RossTalk / Smart GPI on XPression

GPI (General Purpose Interface) is a method by which electronic pulses from one device, such as a vision mixer, are used to trigger functions on another device, such as XPression.

The GPIs are supported during playback of XPression sequences and allow the user to play templates to air without using a full PC keyboard.

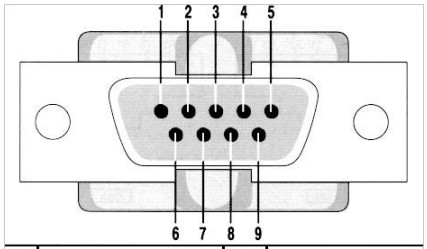
XPression supports two types of GPIs:

- Advance-next – contact-closure GPI
- Smart GPI / RossTalk – string based commands

XPression supports GPI triggers through an RS232 connector. The trigger is a simple contact-closure, which triggers the next event in the currently loaded sequence.

XPression offers two GPI options on a 9 pin D-SUB RS232 connector:

- GPI 1 – "Data Set Ready" pin 6 and 7
- GPI 2 – "Clear To Send" pin 8 and 7



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		

To create an RS232 based GPI trigger, create a device that short-circuits either pin 8-7 or 6-7 on the 9 PIN D-SUB Female connector.

★Do not add any additional power to the circuit, as that will damage the RS232 port.

Some turnkey XPression chassis' may not have a standard DB9 serial port. If this is the case then a USB Serial dongle may be used to provide one. Some USB Serial dongles may not properly support the RTS/CTS lines, therefore we recommend the one supplied Ross Video (contact Ross Video for more information).

Some chassis' may have a serial port in the form of an RJ45 connector. If this is the case, the pinouts will be different from the above, however it is still the DSR/RTS pins or the CTS/RTS pins that should be shorted. Consult the manual for the correct pinouts for your serial port.

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 might also cause this problem. If the connection is noisy, it might generate multiple triggers causing the sequence to advance by 2 or 3 events at a time. In the **Hardware GPI** configuration, it is possible to set a **Debounce Time**, which is the amount of time in milliseconds, XPression will wait before acting upon a second GPI trigger.

Phone: +1 613-686-1557 • Technical Support: +1-833-859-0499 (North America) • +800 3540 3545 (Int'l) • 1 300 007 677 (Australia) • +91-22-5016-6177 (India) • 3500DR-513 • October 2026 © 2026 Ross Video Limited. Ross® and any related marks are trademarks or registered trademarks of Ross Video Limited. All other trademarks are the property of their respective companies. PATENTS ISSUED and PENDING. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, mechanical, photocopying, recording or otherwise, without the prior written permission of Ross Video. While every precaution has been taken in the preparation of this document, Ross Video assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein.

Enabling GPI over RS232 on XPression

To enable GPI over RS232 on XPression:

1. From the **Edit** menu, select **Hardware Setup**.

   The **Hardware Setup** dialog opens.
2. Select the **GPI / Tally Boards** tab.
3. Select **Add**.

   The **Add New GPI Board** dialog opens.
4. From the **Brand** list, select **Serial GPI (CTS/DSR)**.

   The **Serial GPI Setup** dialog opens.
5. In the **RS232 GPI Settings** section, from the **State** drop-down, select **Enabled**.
6. From the **Port** drop-down, select the **Communication** port that receives RS232 GPI signals.
7. In the **Debounce Time (ms)** field, enter or select the amount of milliseconds between sequential GPI pulses.

   A value of around 50-100 milliseconds should be sufficient for filtering out any noise during the GPI trigger.
8. Select **OK**.

   The **Serial GPI Setup** dialog closes and the configuration appears in the **GPI / Tally Boards** tab list.

   XPression will now accept GPI triggers when a sequence is loaded and will advance through the playlist.

25-Pin GPIO Port (12 In/12 Out)

The 25-pin GPIO port is supported in software version 3.2 or later and is only available in Turnkey systems.

Limited support was available in version 3.1 but it could only be accessed through external .NET API applications.

The pinout for the 25-pin GPIO port is as follows:

1 – GND	14 – GPI OUT 12
2 – GPI IN 12	15 – GPI OUT 11
3 – GPI IN 11	16 – GPI OUT 10
4 – GPI IN 10	17 – GPI OUT 9
5 – GPI IN 9	18 – GPI OUT 8
6 – GPI IN 8	19 – GPI OUT 7
7 – GPI IN 7	20 – GPI OUT 6
8 – GPI IN 6	21 – GPI OUT 5
9 – GPI IN 5	22 – GPI OUT 4
10 – GPI IN 4	23 – GPI OUT 3
11 – GPI IN 3	24 – GPI OUT 2
12 – GPI IN 2	25 – GPI OUT 1
13 – GPI IN 1	

To configure the 25 pin GPIO port:

1. From the **Edit** menu, select **Hardware Setup**.

   The **Hardware Setup** dialog opens.
2. In the **GPI / Tally Boards** tab, select **Add**.

