images can be selected by using **Shift** + **click** or holding **Ctrl** and clicking on individual videos and images.

✶ Only XPression codec clips should be sent to the Clip Store.

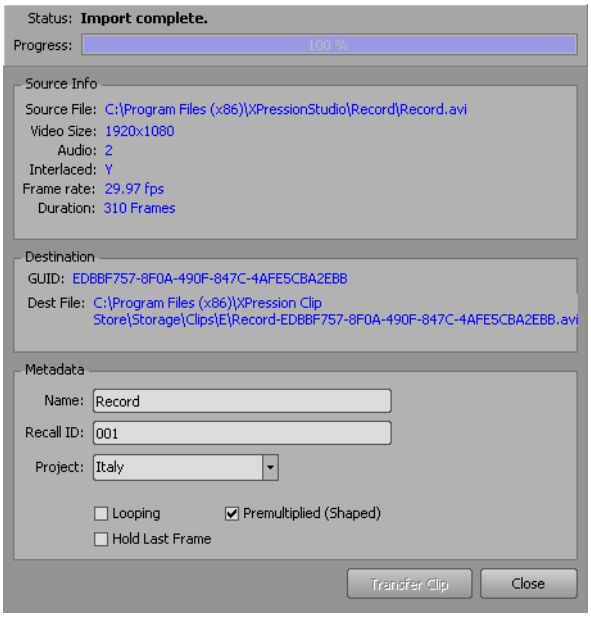


The **Send to Clip Store** dialog box opens.



3. In the **Metadata** section, configure the following items:
   - **Name** — enter a new name for the video or image in Clip Store, if necessary.
   - **Recall ID** — enter an identifier to recall the video or image from an external device.
   - **Project** — use this list to select any existing projects from Clip Store or enter a new project name for the video or image. New projects are automatically added to the Clip Store.
   - **Looping** — select this check box to infinitely replay the video each time it reaches the end.
   - **Hold Last Frame** — select this check box to freeze the video on the last frame after playing.
   - **Premultiplied (Shaped)** — select this check box to multiply/shape the fill signal color information by the luminance information in the key signal.
4. Click **Transfer Clip**.

   The video or image file is transferred to the Clip Store. Once the transfer has successfully completed, the **Status** is listed as **Import Complete**, the Progress bar is at **100%**, and **Destination** details are listed.



For More Information on...

- creating a video file in the Record Client, refer to "**Recording a Video from an Input**" on page 6–2.
- creating an image file in the Record Client, refer to "**Capturing a Still Image from an Input**" on page 6–5.

PBus Interface

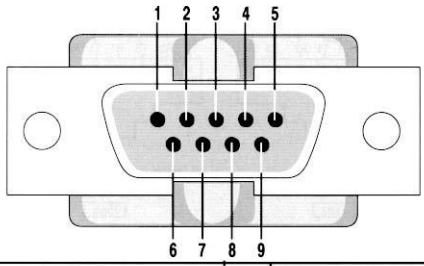
The following topics are discussed in this section:

- Overview
- PBus Triggers
- PBus LEARN Commands
- PBus Mapping
- Using PBus from a Switcher to Recall Items
- Using PBus for Clips

Overview

PBus (Peripheral Bus) is an industry standard protocol designed to allow production switchers to communicate with external devices. Most large production switchers have some capability of sending PBus commands to a device.

XPression supports PBus over standard RS232 or TCP/UDP sockets.



Pin	Signal	Pin	Signal
1	Data Carrier Detect	6	Data Set Ready
2	Received Data	7	Request to Send
3	Transmitted Data	8	Clear to Send
4	Data Terminal Ready	9	Ring Indicator
5	Signal Ground		

The chassis of some turnkey XPression systems might not include a standard RS232 port. However, it is possible to use an RS232-USB adaptor.

If the production switcher has an RS422 serial port, then you will require an RS232-RS422 adaptor. This adaptor will require its own power supply. Generally, the adaptors that are port-powered will not function for these purposes.

✶ On an XPression Bluebox system, a limited subset of PBus functionality is available. PBus commands can be used to trigger take items that have been pre-built in an XPression sequence using either XPression Designer or Studio. It is not possible to customize the PBus registers actions using Bluebox. Each register number corresponds to a specific take item number and can not be changed. It is not possible to load the PBM or PBMS PBus mapping files on Bluebox.

For More Information on...

- configuring the PBus interface and PBus recalls, refer to "**Configure PBus Interface and PBus Recalls**" on page 3–99.

PBus Triggers

XPression supports many PBus Trigger commands.

- **Trigger 0 – Play Item**

✶ This trigger can be overridden in the PBus mapping.

Trigger 0 is normally used to play a take item to air. However, this can be overridden to perform other actions on a per-register basis. These actions can be configured in the PBus mapping menu.

- **Trigger 1 – Take Sequence Item Off-Air**

Trigger 1 is used to take an item off air (assuming it was already on air). The item taken off air will be the take item that was previously recalled using a PBus recall command.

- **Trigger 2 – Execute GPI**

Trigger 2 is used to emulate a standard GPI input. In the XPression Keyboard/GPI Mapping, various actions can be configured to be executed on a GPI input being triggered. It is possible to trigger up to 99 different GPIs through PBus. The GPI number that will be triggered is the number that was previously recalled using a PBus recall command.

- **Trigger 3 – Clear Framebuffer**

Trigger 3 will clear the framebuffer assigned to the device in the PBus channel configuration. If the channel is set to **<default>**, this trigger will clear Channel 1.

- **Trigger 4 – Clear Framebuffer Channel 2**

Trigger 4 will clear the framebuffer assigned to the device in the PBus channel configuration. If the channel is set to **<default>**, this trigger will clear Channel 2.

- **Trigger 5 – Read Current Sequence Item to Air**

Trigger 5 will take the currently selected sequence item from the sequencer to air. It ignores the PBus recall command and uses whichever item currently has focus in the XPression sequencer.

- **Trigger 6 – Resume Channel**

Trigger 6 will resume all paused graphics currently on the framebuffer assigned to the device in the PBus Channel Configuration. If the framebuffer is set to **<default>**, this will resume Channel 1.

- **Trigger 7 – Resume Channel**

Trigger 7 will resume all paused graphics currently on the framebuffer assigned to the device in the PBus Channel Configuration. If the framebuffer is set to **<default>**, this will resume Channel 2.

- **Trigger 8 – Resume Take Item**

Trigger 8 will resume a single paused take item. The take item will be the item previously recalled by a PBus recall command.

- **Trigger 10 – Bank 0**

Trigger 10 will change the last recall command into an ID in the 0-99 range (refer to the Bank 1 command below for more details).

- **Trigger 11 – Bank 1**

Trigger 11 is used to allow switchers that can only send PBus recall commands up to 99 to be able to recall take items with values of between 100 and 199.

This "bank 1" command will add 100 to the last recalled item using a PBus recall command. For example; to recall take ID 135 and put it on air, a switcher could send:

› Recall 035

› Trigger 11 (changes the 035 into 135)

› Trigger 0

It is not necessary to switch back to bank 0 after sending a bank 1 command. XPression will automatically revert to bank 0 for the next PBus recall command.

- **Trigger 12 – Bank 2**

Changes the last PBus recall command into an ID in the 200-299 range.

- **Trigger 13 – Bank 3**

Changes the last PBus recall command into an ID in the 300-399 range.

- **Trigger 14 – Bank 4**

Changes the last PBus recall command into an ID in the 400-499 range.

- **Trigger 15 – Bank 5**

  Changes the last PBus recall command into an ID in the 500-599 range.

For More Information on…

- configuring the PBus interface and PBus recalls, refer to "**Configure PBus Interface and PBus Recalls**" on page 3–99.

PBus LEARN Commands

When a PBus LEARN command is received from a remote device, XPression will look to the configured server channel for the PBus device, and if there is a clip currently cued on that server channel it will assign that clip into the PBus register via the recall ID, if assigned.

There is an option **Ignore LEARN command** in the **PBus Setup** dialog box in the **Hardware Setup**. This option is useful if you are manually assigning clips to PBus registers and you do not want to change/overwrite them when storing memories on the production switcher. Most production switchers automatically send the PBus LEARN command when storing the memory.

For More Information on...

- the PBus LEARN command, refer to the appropriate switcher documentation.

PBus Mapping

Use PBus mapping to assign clips, functions, scenes, scripts, and other actions and functions to device registers, and then save and load the maps.

The following procedures are covered in this section:

- Configuring PBus Mapping
- Assigning an Action to a PBus Register
- Remapping a PBus Register
- Loading and Saving Maps

For More Information on…

- configuring the PBus interface and PBus recalls, refer to "**Configure PBus Interface and PBus Recalls**" on page 3–99.

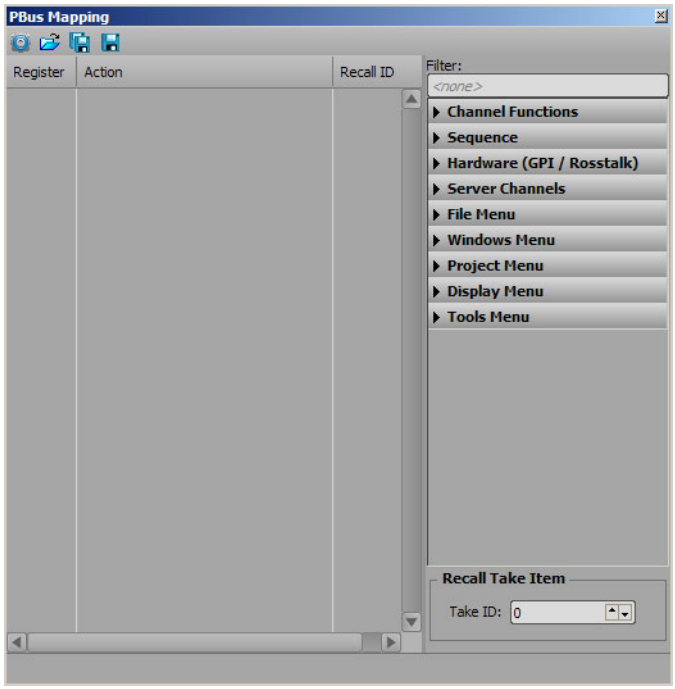
Configuring PBus Mapping

Use the PBus Device Configuration dialog box to configure the Device IDs and channels.

To configure PBus Mapping:

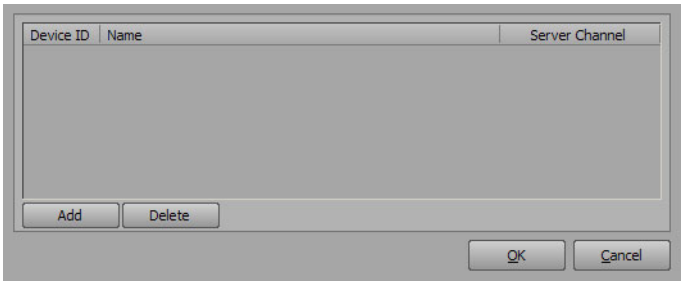
1. In **XPression**, open the **Sequencer**.
2. Click **Display** > **PBus Mapping**.

