

1. General

Intuiface's digital experience software can integrate with Nexmosphere's Xperience platform to create interactive presentations in which real-world sensor input and dynamic (touch) content can be combined into rich and gratifying experiences.

This document offers step-by-step instructions for first-time users on how to compose an Intuiface experience with integrated Nexmosphere sensor-input and control-output.

The information, instructions and examples provided in this document are categorized in 3 different levels:

- ESSENTIAL** gain a basic understanding which enables you to create an interactive Nexmosphere/Intuiface experience
- INTERMEDIATE** expand your skillset and create experiences with dynamic behavior based on sensor input
- ADVANCED** learn how to create presentations with advanced control of Nexmosphere actuator output

The information in this document is created for users who have basic knowledge of Intuiface and Intuiface Composer. If this is not the case and you have never worked with Intuiface before, please follow the Intuiface Beginner tutorials before continuing reading this document: <https://www.intuiface.com/teach-yourself>.

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* will be added in future updates of this document

2. API principles

Nexmosphere controllers have a USB or Serial interface which is used to communicate with the IntuiFace Player. How the IntuiFace player and Nexmosphere controller communicate is defined by Nexmosphere's serial API protocol, named X-Script. 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 scripting control to IntuiFace Composer. 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]

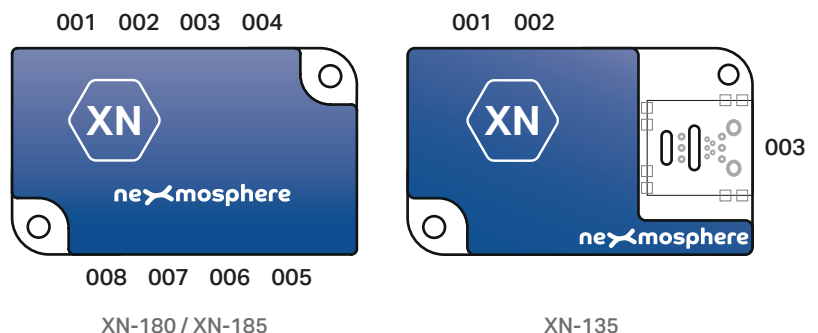
- TYPE =** **type of command**
 X= X-Talk command - this type of command is used to receive from / control any Element connected to an X-Talk interface
 G = Generic control command - not in the scope of this document
 S = System command - not in the scope of this document
 D = Diagnostic command - not 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 IntuiFace player, the address indicates by which Element the command was triggered. Vice versa, when sending an API command from a IntuiFace 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.



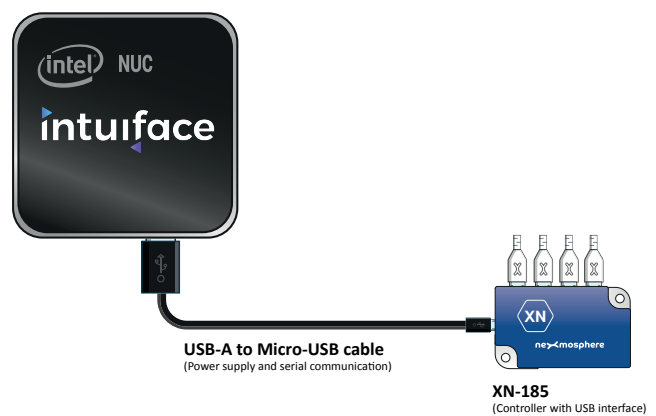
Nexmosphere offers two options for connecting XN controllers to a hardware device: via Serial or USB.

- XN-180 can be connected via a Serial (RS-232) interface
- XN-185 / XN-135 can be connected via a USB interface

Intuiface Player software can be installed on various hardware devices (see <https://www.intuiface.com/validated-hardware>). Nexmosphere controllers can only connect to hardware devices that have an available USB or Serial interface and of which the COM ports are accessible to the Intuiface Player software. All of the methods and examples provided in this document are validated and tested on an Intel NUC with Windows 10 installed. As Intel NUCs do not offer fixed RS-232 serial interfacing as a standard option, this document only covers USB connected XN controllers.

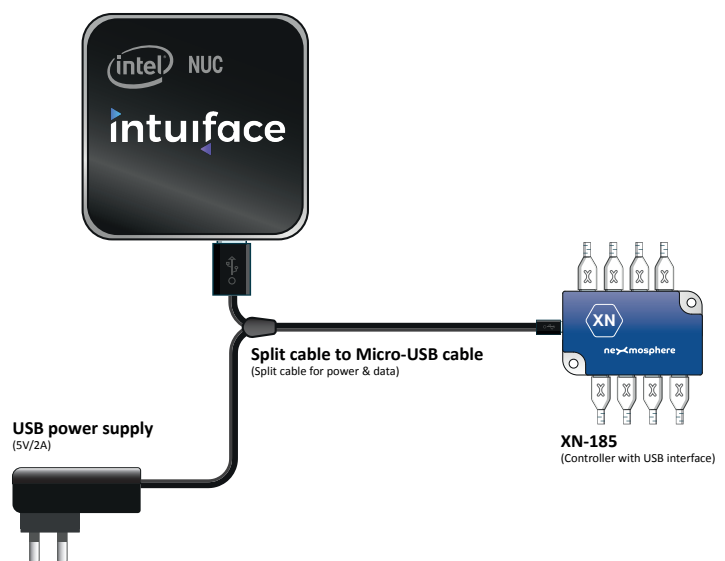
USB connection

- When using an XN controller with a USB connection such as the XN-185 or XN-135, a 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 Intel NUC. The XN controller is powered via the USB port of the Intel NUC.



USB connection - Split Cable

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



Intuiface experiences are built in Intuiface Composer and deployed on hardware devices that have Intuiface Player installed. Intuiface Composer is only available for Windows. Intuiface Player is available for multiple hardware devices and OS's.

