1. General

The Enterprise-class Digital Signage software of Signagelive can integrate with Nexmosphere's Xperience platform to create interactive digital signage presentations. This document offers step-by-step instructions for first-time users on how to publish content on a Signagelive player which is triggered based on real-time sensor input.

The information, instructions and examples provided in this document are categorized in 2 different levels:

ESSENTIAL   gain basic skills which enable you to create interactive Nexmosphere/Signagelive content

INTERMEDIATE   expand your skillset and learn how to control Nexmosphere output Elements

The information in this document is created for users who have basic knowledge of Signagelive. If this is not the case and you have never worked with Signagelive before, please read the Introduction and Getting Started section of Signagelive Help center: **https://support.signagelive.com/hc/en-us**

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2. API principles

Nexmosphere controllers have a USB interface which communicates with the Signagelive player. How the Signagelive player and Nexmosphere controller communicate is defined by Nexmosphere's serial API protocol. In this section, the main principles of the API are explained. It is not necessary to fully understand the API structure in order to complete the instructions in this document. To keep it simple, the applicable API commands for each example are explicitly provided. However, in order to fully comprehend how the API works, we recommend reading the API manual, which can be downloaded on the Nexmosphere support documentation page: https://nexmosphere.com/support-documentation.

2.1 - General API logic

The general concept of the API is to offer a flexible command set for both input and output operations which provides full control to the Signagelive player. The Nexmosphere controller acts as a sensor/actuator hub which provides serial output when a specific sensor Element is triggered (for example a pick-up, motion or touch) and provides control over output Elements (for example animated LED strips) via serial input commands.

2.2 - API command structure

The command structure for each command is as follows:
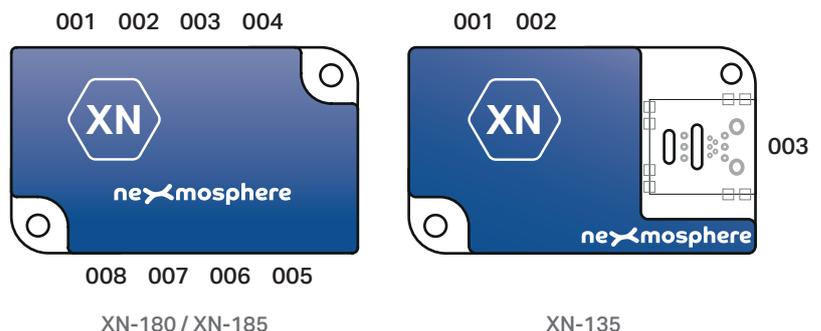
TYPE ADDRESS FORMAT [COMMAND]

TYPE =	type of command	
	X= X-talk command - this type of command is used to receive from / control any Element connected to an X-talk interface	
	G = Generic control command - not in the scope of this document	
	S = System command - not in the scope of this document	
	D = Diagnostic command - not in the scope of this document	
ADDRESS =	channel address to which the command is send	
	value between 0-999	
FORMAT =	format of the command	
	A = short command (number between 0-65535)	
	B = long command (ascii string of 0-30 characters)	
	S = setting command (custom format for each setting)	
[=	start of command	
	fixed	
COMMAND =	the actual command	
	for each function and element the command is specified in the serial API document	
] =	end of command	
	fixed	

2.3 - API addressing and structure

When an Xperience controller sends an API command to the Signagelive player, the address indicates by which Element the command was triggered. Vice versa, when sending an API command from a Signagelive player to an Xperience controller, the address indicates to the Xperience controller to which X-talk Element the command is addressed. Nexmosphere has several ranges of Xperience controllers: XN, XC and XM. For first time users, it is recommended to start with the XN range. Therefore, only XN controllers are used in the examples provided in this document.

XN-Range

The XN-180 and XN-185 both have 8 X-talk interfaces, addressed 1 to 8. As an address in an API command should always consist out of 3 digits, the addresses are numbered 001, 002, and so on. The physical layout of the addresses on the XN-180 and XN-185 controller is indicated in the image on the right. The XN-135 has 3 X-Talk interfaces of which the 3rd is a MicroBay.

001 002 003 004

XN

ne✕mosphere

008 007 006 005

XN-180 / XN-185

001 002

XN

003

ne✕mosphere

XN-135

3 - HARDWARE SETUP

Signagelive can be installed on many different types Digital Media Players, see https://signagelive.com/players. However, integrating Nexmosphere controllers only works for Signagelive when installed on a BrightSign Digital Media Player. The combination of Signagelive (software) and BrightSign (Hardware), is referred to in this document as "Signagelive Player".