   The **PBus Mapping** window opens.



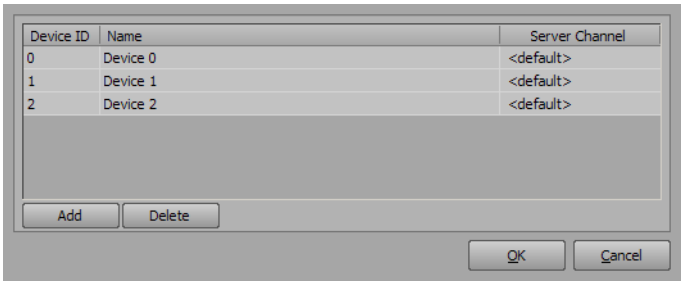
3. Click the **Setup Device Configuration** ( ) icon.

   The **PBus Device Configuration** dialog box opens.



4. Click **Add** to add a **Device ID**.

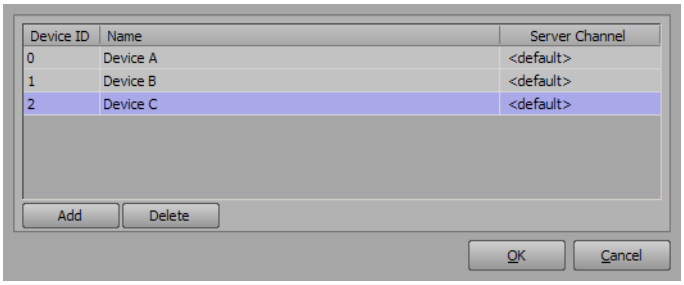
   A device ID is added to the PBus Device Configuration list. At least one Device ID must be added. The Device ID is the ID number that will be sent in PBus messages transmitted from the production switcher.



5. Click inside the **Device ID** column of the ID and enter or select an ID number.

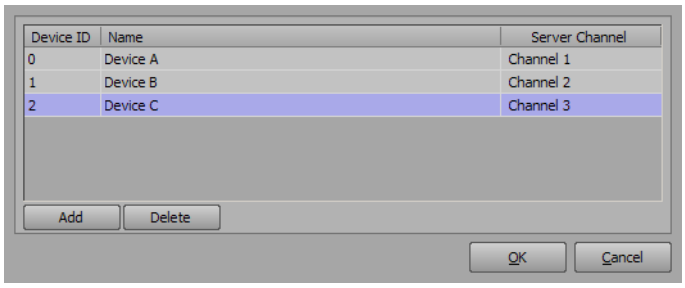
   PBus Device IDs must be between 0 and 23.

6. Click inside the **Name** column of the ID and enter a name to refer to the Device ID. For example, Device A.



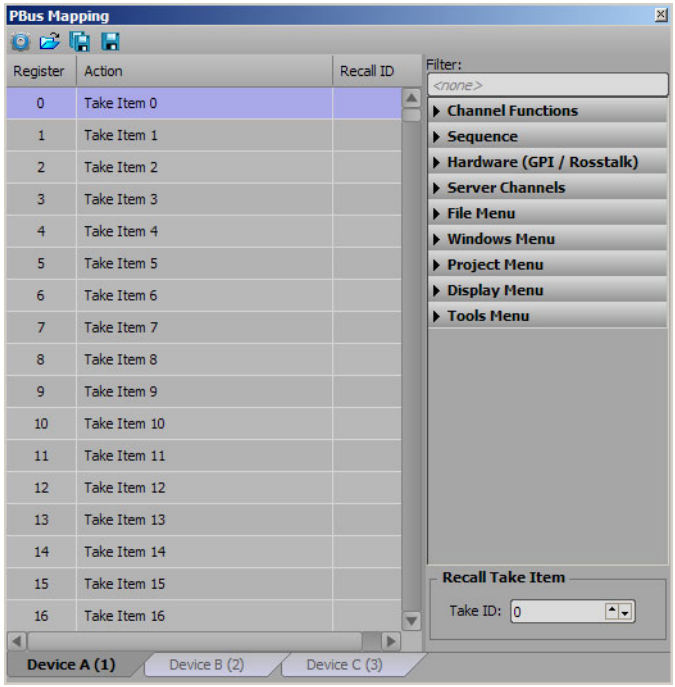
7. Click inside the **Server Channel** column of the ID and use the list to select a specific output framebuffer or use the **<default>** framebuffer.

   If the framebuffer is set to anything other than <default> when a PBus recall command is received for a specific Device ID, then the item will be played on the selected framebuffer. If <default> is selected, then the item will be played on the framebuffer for which the original take item was configured. When a clip from the Clip Store is assigned to a register and **<default>** was selected for the Server Channel, the first device configured will use Server Channel 1, the next will use Server Channel 2, etc.



8. Click **OK**.

   The Device IDs are added as tabs at the bottom of the PBus Mapping window under the assigned device names. If there are no tabs added, then a Device ID was not added to the PBus Device Configuration list.



Assigning an Action to a PBus Register

Each device has a list of 4095 registers which can be recalled through PBus.

✶ Some switchers can only support the first 99 registers.

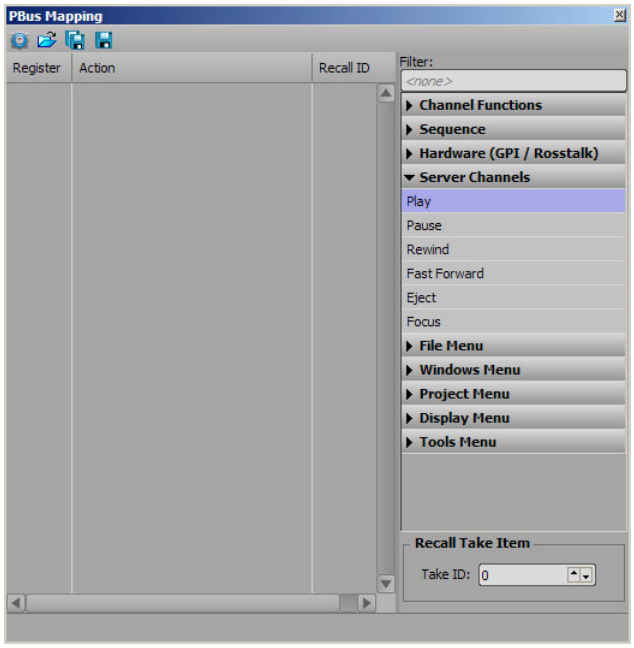
Each PBus register can be assigned an action that will be executed after the register is recalled and Trigger 0 is received. The default action for each register is to play the corresponding Take Item with the same number as the PBus register.

For More Information on...

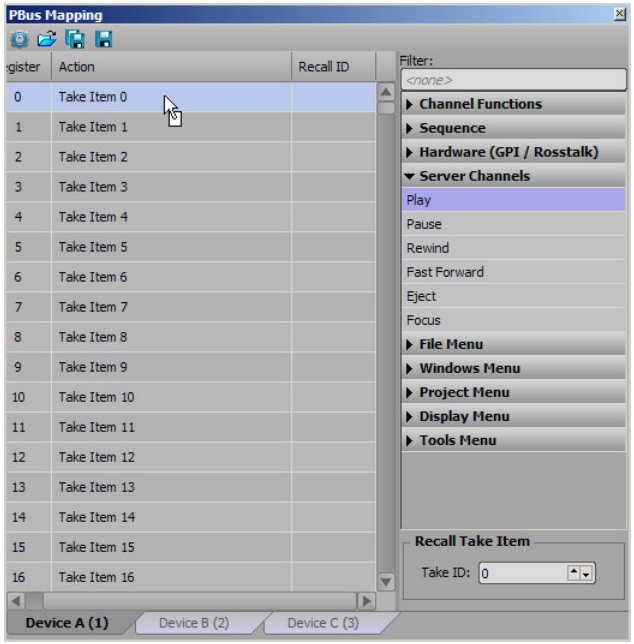
- PBus triggers, refer to "**PBus Triggers**" on page 7–2.

To assign an action to a PBus register:

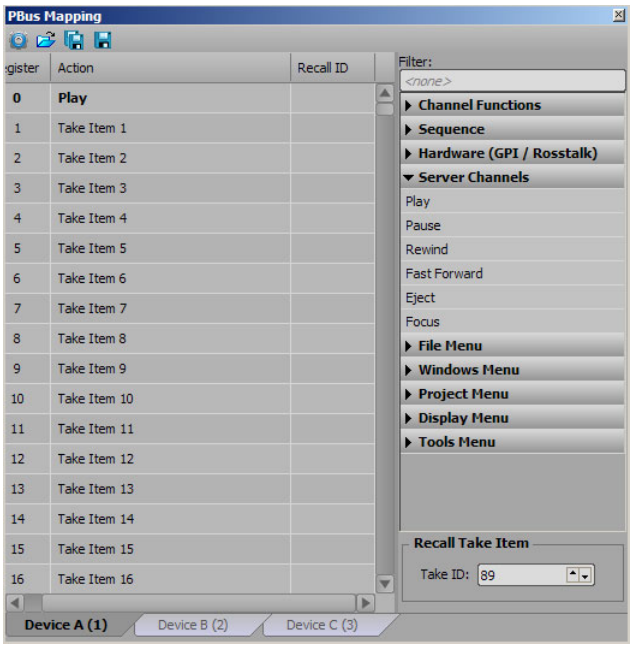
1. In the **PBus Mapping** window, select a function from the actions list to the right of the devices.



2. Drag and drop the action onto a register.



The action is added to the register.

