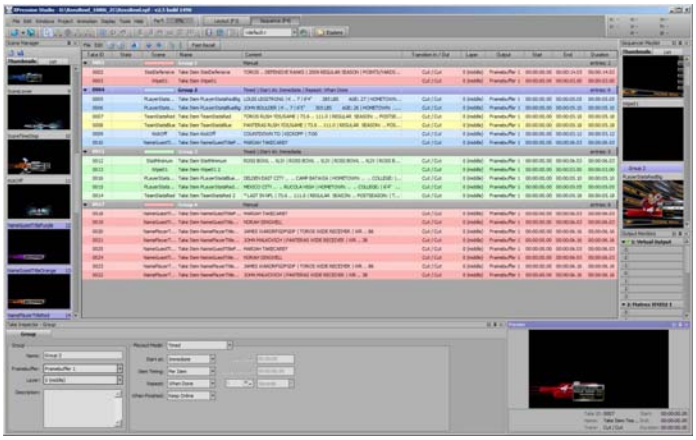
Using GPI On XPression™

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 allows the user to play templates to air without using a full PC keyboard.



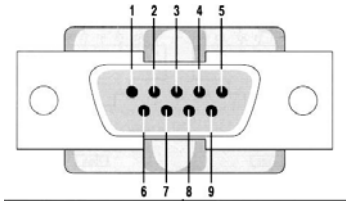
XPression supports two types of GPIs:

- Advance-next – contact-closure GPI
- RossTalk/Smart-GPI – 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 simply create a device that short-circuits either pin 8-7 or 6-7 on the 9 PIN D-SUB Female connector. It is essential that no additional power is added 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 then the pinouts will be different than 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 of your serial port.

Enabling RS232 CTS/DSR-Based GPIs

To enable GPI over RS232 on XPression:

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

   The **Hardware Setup** dialog box opens.

2. Select the **GPI Boards** tab.
3. Click **Add**.

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

4. From the **Brand** list, select **Serial GPI (CTS/DSR)**.

   The **Serial GPI Setup** dialog box opens.

5. In the **RS232 GPI Settings** section, select **Enabled** from the **State** list.
6. Use the **Port** list to select the Communication port that receives RS232 GPI signals.
7. In the **Debounce Time** box, enter or select the amount of milliseconds between sequential GPI pulses.
8. Click **OK**.

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

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

✶ 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 exhibit this problem. If the connection is noisy, it might generate multiple triggers that cause the sequence to advance by two or three events at a time. In the Hardware GPI configuration, it is possible to set a **Debounce Time**. This value, specified in milliseconds, 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.

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

To configure the 25 pin GPIO port:

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

   The **Hardware Setup** dialog box opens.

2. Select the **GPI Boards** tab.

3. Click **Add**.

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

4. From the **Brand** list, 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.

RossTalk / Smart GPI

RossTalk/Smart GPI allows the user to send TakeIDs as part of the trigger. RossTalk/Smart GPI also allows the user to recall templates in any desired order, in contrast to the Advance-next GPI, which airs templates in sequence. It can accept up to 99999 GPIs.

XPression RossTalk/Smart GPI supports the following commands:

- **SEQI [take ID]:[layer ID]** – loads a template to air on the specified layer and the template-defined output channel.

  To air TakeID 0005 on layer 7, the command would look as follows: `SEQI 0005:7`
- **TAKE [take ID]:[buffer ID]:[layer ID]** – takes a template to air on the specific framebuffer and layer without moving the sequencer focus to that item (XPression 3.6 and later).

  To air TakeID 5 on the first framebuffer layer 7 the command would look as follows: `TAKE 5:0:7`
- **SEQO [take ID]** – takes the template off air.

  To take TakeID 0005 on air, the command would look as follows: `SEQO 0005`
- **CLFB [buffer ID]** – clear framebuffer specified by the buffer ID.

  To clear the first framebuffer, the command would look as follows: `CLFB 0000`
- **CLFB [buffer ID]:[layer ID]** – clear a single layer on the framebuffer specified by the buffer ID.