A Nexmosphere XN-185 or XN-135 controller can be connected to a Signagelive Player via USB:

USB connection

• When using an XN controller with USB connection such as the XN-185 or XN-135, an USB-A to Micro-USB cable should be used to connect the micro USB interface of the XN-185/XN-135 to the USB-A interface on the Signagelive player. The XN controller is powered via the USB port. **Make sure the XN controller is connected to the USB port before powering up the Signagelive player.**

USB-A to Micro-USB cable
(Power supply and serial communication)

XN-185
(Controller with USB interface)
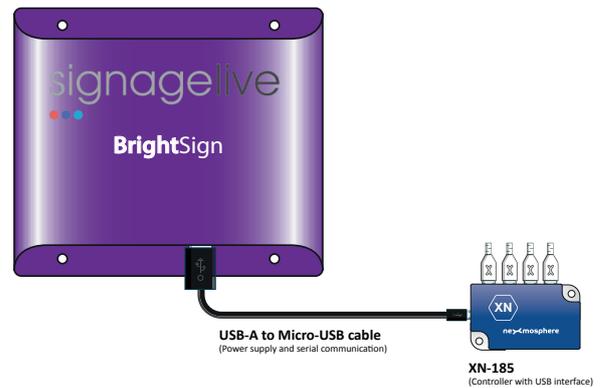
USB connection - Split Cable

• In case the XN-controller and the connected Elements need more power than the USB-A interface of the Signagelive plauer can provide, a split cable with separate power supply should be used.

Split cable to Micro-USB cable
(Split cable for power & data)

USB power supply
(5V/2A)

XN-185
(Controller with USB interface)
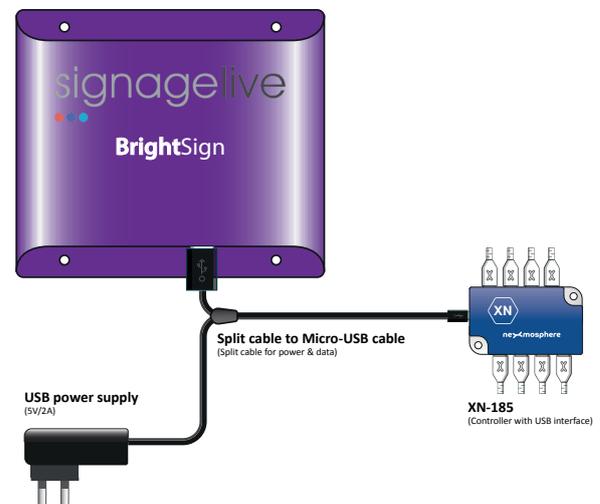
Install Signagelive on your BrightSign
1.   Configure you BrightSign device for Signagelive
       https://support.signagelive.com/hc/en-us/articles/115000280512-Manually-configuring-your-BrightSign-device-
2.   Once ready, make sure the Signagelive player is running and is connected to the internet.

Log in on your Signagelive account
3   Log in on your Signagelive account https://login.signagelive.com/

Configure the Nexmosphere controller in Signagelive
4.   In your Signagelive account, click "Settings"
5.   Click "Serial Devices" in the drop-down menu
6.   Click the large blue "+" button and then click "New Serial Device"
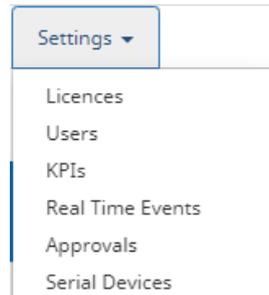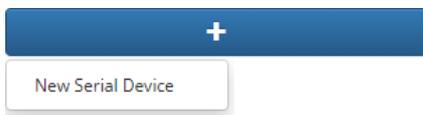
6.   In the Serial Device pop-up window, fill in the following values:

       Name: Nexmosphere controller *(or any other Name you deem fit)*

       Baud rate: 115200   **Data bits:** 8
       Parity: None   **Stop bits:** 1
       Flow control: None   **Protocol:** ASCII
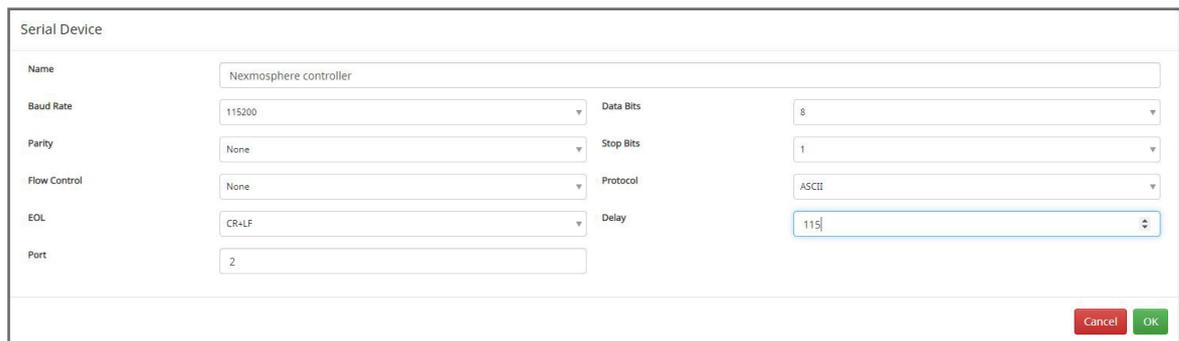   **EOL:** CR+LF   **Delay:** 115
       Port: 2

       Click to OK confirm.