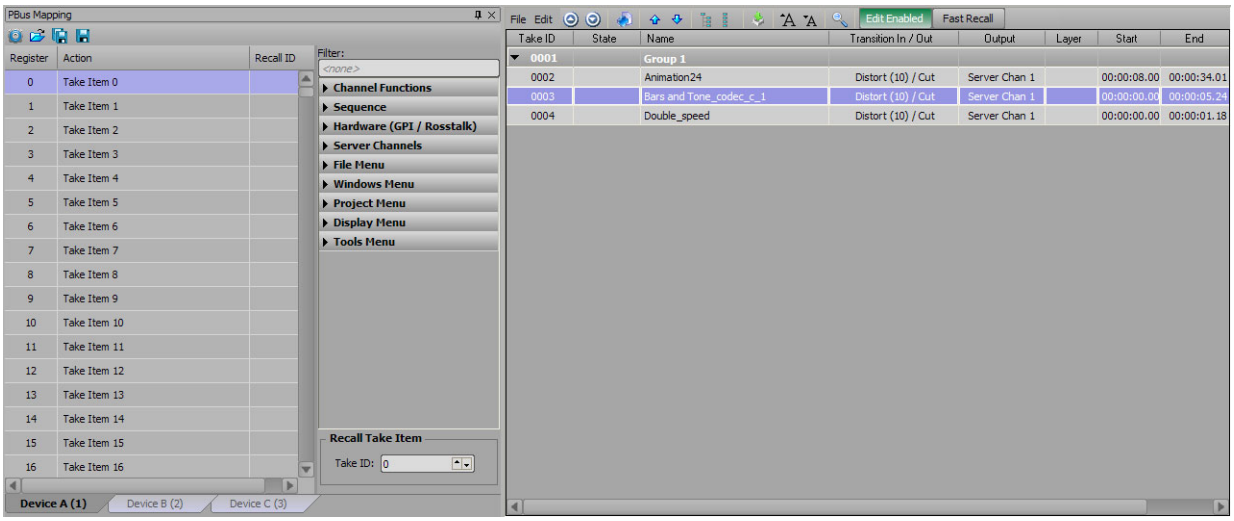


Remapping a PBus Register

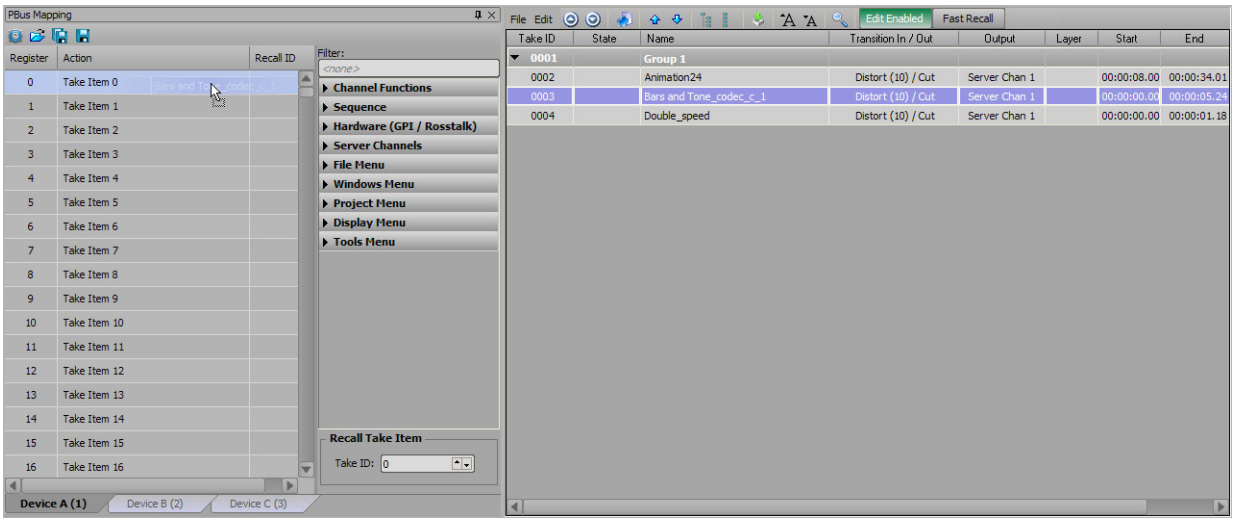
To remap a PBus register to play a different take item, the take item can be dragged and dropped from the sequencer onto the register in the PBus Mapping window or you can enter or select a different take ID using the **Take ID** box in the **Recall Take Item** section of the PBus Mapping window.

To remap a PBus register using drag and drop from the Sequencer:

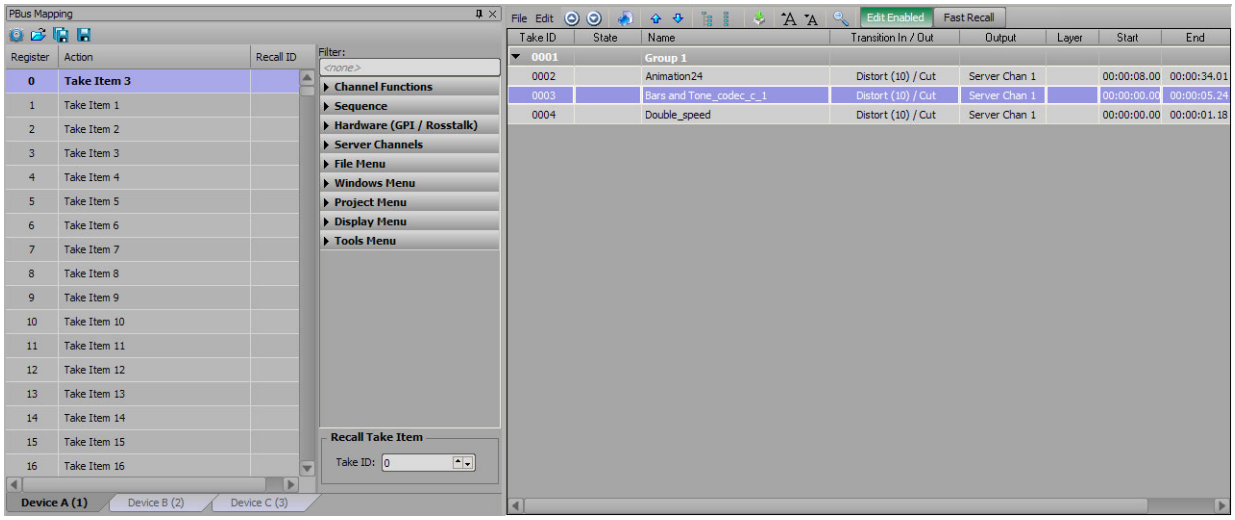
1. In the **Sequencer**, select a take item from the **Take ID** list.



2. Drag and drop the take item onto a register in the **PBus Mapping** window.

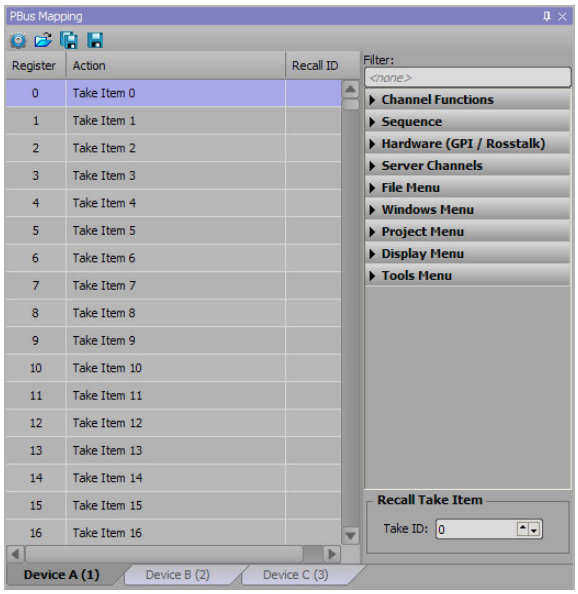


The take item is added to the register.

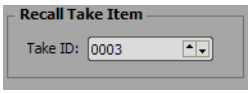


To remap a register using the Take ID box:

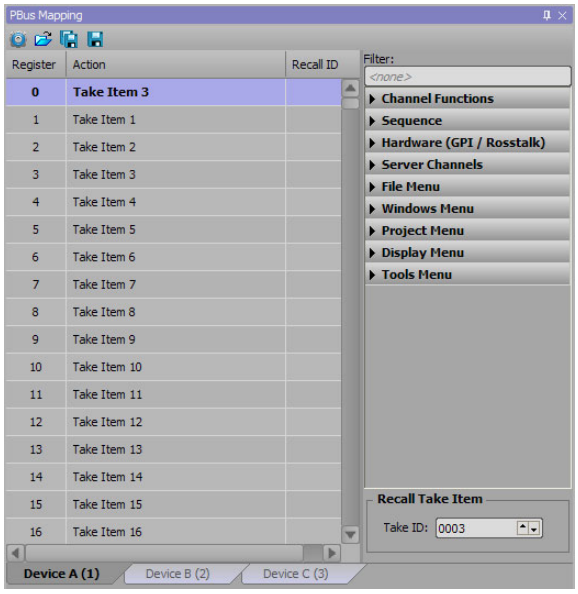
1. In the **PBus Mapping** window, select a register number from the devices to the left of the actions list.



2. In the **Recall Take Item** section, use the **Take ID** box to enter or select a take item to add to the selected register.

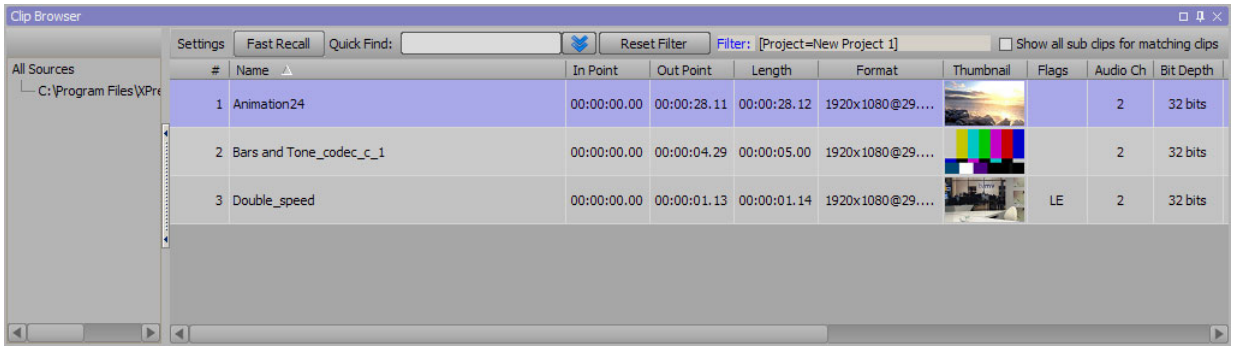


The take item is added to the selected PBus register.