   The **Add New GPI Board** dialog opens.
3. From the **Brand** drop-down, select **Adrienne TC/GPIO Card**.

   There are no required options to configure.

   The 25-pin GPIO port can be accessed through .NET applications or by configuring it to trigger functions in the **Keyboard/GPI Mapping** feature.

Smart GPI / RossTalk

Smart GPI / RossTalk allows the user to send **Take IDs** as part of the trigger. Smart GPI / RossTalk also allows the user to recall templates in any desired order, in contrast to the Advance-next GPI, which airs templates in sequence.

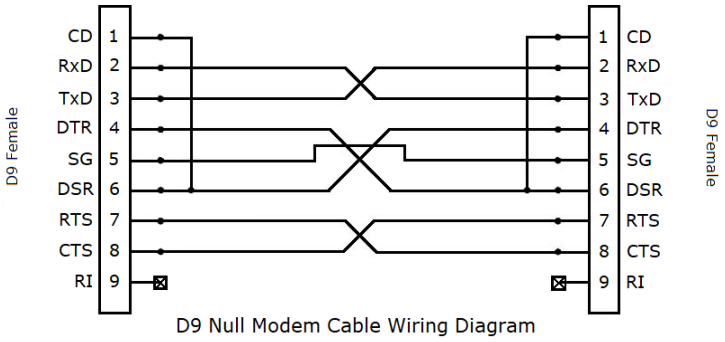
Each command should be terminated by a Carriage Return and Line Feed (CR/LF).

★When using RossTalk with Tessera, all commands that include framebuffer parameters must include a value. However, since Tessera does not use framebuffers, the framebuffer value will be ignored.

XPression Smart GPI / RossTalk is supported on both RS232 and TCP/IP.

On a serial connection Smart GPI / RossTalk utilizes standard RS232 communication.

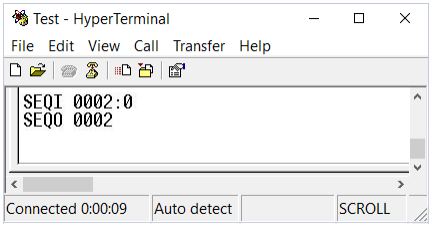
If the transmitting device uses standard RS232 pinouts, then a NULL modem will be required between the transmitting device and XPression.



D9 Null Modem Cable Wiring Diagram

On TCP/IP Smart GPI / RossTalk the communication is sent on a user-definable IP port.

Windows HyperTerminal is a good tool for testing the communication for both RS232 and TCP/IP-based Smart GPI / RossTalk GPIs.



When using HyperTerminal to send Smart GPI / RossTalk commands, it should be configured to send a Carriage Return/Line Feed (CR/LF) pair when the **Enter** key is pressed.

To configure HyperTerminal to send a CR/LF pair:

1. Select **File > Properties > Settings > ASCII Setup**.
2. Then select the **Send line ends with line feeds** checkbox.

Configuring Smart GPI / RossTalk in XPression

To enable Smart GPI / RossTalk in XPression:

1. From the **Edit** menu, select **Hardware Setup**.

   The **Hardware Setup** dialog opens.

2. In the **GPI / Tally Boards** tab, select **Add**.

   The **Add New GPI Board** dialog opens.

3. From the **Brand** drop-down, select **Smart GPI / RossTalk** and select **OK**.

   The **Smart GPI / RossTalk Setup** dialog opens.

4. In the **Settings** section, from the **State** drop-down, select **Enabled**.

   Select **Disabled** to turn off **Smart GPI / RossTalk**.

5. Select a **Mode** for the Smart GPI / RossTalk:

   Serial RS232 — select to use **RS232** to send Smart GPI 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.

6. Configure the selected **GPI mode**:

   Serial RS232:

   a. From the **Port** drop-down, select the communication port that receives GPI signals.

   b. From the **Baudrate** drop-down, select the communication speed for GPI signals.

   c. From the **Data Bits** drop-down, select the number of bits used to represent one character of data for GPI signals.

   d. From the **Parity** drop-down, select the method used to check for lost data in a GPI signal.

   e. From the **Stop Bits** drop-down, select the number of bits used to indicate the end of a byte in a GPI signal.

   f. From the **Flow Control** drop-down, select the data transmission rate controller for a GPI signal.

   When using Smart GPI / RossTalk GPIs, 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 and UDP:

a. In the **Incoming Network Settings** section, use the **TCP/UDP Port** field to enter or select the communication port that receives GPI signals.

b. In the **Outgoing Network Settings** section, use the **Hostname** field to enter the host name of a remote device that is to receive RossTalk messages.

c. In the **TCP/UDP Port** field, enter or select the communication port that receives the signals.