The XN controller sends a serial command to the Signagelive player each time a sensor is triggered (changed sensor value). Embedding Nexmosphere sensor input in Signagelive therefore works for via a so-called Start trigger.

5.1 - Publish content with Start triggers

In Signagelive, "Start triggers" can be used to trigger the start of new content. There are multiple types of Start triggers, such as "Key Press" and "Serial Device". Linking the input of Nexmosphere sensors to content (such as a media asset or playlist), is done in the Publish process of Signagelive. In general, to publish content which starts based on Nexmosphere sensor input, the steps below need to be executed:

0. **Go to the "Publish" section in your Signagelive account**
    Click "Content"
    Select "Publish" in the drop-down menu
    Select the following options:

1. **When do you want this content to play?** As the result of a trigger
    Start trigger: Serial Device   **Stop trigger:** None
    Serial device: Nexmosphere controller
    Start command:
    In this field, you fill in the actual command which the XN controller sends when the desired trigger is detected by one of the connected sensor Elements. For all of Nexmosphere's Elements, every available trigger command is listed in the API manual, which can be downloaded on Nexmosphere's support documentation page: https://nexmosphere.com/support-documentation.
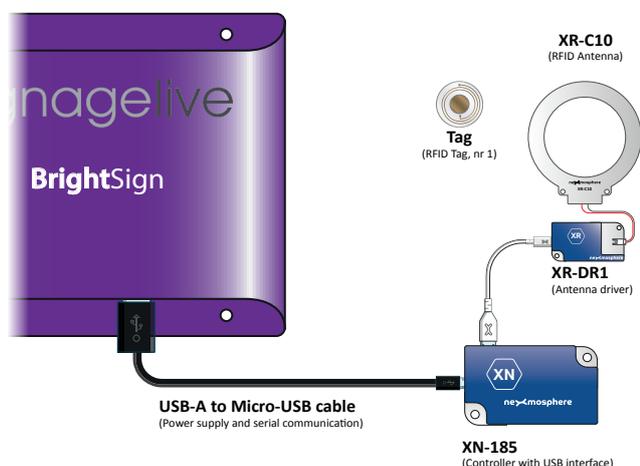   *Example: when a presence sensor connected to X-talk interface 001 detects an object in distance zone 4, the following serial command will be: **X001A[4]***
    Duration: *choose the duration for which you want the content to play*

2. **What do you want to publish?** *Select the content you want to publish*
3. **Which Players do you want to publish to?** *Select the Players you want to publish to*

Example - RFID Start trigger

XR-C10
(RFID Antenna)

Tag
(RFID Tag, nr 1)

XR-DR1
(Antenna driver)

USB-A to Micro-USB cable
(Power supply and serial communication)

XN-185
(Controller with USB interface)

On the following page, a practical step-by-step example is provided on how to implement a Start tigger.
In this specific example:

Hardware Setup

*   XN-185 or XN-135 controller
*   XR-DR1 + antenna + RFID tags
*   Signagelive player

Functionality

*   A default playlist loops continuously.
*   If RFID Tag 1 is picked up, a new playlist is triggered
*   Once the new playlist has ended, the Signagelive player will go back to the default video loop

Step 1 - Create two new playlists
1.   Create a new playlist containing at least 1 image or video and name it "Playlist Default".
2.   Create a new playlist containing at least 1 image or video and name it "Playlist One".

If you are not familiar with how to create a Playlist in Signagelive, please read the information in the following link: https://support.signagelive.com/hc/en-us/sections/115000026871-Playlists-Beginner-Techniques

Step 2 - Publish "Playlist Default"
3.   Go to the Publish section and choose the following options:

       1. When do you want this content to play? When nothing else is scheduled

       2. What do you want to publish? Playlist

           Select Playlist Select "Playlist Default" and click OK

       3. Which Players do you want to publish to? *Select the Players you want to publish to*

4.   Click "Publish to Players"

Step 3 - Publish "Playlist One"
5.   Go to the Publish section and choose the following options:

       1. When do you want this content to play? As the result of a trigger

           Start trigger: Serial Device   **Stop trigger:** None

           Serial device: Nexmosphere controller

           Start command: XR[PU001]

           Duration: Play to the duration of the chosen content

       2. What do you want to publish? Playlist

           Select Playlist Select "Playlist One" and click OK

       3. Which Players do you want to publish to? *Select the Players you want to publish to*

Click "Publish to Players".