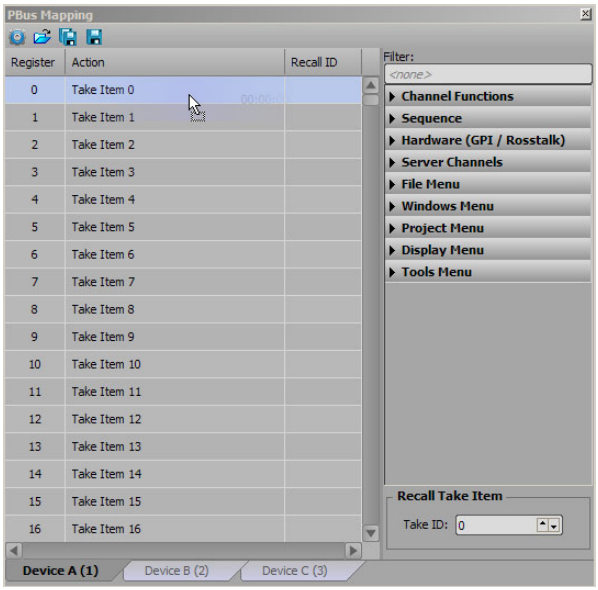


To remap a PBus register using drag and drop from the Clip Browser:

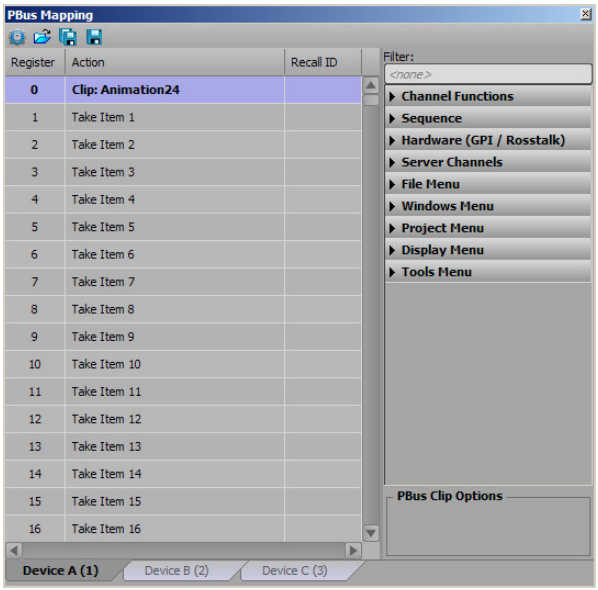
1. In the **Clip Browser**, select a clip from the list.



2. Drag and drop the take item onto a register in the **PBus Mapping** window.



The take item is added to the register.



Loading and Saving Maps

PBus maps are not loaded and saved with XPression projects. They are loaded and saved to disk as .pbm or .pbms files using the PBus Mapping window. The .pbm file extension is used for a single PBus map and the .pbms file extension is used for multiple PBus maps.

Use the following PBus Mapping window toolbar icons to load and save PBus maps:

Load () – click this button to open a file browser to select a PBus map or multiple PBus maps to load.

Save All () – click this button to save multiple PBus maps to disk.

Save () – click this button to save a single PBus map to disk.

Using PBus from a Switcher to Recall Items

✶ Consult the switcher documentation for a complete description of how to use PBus with your particular manufacturer/model. This section is only intended to provide some background information and tips.

Normally switchers will send a PBus recall command when an EMEM is recalled. The following procedure is an example using take item 0005.

For More Information on...

- configuring the PBus interface and PBus recalls, refer to "**Configure PBus Interface and PBus Recalls**" on page 3–99.

To recall and play a specific take item from XPression:

1. In **XPression**, use the **Sequencer** to create a take item and give it an ID of 0005.
2. Create an EMEM/Memory on the switcher and store it as **EMEM 5**.
3. Within **EMEM 5**, ensure that you have enabled the sending of PBus commands.
4. Within the timeline for **EMEM 5**, issue a PBus Trigger 0 command.

When **EMEM 5** is recalled, it will send a PBus recall 5 command to XPression. This command will not yet do anything (unless the configuration options discussed in the **"Configure PBus Interface and PBus Recalls**" on page 3–99 section are enabled).

When the timeline is run, the switcher will send a PBus Trigger 0 command. At this time, XPression will then put take item #5 on the output channel/layer previously assigned to that item in the sequencer.

✶ There may be several frames of delay between issuing the Trigger 0 command and when the video for the item appears on the SDI output of XPression. This is normal and should be accounted for inside of the timeline on the switcher. For example, you will need a delay between the issuing of trigger 0 and when the keyer containing the XPression is keyed onto the PGM output.

To recall different take items, the timeline on the switcher can be copied into different switcher registers.

For More Information on...

- PBus triggers, refer to "**PBus Triggers**" on page 7–2.

Using PBus for Clips

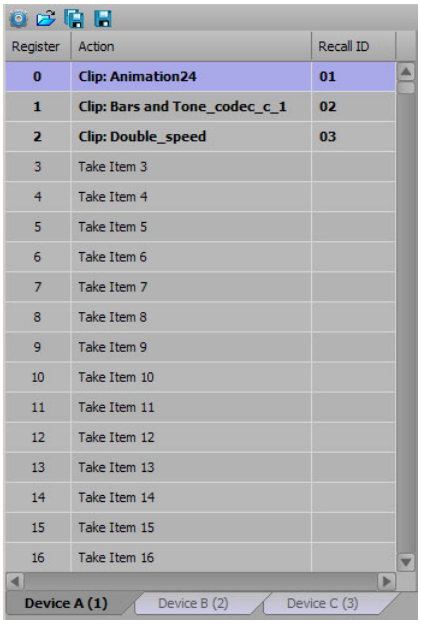
Firstly, the PBus configuration must be set to assign a PBus device ID to a specific server channel. This controls the server channel onto which PBus commands to a device will load the clip. Valid device IDs are from 0 to 23.

By default, every PBus register (0 to 4095) will cue/play the corresponding take item with that ID number. However, clips from the Clip Browser can be assigned to a PBus register simply by dragging them from the Clip Browser onto a PBus register. Alternatively, various actions (same ones accessible in the keyboard mapping menu) can be assigned to a PBus register by dragging them from the action list on the right to a PBus register. This is useful for assigning scripts or actions like Take Next/Clear Channel, etc. to a PBus register. Right-click on a register with a clip and select **Find Clip in Clip Browser** to find a clip or select a different clip in the Clip Browser.

A PBus register map can be saved to disk to a file using the .PBM extension, or maps for all devices can be saved to a .PBMS file. Maps can be loaded from these PBM files or from a specific format of XML file. When using the XML file import, it will assign clips to PBus registers using their recall ID from the clip database.

Using PBus for Clips with Recall IDs

The PBus map contains a column named **Recall ID**.



If a clip in the Clip Store exists with that recall ID, it will be assigned to that PBus register. A clip's recall ID can also be entered into the column to assign it to the respective register. The PBus register will always recall the clip with that specific recall ID, so if a new clip is ingested with a matching recall ID, the PBus register will recall the new clip instead. If the clip is manually edited and the recall ID is changed or removed, the PBus register will no longer recall that clip.

A similar behavior exists when dragging a clip with a recall ID into the PBus register; meaning that the PBus register is bound to a specific recall ID and not to a specific clip. Holding **Ctrl**-**Shift** and dragging a clip onto a PBus register will link the clip with the PBus register, and it will not be replaced regardless of a clip with a duplicate recall ID being ingested.

Output

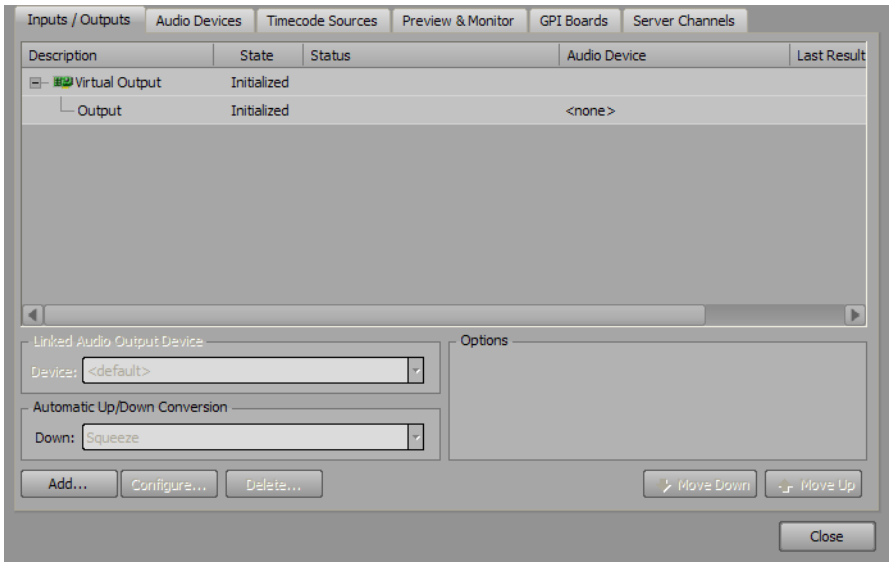
The output of an XPression project can be sent to preview in a virtual output.

The following topic is discussed in this section:

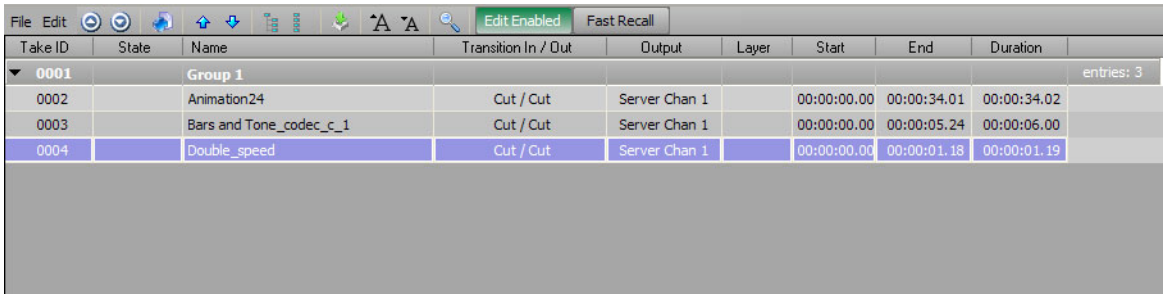
- Preview Output in a Virtual Output

Preview Output in a Virtual Output

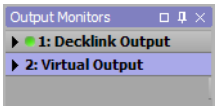
1. Use the **Hardware Setup** dialog box to configure an XPression Virtual Output.



2. In the **Clip Browser**, click and drag the clip to output into the **Sequencer**.



3. In the **Output Monitors** window, note the framebuffer number of the **Virtual Output** output monitor.



4. Use the list in the **Output** column of the **Sequencer** to select the framebuffer number of the **Virtual Output** for the clip to output.
5. Double-click the clip in the **Sequencer** to take it "online".

   The **XPression Virtual Output** window opens to display the output of the selected clip.

   Right-click the output in the **XPression Virtual Output** window and select **Full Screen** to use full screen display.

For More Information on...

- configuring an XPression Virtual Output, refer to the procedure "**Configure an XPression Virtual Output**" on page 3–79.

Keyboard and GPI Mapping

Keyboard and GPI mapping enables many of the XPression functions to be assigned to keyboard shortcuts or GPI input triggers. Many of XPression's existing default keyboard shortcuts can also be customized.