  To clear the layer 2 on the first framebuffer, the command would look as follows: `CLFB 0000:2`
- **RESUME [buffer ID]:[layer ID]** – clear a single layer on the framebuffer specified by the buffer ID. If the layer is not specified, every layer on the channel will resume.

  To resume the layer 2 on the first framebuffer, the command would look as follows: `RESUME 0000:2`
- **CLRA** – clear all framebuffers.
- **READ** – read the current selection in the sequencer to air.
- **NEXT** – read the current selection in the sequencer to air and advance the current selection to the next item.
- **UP** – move the current selection in the sequencer to the item above it.
- **DOWN** – move the current selection in the sequencer to the item below it.
- **FOCUS [take ID]** – set sequencer focus to a specific TakeID.
- **CUE [take ID]:[Channel]:[Layer]** – cue a TakeID in the sequencer. If no parameters are indicated, the focused take item is cued.

- **GPI [gpi number]** – can be used to 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 inputs.
  - › **GPI [gpi number]:[state]** – 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 ID]:[layer ID]** – if there is a scene on the specific framebuffer/layer, take it offline using its "out transition".

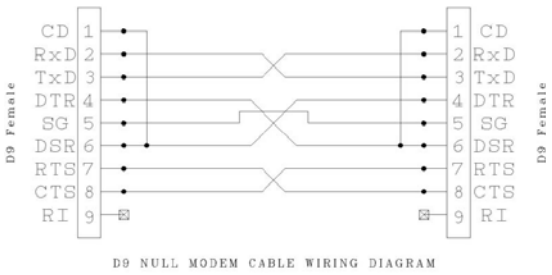
  To remove the scene on layer 2 on the first framebuffer, the command would look as follows:
  `LAYEROFF 0000:2`.
- **UPNEXT** – set the preview in the sequencer without moving the focus bar.

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

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

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

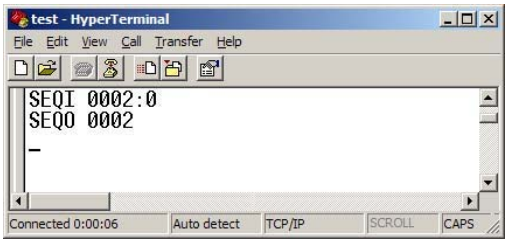
If the transmitting device uses standard RS232 pinouts, then a NULL modem will be required between the transmitting device and XPression.



D9 NULL MODEM CABLE WIRING DIAGRAM

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

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



When using HyperTerminal to send RossTalk/Smart GPI 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 **Properties** > **Settings** > **ASCII Setup**.
2. Select the **Send line ends with line feeds** check box.

Configuring RossTalk / Smart GPI Support

To enable RossTalk / Smart GPI in XPression:

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

   The **Hardware Setup** dialog box opens.
2. Select the **GPI Boards** tab.
3. Click **Add**.

   The **Add New GPI Board** dialog box opens.
4. From the **Brand** list, select **RossTalk/Smart GPI**.
5. Click **OK**.

   The **RossTalk/Smart GPI Setup** dialog box opens.
6. In the **Settings** section, select **Enabled** from the **State** list. Select **Disabled** to turn off RossTalk/Smart GPI.
7. Select a **Mode** for the RossTalk/Smart GPI:
   - **Serial RS232** — select to use RS232 to send Smart GPI signals to XPression.
   - **TCP** — select to use TCP/IP to send RossTalk/Smart GPI signals to XPression.
   - **UDP** — select to use UDP sockets to send RossTalk/Smart GPI signals to XPression.
8. Configure the selected GPI mode:

   Serial RS232:

   a. 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 RossTalk/Smart 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/IP:

a. In the **TCP Port** box, enter or select the communication port that receives GPI signals.

9. Click **OK**.

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

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 the section “Enabling RS232 CTS/DSR-Based GPIs” on page 4-1).

To create a keyboard map:

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

   The **Keyboard / GPI Mapping** window 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.

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

   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***.