In order to set the output or a setting of an Element, a Serial event needs to be sent from the Signagelive player to the XN controller to which the Element is connected. Embedding Nexmosphere control output - for example LED control- into a Signagelive presentation is therefore done via a "Real Time Event".

6.1 - Embed Real Time Events in content

In Signagelive, "Real Time Events" can be implemented to control output on one of the connected Nexmosphere Elements. In order to do create a Real Time Event and link it to a specific Media Asset, the following steps need to be executed:

1. **Create a New Real Time Event**
   Click "Settings", -> select "Real Time Event" in the drop-down menu
   Click the large blue "+" button and then click "Custom Event"
   Fill in a name for your Real Time Event, for example "LED output"
   Click on the tab **Asset Start** to fill in the parameter for a Event which is executed when a new Media Asset starts.
   Click on the tab **Asset Complete** to fill in the parameter for a Event which is executed when a Media Asset ends.
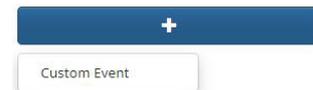
2. **Fill in the parameters Real Time Event**
   Click "Serial", -> fill in the parameters for the Real Time Serial Event:
   Name: *any name you deem fit*

Baud rate: 115200	**Data bits:** 8
Parity: None	**Stop bits:** 1
Flow control: None	**Protocol:** ASCII
EOL: CR+LF	**Delay:** 115
Port: 2	

   Command:
   This is the actual ASCII string which the Signagelive player sends to the XN controller to control the output of the connected Elements. Every available output and setting command for each of Nexmosphere's Elements is listed in the API manual (https://nexmosphere.com/support-documentation). Example: to set the output of an X-Wave LED connected to X-talk interface 001 to solid blue, the serial command to be used is: **X001B[299305]**.

3. **Add the Real Time Event to your Playlist content**
   Click "Content" from the main menu, -> select "Playlists" -> "Create/Edit" from the drop-down menu
   Click on ⋮ of the Media Asset to which you want to add the Real Time Event, -> then select "Properties"
   In the Media Asset Properties window, click the large blue "+" button and then click "From Template"
   Select the Real Time Event yo want to and click OK to confirm

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Example - X-Wave output command with Real Time Event

On the following page, a practical step-by-step example is provided on how to implement a "Real Time Event".

Hardware Setup
- BrightSign player
- XN-185 or XN-135 controller
- XW-L96 animated LED strip

Functionality
- The Signagelive presentation loops a Playlist
- When the playlist starts, a Real Time Event is send to set the X-Wave LED to solid blue.

XW-L96
(animated LED strip)

BrightSign

USB-A to Micro-USB cable
(Power supply and serial communication)

XN-185
(Controller with USB interface)

Step 1 - Create a new playlists

1. Create a new playlist containing 1 image or video. Name the image or video "Content1" and name the "Playlist1".

If you are not familiar with how to create a Playlist in Signagelive, please read the information in the following link: https://support.signagelive.com/hc/en-us/sections/115000026871-Playlists-Beginner-Techniques

Step 2 - Create a new Real Time Event

2. Click "Settings" in the main menu and select "Real Time Event" in the drop-down menu.
3. Click the large blue "+" button and then click "Custom Event".
4. Fill in a name for your Real Time Event, for example "LED output".
5. Click on the tab **Asset Start** to fill in the parameter for an Event which is executed when a new playlist starts.

Step 3 - Fill in the parameters of your new Real Time Event

6. **Name:** LED output Blue

    Baud rate: 115200   **Data bits:** 8

    Parity: None   **Stop bits:** 1

    Flow control: None   **Protocol:** ASCII

    EOL: CR+LF   **Delay:** 115

    Port: 2

    Command: X001B[299305].

Step 4 - Add the Real Time Event to your Playlist content

7. Click "Content" from the main menu and select "Playlists". Click "Create/Edit" from the drop-down menu.
    Click on ⋮ of "Content1" and select "Properties".
    In the Media Asset Properties window, click the large blue "+" button and then click "From Template".
    Select "LED output Blue" and click OK to confirm.

Step 5 - Publish "Playlist One"

8. Go to the Publish section and choose the following options:
    1. **When do you want this content to play?** When nothing else is scheduled
    2. **What do you want to publish?** Playlist
        Select Playlist Select "Playlist1" and click OK
    3. **Which Players do you want to publish to?** *Select the Players you want to publish to*
9. Click "Publish to Players".