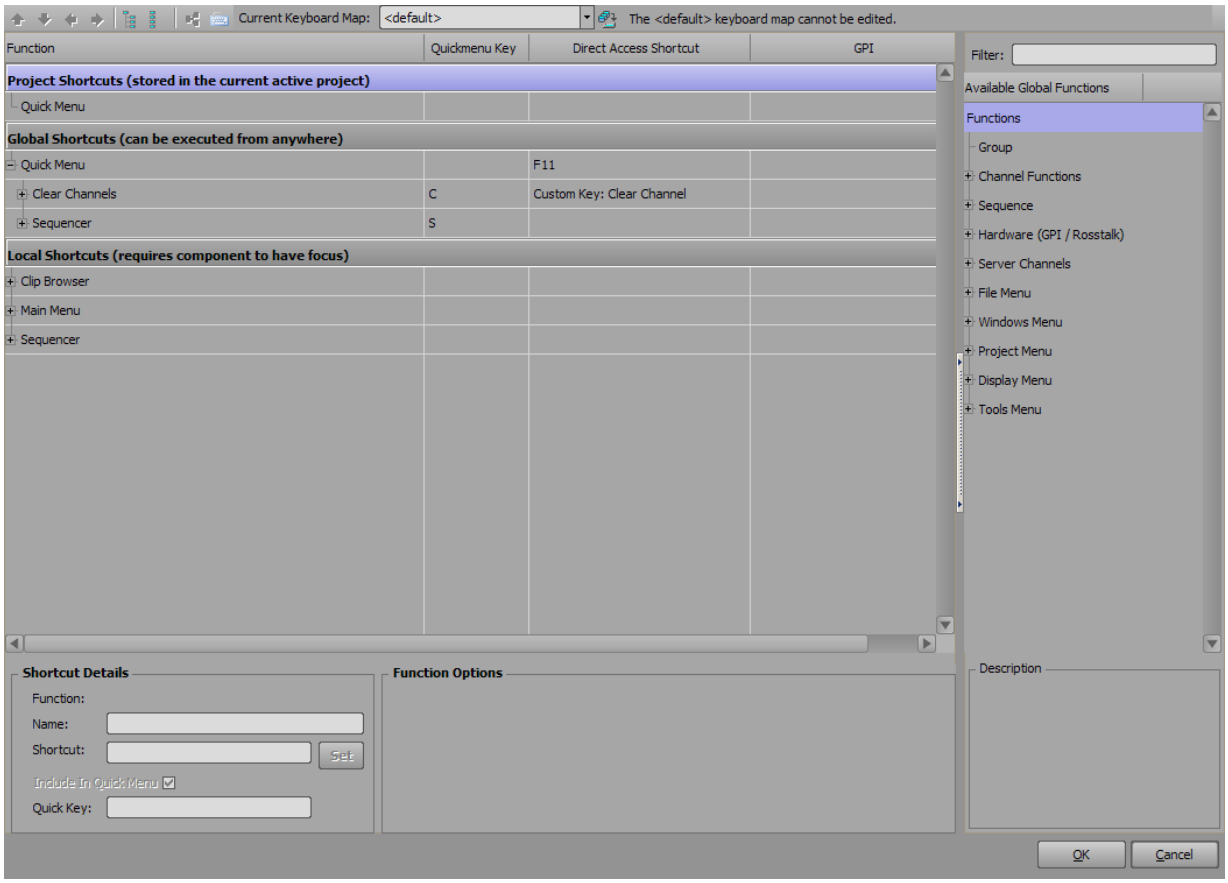
The following topics are discussed in this section:

- Create a Custom Keyboard Map
- Assign a Project Shortcut
- Assign a Global Shortcut
- Assign a Local Shortcut
- Create a Custom GPI Map
- Use the Quick Menu

Create a Custom Keyboard Map

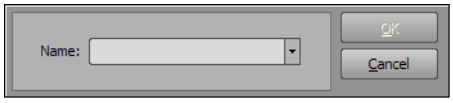
1. In **XPression**, use the **Edit** menu to select **Keyboard / GPI Mapping**.

   The **Keyboard / GPI Mapping** dialog box opens.



2. Click the **Save Keyboard Mapping** button to create a new custom keyboard mapping.

   The **Save Keyboard Mapping** dialog box opens.



3. In the **Save Keyboard Mapping** dialog box, enter a name for the new custom keyboard mapping.
4. Click **OK**.

   The added custom keyboard mapping appears in the **Current Keyboard Map** list and is saved as a .kbd file.

For More Information on…

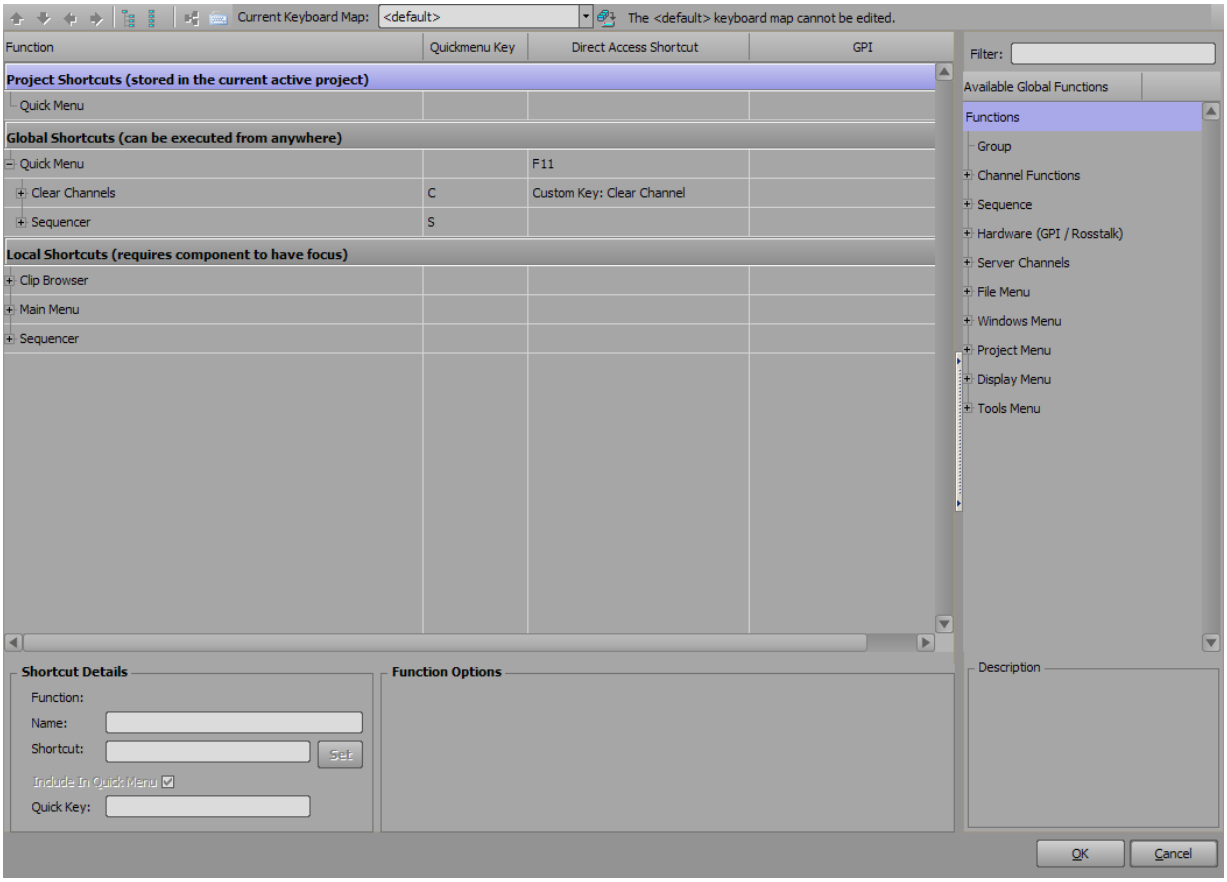
- assigning a Global Shortcut, refer to "**Assign a Global Shortcut**" on page 9–4.
- assigning a Local Shortcut, refer to "**Assign a Local Shortcut**" on page 9–9.

Assign a Project Shortcut

Project shortcuts represent keyboard hotkeys that apply to a specific XPression project.

1. In **XPression**, use the **Edit** menu to select **Keyboard / GPI Mapping**.

   The **Keyboard / GPI Mapping** dialog box opens.



2. Select a a keyboard map from the **Current Keyboard Map** list or create a custom keyboard map.
3. Drag an item from the **Global Functions** list into the **Project Shortcuts** table as necessary.
4. In the **Project Shortcuts** table, right-click on an item in the shortcuts tree and select **Assign Shortcut** to assign a custom keyboard control to the selected item.
5. In the **Shortcut Details** section, perform the following:
   a. In the **Name** box, edit the name of the selected item if necessary.
   b. In the **Shortcut** box, enter a keyboard shortcut to assign to the selected item by entering the command on the keyboard.

      The assigned keyboard shortcut appears in the **Shortcut** box and in the row for the selected item under the **Direct Access Shortcut** column in the **Project Shortcuts** table.

      If the assigned keyboard shortcut is already in use by another function, a hazard icon will appear next to the command in the **Direct Access Shortcut** column. Place the cursor over the hazard icon to view where the conflict occurs.
6. Click **OK**.

For More Information on…

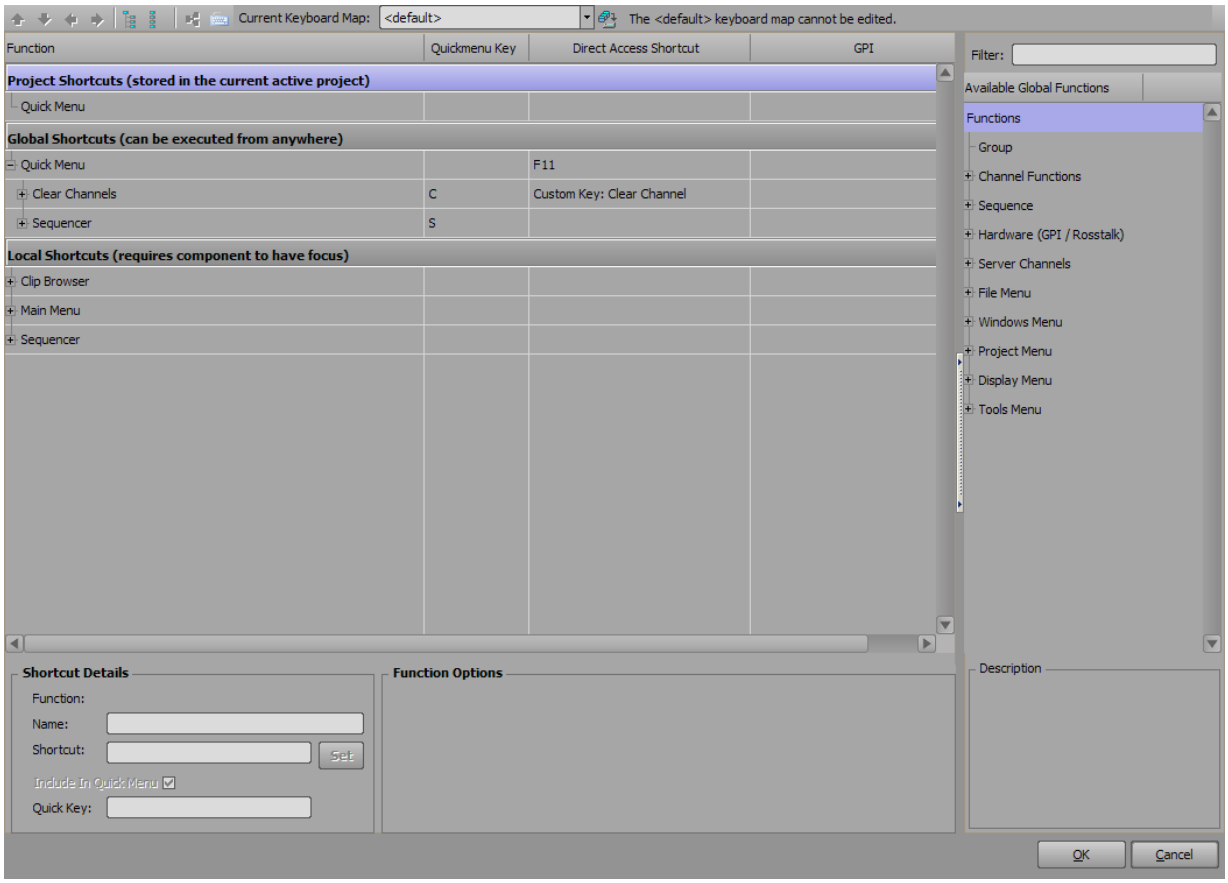
- creating a custom keyboard map, refer to "**Create a Custom Keyboard Map**" on page 9–2.