7. Select **OK**.

The Smart GPI / RossTalk is displayed in the **GPI Board** list.

XPression Smart GPI / RossTalk Commands

XPression Smart GPI / RossTalk supports the following commands:

- **CHANFOCUSSTORY [channel]:[RoID]:[StoryID]** — set **Remote Sequencer** focus to a specified story in a specified channel.
- **CLFB [buffer]** — clear the framebuffer specified by the buffer ID.

  To clear the first framebuffer, the command would be: `CLFB 0000`.
- **CLFB [buffer]:[layer]** — clear a layer on the framebuffer.

  To clear layer 2 on the first framebuffer, the command would be: `CLFB 0000:2`.
- **CLRA** — clear all framebuffers.
- **CUE [takeid]:[buffer]:[layer]** — cue a take item on a specified layer of a framebuffer. If no parameters are indicated, the focused take item is cued.
- **DATALINQKEY [takeid]:[key]:[value]** — set the value of a specified **DataLinq Key** for a specified take item.

  For example: `DATALINQKEY 0002:Names:John`.
- **DOWN** — move the current selection in the sequencer to the item below it.
- **FOCUS [takeid]** — set sequencer focus to a specific take item.
- **FOCUSSTORY [RoID]:[StoryID]** — set the Remote Sequencer focus to the first item inside a specified story for a specified rundown.
- **GAMESTATE** — log an item in the **As Run Log** for each game state, such as first half, second half, etc.
- **GPI [gpi num]:[state]** — trigger a simulated GPI input which can be assigned to global functions in the Keyboard/GPI mapping menu. RossTalk/Smart GPI supports up to 64 simulated in-puts.

  An optional state value can be provided to simulate a level-based GPI which can be read from the API. The state value should be either 0 or 1. If not provided, the state shall be assumed to be 1.
- **LAYEROFF [buffer]:[layer]** — if there is a scene on the specific framebuffer/layer, take it offline using its out transition.

  To remove the scene on layer 2 on the first framebuffer, the command would be: `LAYEROFF 0000:2`.
- **LAYEROFF [buffer]:[Layer1]:[layer2]** — remove a range of layers from a scene.

  To remove layers 2 to 6 on framebuffer 0, the command would be: `LAYEROFF 0000:2:6`.
- **NEXT** — read the current selection in the sequencer to air and advance the current selection to the next item.
- **PREVIZCLRA/PREVISCLRA** — clear all previsualization.
- **PREVIZSEND/PREVISSEND [takeid]** — send item to previsualization.
- **PREVIZREMOVE/PREVISREMOVE [takeid]** — remove item from previsualization.
- **READ** — read the current selection in the sequencer to air.

- **REPLACEPVLAYOUT [OutputChannel]:[GRID]** — replace local engine output with the dynamic grid.

  To replace output channel 2 with the dynamic grid, the command would be `REPLACEPVLAYOUT 2:GRID`.

  This can only be used to replace an output that is already assigned to a custom scene or the dynamic grid.

- **REPLACEPVLAYOUT [OutputChannel]:[SCENE]:[SceneName]** — replace local engine output with a custom scene.

  To replace output channel 1 with a custom scene called "AnchorWall", the command would be `REPLACEPVLAYOUT 1:SCENE:AnchorWall`.

  This can only be used to replace an output that is already assigned to a custom scene or the dynamic grid.

- **REPLACEPVLAYOUT [PreviewEngineIndex]:[OutputChannel]:[GRID]** — replace remote preview engine output with the dynamic grid.

  To replace the output on channel 1 on preview engine 2 with the dynamic grid, the command would be `REPLACEPVLAYOUT 2:1:GRID`.

- **REPLACEPVLAYOUT [PreviewEngineIndex]:[OutputChannel]:SCENE:[SceneName]** — replace the remote preview engine output with a custom scene.

  To replace the output on channel 3 on preview engine 2 with a custom scene called "WeatherPreview", the command would be `REPLACEPVLAYOUT 2:3:SCENE:WeatherPreview`.

- **RESUME [buffer]** — resume all layers on the framebuffer specified by the buffer ID.

  To resume all layers on framebuffer 2, the command would be: `RESUME 0002`.

- **RESUME [buffer]:[layer]** — resume a single layer on the framebuffer specified by the channel.

  To resume the layer 2 on the first framebuffer, the command would be: `RESUME 0000:2`.

  This command can also contain a Tessera source name to resume all layers on that source. For example, `RESUME Ribbon Boards`.

- **ROUTEIPIN <input>:<ip>:<port>[:AUDIO:<audio ip>:<audio port>]** — perform a clean switch on a 2110 IP input. This command is supported on the Matrox DSX IP board with the Pair inputs to allow remote clean switch option enabled.

- **SEQI [takeid]:[layer]** — loads a template to air on the specified layer and the template-defined output framebuffer.

  To air Take ID 0005 on layer 7, the command would be: **SEQI 0005:7**.

- **SEQO [takeid]** — takes the template off air.

  To take **Take ID 0005** off air, the command would be: **SEQO 0005**.

- **SWAP [buffer]** — place all the take items that are currently in the cued state to air on specified framebuffer. If a framebuffer is not specified, all cued take items are taken to air. For example, SWAP 0 takes all the cued take items in framebuffer 1 to air. This command can also be used with the XPression Remote Sequencer to swap all channels.

- **TAKE [takeid]:[buffer]:[layer]** — takes a template to air on the specific framebuffer and layer without moving the sequencer focus to that item.

  To air **Take ID 5** on the first framebuffer layer 7, the command would be: **TAKE 5:0:7**.

- **TEMPLATEDATA [takeid]:[objectname]:[newvalue]** — set the value of a specified object in a specified take item, for example, `TEMPLATEDATA 0002:Text1:John`.
- **UNCUE [takeid]** — uncue a take item that is currently in the cued state.
- **UNCUEALL** — uncue all take items items that are currently in the cued state.
- **UP** — move the current selection in the sequencer to the item above it.
- **UPNEXT [takeid]** — set the preview in the sequencer without moving the focus bar.

The commands are terminated by a **Carriage Return** and **Line Feed** (CR/LF).

Remote Sequencer (2.0) Smart GPI / RossTalk Commands

The Remote Sequencer (2.0) Smart GPI / RossTalk supports the following commands:

- **CHANCUE [chan]** — cue the current selection of a specified channel.
- **CHANDOWN [chan]** — move the current selection in a specified channel to the item below.
- **CHANFOCUSSTORY [channel]:[RoID]:[StoryID]** — set **Remote Sequencer** focus to a specified story in a specified channel.
- **CHANNEXT [chan]** — read the current selection of a specified channel to air and advance the current selection to the next item.
- **CHANREAD [chan]** — read the current selection of a specified channel to air.
- **CHANUP [chan]** — move the current selection in a specified channel to the item above.
- **FOCUSSTORY [RoID]:[StoryID]** — move the current selection to the first item of a specified story in the linear rundown.
- **NEXTSTORY** — move the current selection to the top item of the next story in the linear rundown.
- **PREVSTORY** — move the current selection to the top item of the previous story in the linear rundown.
- **ROFOCUS [roname] —** move the focus to the first take item, in the linear rundown of the specified rundown.

  The `ROFOCUS` command includes the name of the rundown, as it appears in the Remote Sequencer GUI (not the running order ID).

  To move the focus to the first take item in the IP-XE1 rundown, the command would be: `ROFOCUS IP-XE1`.
- **ROTAKE [roname]:[takeid]** — take the specified remote sequencer take item online without moving the focus to that item.

  The `ROTAKE` command includes the name of the rundown, as it appears in the Remote Sequencer GUI (not the running order ID) and the **Take ID** number.

  To take the take item with the **Take ID** 0010 from the **IP-XE1** rundown online, the command would be: `ROTAKE IP-XE1:0010`.

Upgrading from Versions Prior to 3.2

In versions prior to 3.2 the CTS/DSR GPIs could only be used for one action: to take the current sequence item online and advance to the next item. This was configured in the **Hardware Setup** menu on a tab labeled **GPI**. This tab is removed in version 3.2 and later. In order to duplicate this functionality, it is required to perform some additional configuration steps in version 3.2. These steps are now necessary as a result of the additional flexibility that has been added to the entire GPI system.

Replicating the previous behavior of a GPI advancing the Sequencer requires the user to map the GPI to a custom Keyboard/GPI action.

The **Serial GPI** plugin needs to be added to the **GPI Boards** tab (refer to Enabling RS232 CTS/DSR-Based GPIs).

To create a keyboard map:

1. From the **Edit** menu, select **Keyboard / GPI Mapping**.

   The **Keyboard / GPI Mapping** window opens.

2. Select **Save Keyboard Mapping**  to create a new custom keyboard mapping.

   The **Save Keyboard Mapping** dialog opens.

3. In the **Save Keyboard Mapping** dialog, enter a name for the new custom keyboard mapping.

4. Select **OK**.

   The added custom keyboard mapping appears in the **Current Keyboard Map** list.

5. In the **Global Shortcuts** list, right-click on the **Take Next** function in the **Sequencer** tree.

6. If the **Take Next** function is not present in the current keyboard map, use the **Available Global Functions** list to add the function by dragging it into the keyboard map.

   For more information on editing the **Keyboard/GPI** map, please refer to the *XPression User Guide*.