Assign a Global Shortcut

Global Shortcuts represent functions that can be assigned to keyboard hotkeys that are active at any time while XPression is running.

1. In **XPression**, use the **Edit** menu to select **Keyboard / GPI Mapping**.

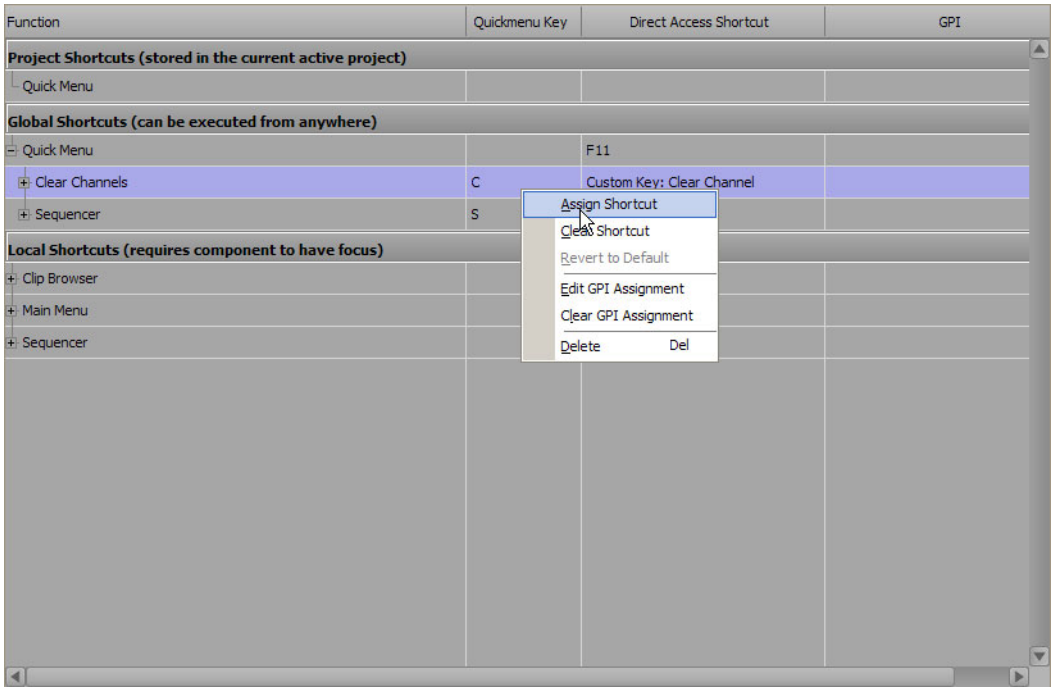
   The **Keyboard / GPI Mapping** dialog box opens.



2. Select a a keyboard map from the **Current Keyboard Map** list or create a custom keyboard map.
3. In the **Available Global Functions** list, drag and drop the **Group** function or click the **Add Group** button in the toolbar to create a group branch in the **Global Shortcuts** tree.
4. In the **Available Global Functions** list, select a function and drag and drop it into the desired spot in the **Global Shortcuts** tree to add the function.

   Entering a function in the **Filter** box lets you search the **Available Global Functions** list for a specific function.

5. In the **Global Shortcuts** table, right-click on an item in the shortcuts tree and select **Assign Shortcut** to assign a custom keyboard control to the selected item.



6. In the **Shortcut Details** section, perform the following:

   a. In the **Name** box, edit the name of the selected item if necessary.

   b. In the **Shortcut** box, enter a keyboard shortcut to assign to the selected item by entering the command on the keyboard.

      The assigned keyboard shortcut appears in the **Shortcut** box and in the row for the selected item under the **Direct Access Shortcut** column in the **Global Shortcuts** table.

      If the assigned keyboard shortcut is already in use by another item, a hazard icon will appear next to the command in the **Direct Access Shortcut** column. Place the cursor over the hazard icon to view where the conflict occurs.

   c. Select the **Include In Quick Menu** check box to include the keyboard shortcut in a Quick Menu.

      Quick Menus are shortcut menus that appear when a Quick Key for a Global Shortcut is entered. The keyboard shortcuts available for the selected Global Shortcut are listed in the Quick Menu that appears. This feature only applies to Global Shortcut branches that contain children nodes.

      In the **Quick Key** box, enter a letter or number as the Quick Menu command.

7. In the options section located to the right of the **Shortcut Details** section, configure the shortcut options of various functions:

   ### Clear Layer Options

   - **Framebuffer** — use the list to select a framebuffer for clearing the layer.
   - **Layer** — in this box, enter or select a layer.

   ### Clear Single Channel Options

   - **Framebuffer** — use the list to select a framebuffer for clearing the channel.

   ### Clip Browser Options

   - **Run all children actions when group triggered** — select this check box to run all of the keyboard shortcuts of the children attached to the Clip Browser branch when the Quick Key assigned to the Clip Browser group is triggered.

Color Options

- **Run all children actions when group triggered** — select this check box to run all of the keyboard shortcuts of the children attached to the Clip Browser branch when the Quick Key assigned to the Clip Browser group is triggered.

Cue Item Options

- Select **Current Sequence Item** to apply the shortcut to the current focused item in a sequencer, or select **Take ID** and enter or select a Take ID number in the box to apply the shortcut to the specific Take ID.
- **Move Sequencer Focus to Item** — check this box to the set sequencer focus to the selected Take ID.
- **Framebuffer** — use the list to select a framebuffer for the item.

Debug Options

- **Run all children actions when group triggered** — select this check box to run all of the keyboard shortcuts of the children attached to the Debug branch when the Quick Key assigned to the Debug group is triggered.

Display Menu Options

- **Run all children actions when group triggered** — select this check box to run all of the keyboard shortcuts of the children attached to the Display Menu branch when the Quick Key assigned to the Display Menu group is triggered.

Group Options

- **Run all children actions when group triggered** — select this check box to run all of the keyboard shortcuts of the children attached to the group branch when the Direct Access shortcut assigned to the group is triggered.

Project Menu Options

- **Run all children actions when group triggered** — select this check box to run all of the keyboard shortcuts of the children attached to the Project Menu branch when the Quick Key assigned to the Project Menu group is triggered.

Project Server Options

- **Run all children actions when group triggered** — select this check box to run all of the keyboard shortcuts of the children attached to the Project Menu branch when the Quick Key assigned to the Project Menu group is triggered.

Send RossTalk Message Options

- **GPI Board** — use the list to select a GPI board for sending the RossTalk message.
- **RossTalk Message** — use the list to select a RossTalk message. The available options are:
  - **CLFB [channel]:[layer]** — clear a single layer on the channel.
  - **CLRA** — clear all framebuffers.
  - **CUE [takeid]:[channel]:[layer]** — cue a Take Item on a specified layer of a channel.
  - **DOWN** — move the current selection in the sequencer to the item below it.
  - **FOCUS [takeid]** — set sequencer focus to a specific Take Item.
  - **GPI [gpi num]** — used to trigger a simulated GPI input. RossTalk/Smart GPI supports up to 64 simulated inputs.
  - **LAYEROFF [channel]:[layer]** — clear a single layer on the framebuffer specified by the channel. If the layer is not specified, every layer on the channel will be cleared.
  - **NEXT** — read the current selection in the sequencer to air and advance the current selection to the next item.
  - **READ** — read the current selection in the sequencer to air.
  - **RESUME [channel]:[layer]** — resume a single layer on the framebuffer specified by the channel. If the layer is not specified, every layer on the channel will resume.
  - **SEQI [takeid]:[layer]** — loads a template to air on the specified layer and the template-defined output channel.
  - **SEQO [takeid]** — takes the template off air.
  - **SWAP [channel]** — switches from the current channel to the one specified in the message.
  - **TAKE [takeid]:[channel]:[layer]** — takes a template to air on the specific framebuffer and layer without moving the sequencer focus to that item.
  - **TEMPLATEDATA [takeid]:[object name]:[property]:[value]** — set the value of a specified object in a specified take item.
  - **UP** — move the current selection in the sequencer to the item above it.
  - **UPNEXT** — set the preview in the sequencer without moving the focus bar.

Set Framebuffer Options

- **Framebuffer** — use the list to select a framebuffer or select **<none>**.

Set GPI Output Options

- **GPI Board** — use the list to select a GPI board for sending the GPI command.
- **GPI #** — use this box to enter or select a GPI pin number.
- **State** — use the list to select the state of the signal:
  - **Low (Inactive)** — select this to use low voltage for the signal.
  - **Low (Active)** — select this to use high voltage for the signal.

Set Layer Options

- **Layer** — in this box, enter or select a layer.

Set Transition Options

- **Current Sequence Item** — select this to use the transition options for the currently selected take item in the sequencer.
- **Take ID** — select this to use the transition options for a specific Take ID in the sequencer. Use the box to enter or select the Take ID number.
- **Transition In/Out** — use the lists to select the in and out transitions for a take item. The available options are as follows:
  - **Cut** — select this to use an instantaneous transition from the take item to the next take item.
  - **Dissolve** — select this to use a gradual transition where a take item dissolves into the next take item.
  - **Push** — select this to use a sliding transition where the take item pushes out the previous take item.
  - **Distort** — select this to use a transition where a take item is warped out.
- **Duration** — use this box to enter or select the duration of the transition in number of frames.

Take Offline Options

- Select **Current Sequence Item** to apply the shortcut to the current item in a sequence, or select **Take ID** and enter or select a Take ID number in the box to apply the shortcut to the specific Take ID, or select **Entire Framebuffer** to take all layers off of a framebuffer and use the list to select the framebuffer.

Take Options

- Select **Current Sequence Item** to apply the shortcut to the current item in a sequence, or select **Take ID** and enter or select a Take ID number in the box to apply the shortcut to the specific Take ID.
- **Move Sequencer Focus to Item** — check this box to the set sequencer focus to the selected Take ID.
- **Framebuffer** — use the list to select a framebuffer for the Take Item.
- **Advance Sequence After Take** — check this box to advance to the next Take Item in the sequence after the current or selected Take Item has finished playing.

Tools Menu Options

- **Run all children actions when group triggered** — select this check box to run all of the keyboard shortcuts of the children attached to the Tools Menu branch when the Quick Key assigned to the Tools Menu group is triggered.

Windows Menu Options

- **Run all children actions when group triggered** — select this check box to run all of the keyboard shortcuts of the children attached to the Windows Menu branch when the Quick Key assigned to the Windows Menu group is triggered.

8. Click **OK**.

For More Information on...

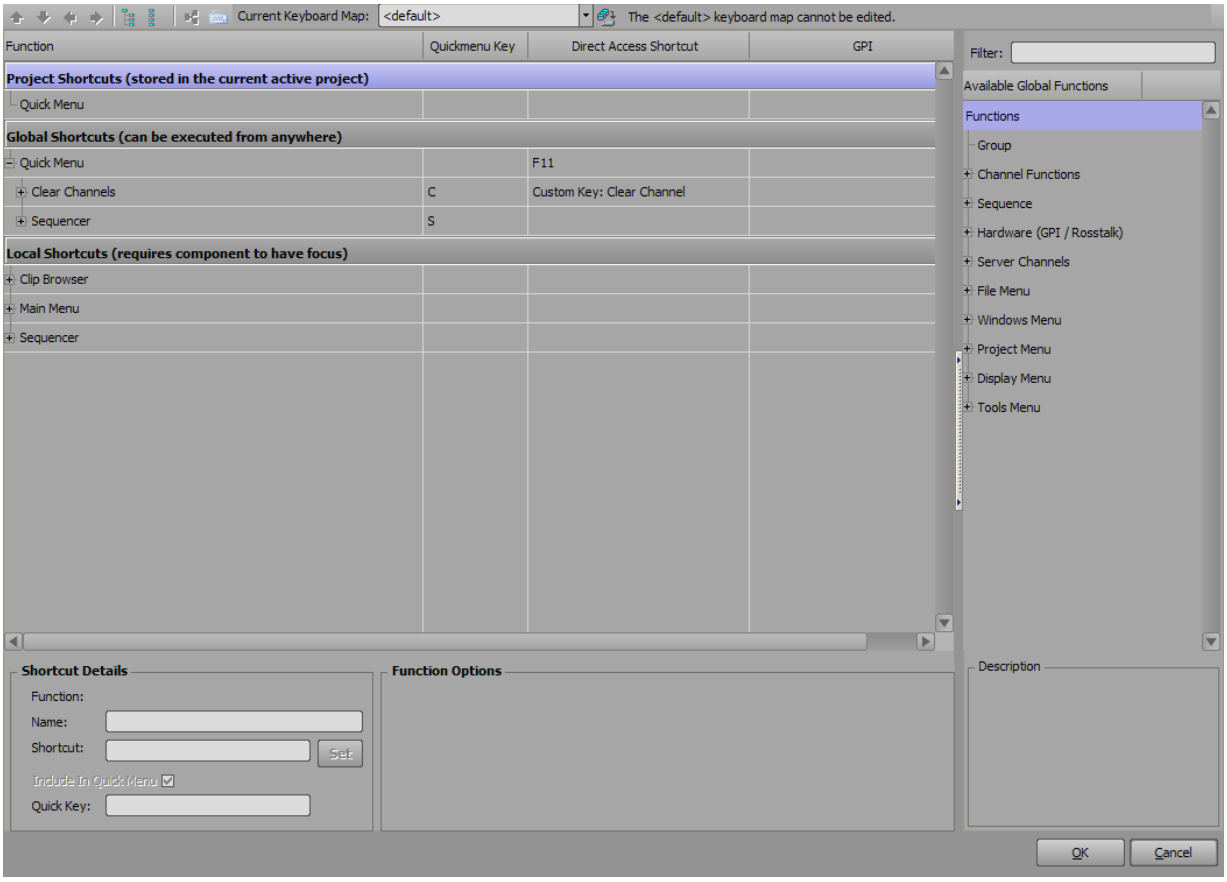
- creating a custom keyboard map, refer to "**Create a Custom Keyboard Map**" on page 9–2.
- using a Quick Menu, refer to "**Use the Quick Menu**" on page 9–13

Assign a Local Shortcut

Local shortcuts represent keyboard hotkeys that apply to one particular component of XPression, such as the Sequencer, and are only active when the particular component of XPression has keyboard/mouse focus.

1. In **XPression**, use the **Edit** menu to select **Keyboard / GPI Mapping**.

   The **Keyboard / GPI Mapping** dialog box opens.



2. Select a a keyboard map from the **Current Keyboard Map** list or create a custom keyboard map.
3. In the **Local Shortcuts** table, right-click on an item in the shortcuts tree and select **Assign Shortcut** to assign a custom keyboard control to the selected item.
4. In the **Shortcut Details** section, perform the following:
   a. In the **Name** box, edit the name of the selected item if necessary.
   b. In the **Shortcut** box, enter a keyboard shortcut to assign to the selected item by entering the command on the keyboard.

      The assigned keyboard shortcut appears in the **Shortcut** box and in the row for the selected item under the **Direct Access Shortcut** column in the **Local Shortcuts** table.

      If the assigned keyboard shortcut is already in use by another function, a hazard icon will appear next to the command in the **Direct Access Shortcut** column. Place the cursor over the hazard icon to view where the conflict occurs.
5. Click **OK**.

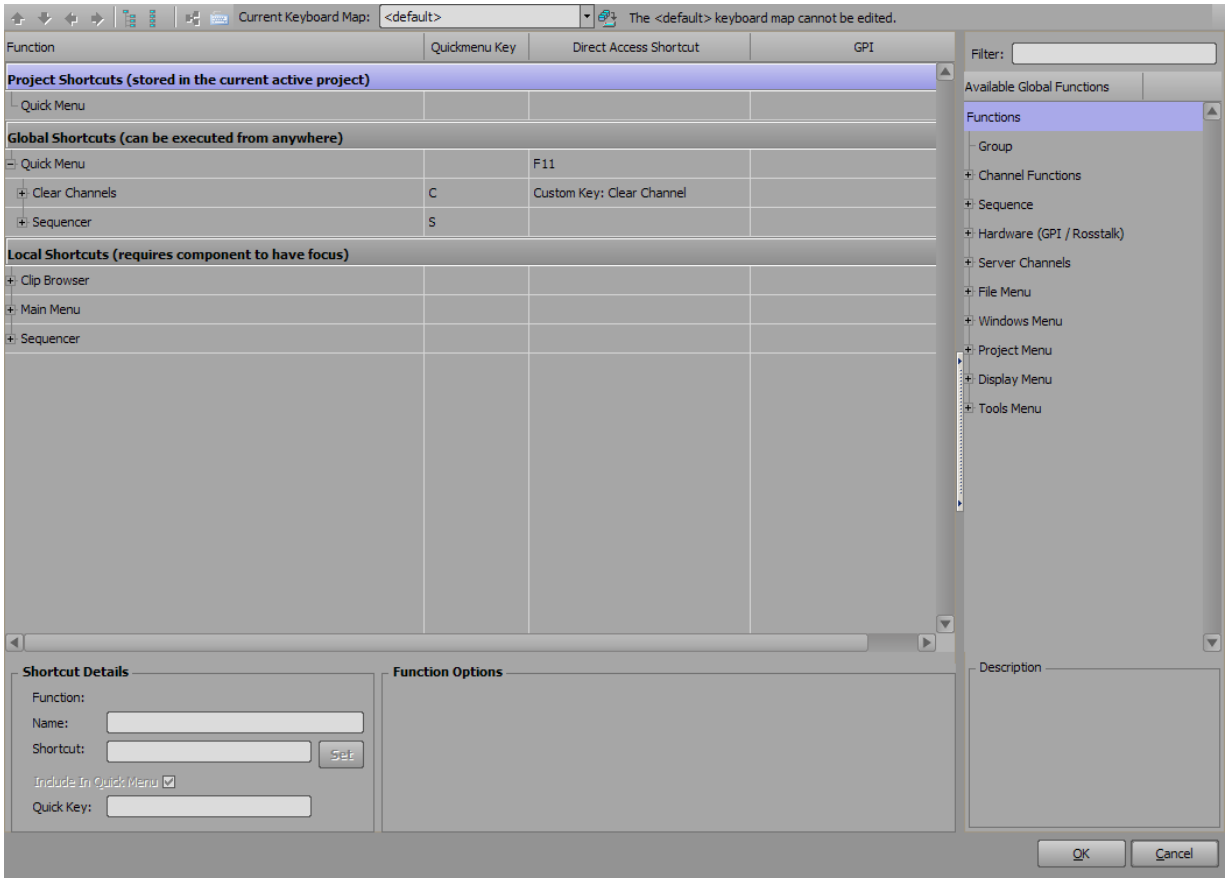
For More Information on...

- creating a custom keyboard map, refer to "**Create a Custom Keyboard Map**" on page 9–2.

Create a Custom GPI Map

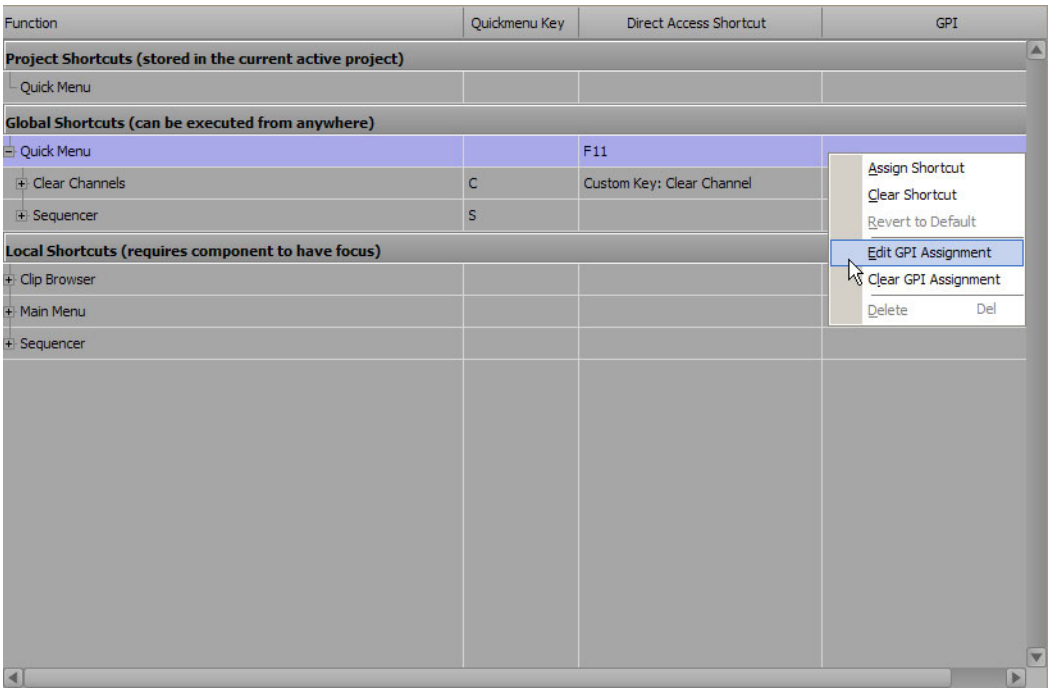
1. Use the **Hardware Setup** dialog box to configure a GPI board for XPression.
2. In **XPression**, use the **Edit** menu to select **Keyboard / GPI Mapping**.

   The **Keyboard / GPI Mapping** dialog box opens.



3. Create a custom keyboard mapping that includes global shortcuts.
4. In the **Global Shortcuts** tree, right-click on a global shortcut and select **Edit GPI Assignment**.

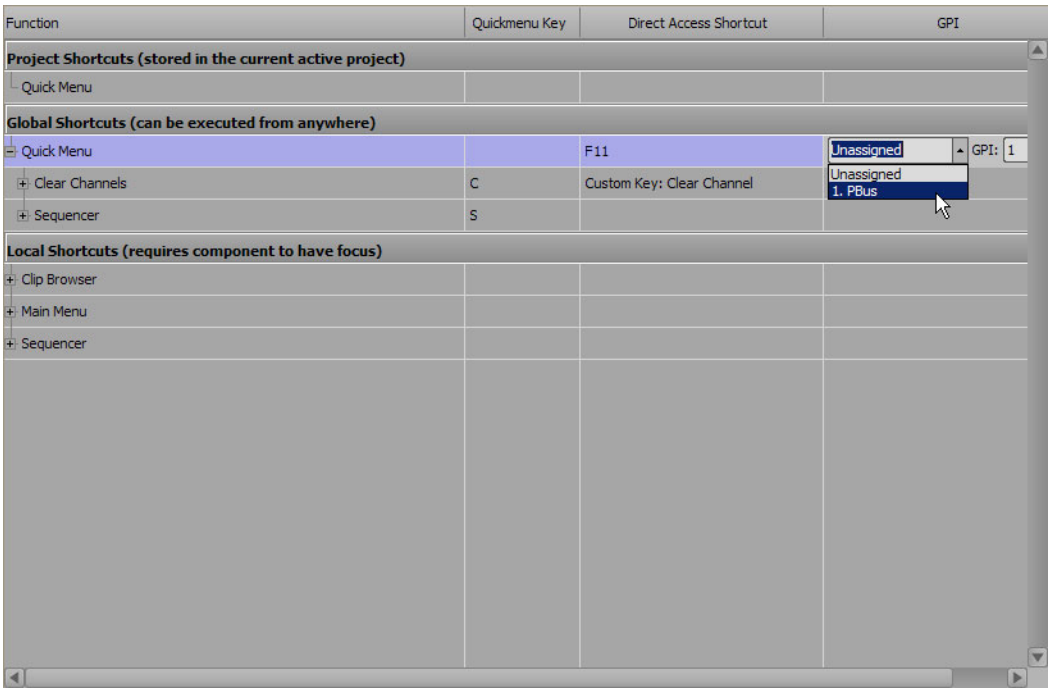
The same GPI trigger can be assigned to multiple global functions to execute them in order.



5. In the **GPI** column of the **Global Shortcuts** table, perform the following to the selected global shortcut:

   ### Steps

   a. Select a GPI board from the list.



   b. In the **GPI** box, enter or select a GPI input to assign to the selected global shortcut.

      If the assigned GPI input is already in use by another item, a hazard icon will appear next to the GPI details in the GPI column. Place the cursor over the hazard icon to view where the conflict occurs.

6. Click **OK**.

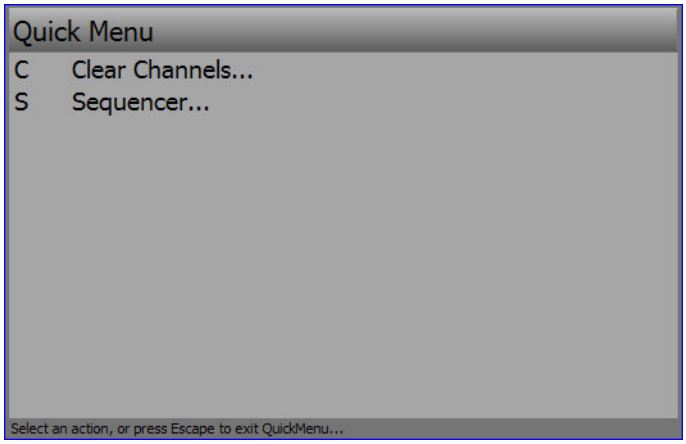
For More Information on...

- adding an Adrienne TC/GPIO card, refer to "**Configure a 25-Pin GPIO Port**" on page 3–93.
- adding a Serial GPI board, refer to "**Configure RS232 CTS/DSR GPI for Contact Closures**" on page 3–91.
- adding a Smart GPI/RossTalk board, refer to "**Configure Smart GPI / RossTalk**" on page 3–97.
- creating a custom keyboard, refer to "**Create a Custom Keyboard Map**" on page 9–2.
- configuring and working with GPIs, refer to the ***GPI White Paper*** available from Ross Video.

Use the Quick Menu

1. Create a custom keyboard mapping that includes Global Shortcuts.
2. In XPression, enter the keyboard shortcut for a Global Shortcut branch.

   The **Quick Menu** for the Global Shortcut branch opens.



3. In the Quick Menu perform one of the following:
   - Use the Quick Keys to select an item from the Quick Menu, or
   - Use the keyboard arrows to select an item and press **Enter**.

   The selected Quick Menu item action is triggered.
   - Press **Esc** at any time in a Quick Menu to close the Quick Menu.

For More Information on...

- creating a custom keyboard, refer to "**Create a Custom Keyboard Map**" on page 9–2.
- assigning a Global Shortcut, refer to "**Assign a Global Shortcut**" on page 9–4.

Project Manager

The Project Manager window is used to create and organize category folders to organize XPression project scenes and scene groups.

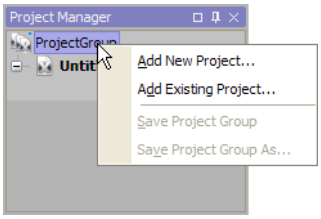
The following topics are discussed in this section:

- Open Multiple Projects in the Project Manager
- Activate a Project from a Project Group
- Remove a Project from a Project Group

Open Multiple Projects in the Project Manager

1. In the **Project Manager** window, right-click on the **Project Group** node.

   The Project Group shortcut menu opens.



2. Select one of the following options:

   - **Add New Project** — select to open the **New Project** dialog box and create a new project to add to the Project Group.
   - **Add Existing Project** — select to open the browser and select an existing project to open in the Project Group.

   The new or existing project displays as a project node in the Project Group and opens in XPression.

3. Repeat step 1 to 2 for individual projects as needed.

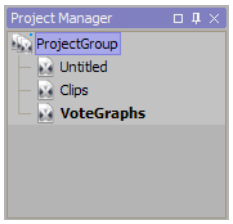
For More Information on...

- creating a new project in XPression, refer to the procedure "**Create a Project**" on page 4–3.

Activate a Project from a Project Group

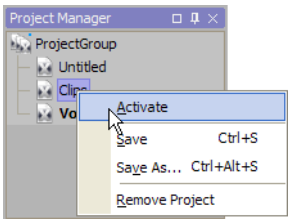
1. Open multiple projects in **XPression**.

   The projects appear in the **Project Manager**.



2. In the **Project Manager** window, right-click on the **Project** node of the project to be activated.

   The Project shortcut menu opens.



3. Select **Activate** from the shortcut menu.

   The selected project is activated.

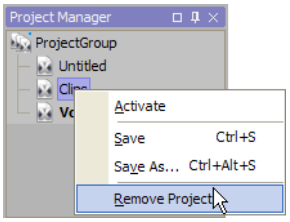
For More Information on...

- opening multiple projects in XPression, refer to the procedure "**Open Multiple Projects in the Project Manager**" on page 10–2
- creating a new project in XPression, refer to the procedure "**Create a Project**" on page 4–3.

Remove a Project from a Project Group

1. In the **Project Manager** window, right-click on the **Project** node of the project to be removed from the project group.

   The Project shortcut menu opens.



2. Select **Remove Project** from the shortcut menu.

   The selected project is removed from the Project Group in the Project Manager.

For More Information on…

- opening multiple projects in XPression, refer to the procedure "**Open Multiple Projects in the Project Manager**" on page 10–2.

Appendix A: Keyboard Shortcuts

Use the keyboard shortcuts to perform various functions in XPression.

The following topics are discussed in this section:

- Menu Shortcuts
- Sequencer Shortcuts
- Clip Browser
- Server Channels

Menu Shortcuts

Menu	Keyboard Shortcut	Function
File	CTRL + ALT + N	New project
	CTRL + O	Open project
	F9	Revert project
	CTRL + S	Save project
	CTRL + ALT + S	Save project as...
	CTRL + SHIFT + ALT + S	Increment and save project
Project	CTRL + ALT + E	Display project path in Windows Explorer
Help	F1	Display Online Help

Sequencer Shortcuts

Keyboard Shortcut	Function
UP ARROW	Select previous take item
DOWN ARROW	Select next take item
CTRL + UP ARROW	Move selected take item up the list
CTRL + DOWN ARROW	Move selected take item down the list
HOME	Select first take item
END	Select last take item
CTRL + F*n* KEY	Remove selected take item from the framebuffer represented by the F*n* key
NUMPAD *	Scroll the Sequencer list to the currently focused item and, if applicable, expand the group containing the focused item. Requires the Fast Recall button to be enabled

Clip Browser

Keyboard Shortcut	Function
ALT + **Q**	Enable Quick Find
ESC	Clear Quick Find
ENTER	Cue/Play when Fast Recall is enabled.

Server Channels

Keyboard Shortcut	Function
ALT + **#**	Select a Server Channel number as the focused Server Channel.

Notes:

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