4.1 - Intuiface Composer setup

Intuiface Composer is the software in which the digital experience is created and where you can embed Nexmosphere sensor input as a Trigger or Nexmosphere control output as an Action. To get started, please follow the steps below.

Create an Intuiface account

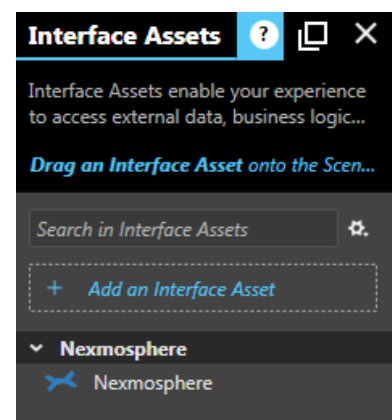
1. If you don't have an Intuiface Account yet, create one via <https://my.intuiface.com/register.aspx>
2. Log in on your Intuiface account.

Install Intuiface Composer software

3. Download and install the latest version of Intuiface Composer via <https://my.intuiface.com/downloads.aspx>

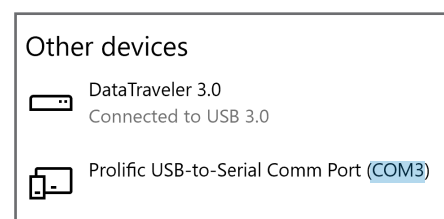
Adding the Nexmosphere Interface Asset to your Intuiface experience

4. Launch Intuiface Composer Version 6.5.1 or later and open your project.
5. Open the Interface Assets panel by pressing ALT+I and select the *Add an Interface Asset* option.
6. Enter "Nexmosphere" (or just a portion of that word) in the search bar. Select "Nexmosphere" and click "Add". The Nexmosphere Interface Asset should now be visible in the Interface Asset Panel.



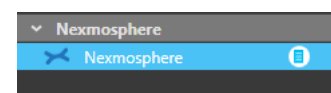
Determine the port name of the connected Nexmosphere controller

7. Connect the Nexmosphere controller to the hardware device on which Intuiface Player is installed.*
**if no Intuiface Player is installed yet, see next page*
8. Go to the Windows 10 "Settings" and select "Devices"
9. Search for the device named "Prolific USB-to-Serial Comm Port".
10. The device name contains the letters "COM", followed by a number, for example "COM3". This is the port name.



Configure the port

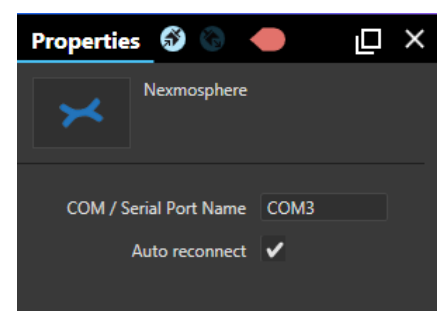
11. Select the Nexmosphere Interfaces Asset by clicking on it once. The asset will be highlighted in blue.
12. Open the Properties window by pressing ALT + P.
13. Fill in the COM / Serial Port Name as determined in step 7-10.
14. Select "Auto reconnect".



Save your presentation

15. Go to "File" -> "Save as" and save your Intuiface project.

You now have an Intuiface project file that you can use as a basis for all your future interactive Intuiface / Nexmosphere experiences.



4.2 - Intuiface Player setup

Intuiface Player is the software installed on the hardware device which runs the interactive experience created in Intuiface Composer. To get started, please follow the steps below.

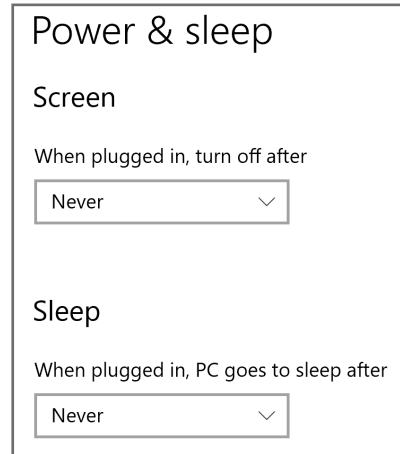
Install Intuiface Player software

1. Log in on your Intuiface account on the hardware device on which your interactive experience will run.
2. Download and install the latest version of Intuiface Player via <https://my.intuiface.com/downloads.aspx>

Configure Power & Sleep settings

3. Go to Windows 10 Settings and select "System".
4. In the left menu select "Power & sleep".
5. In the drop-down menu below Screen settings, select "Never" (turn off).
6. In the drop-down menu below Sleep settings, select "Never" (go to sleep).

You now have an Intuiface player installed on which you can run your interactive experiences.



4.3 - Publish & Deploy experiences

Intuiface experiences can be published from within Intuiface Composer. Once publishing is completed, the experience can be deployed on Intuiface players.

For more information on how to publish and deploy intuiface experiences, please see: <https://support.intuiface.com/hc/en-us/articles/360007431291-Publish-an-experience>

For all practical examples following in this document, it is assumed that the process of publishing and deploying an Intuiface experience is clear to the reader.

The XN controller sends a serial command to the Intuiface player each time a sensor is triggered (changed sensor value). Embedding Nexmosphere sensor-input into an Intuiface Experience is done via "Triggers and Actions".

5.1 - Triggers and Actions

In Intuiface Composer, "Triggers and Actions" can be used to link a specific Trigger (input) to a specific Action (output). There are multiple types of Trigger categories such as "Key presses", "Timers" and "Touch and Gestures". In general, to specify a Trigger for Nexmosphere sensor input, the three steps below need to be executed:

1. Specify Trigger Category

- Select the Nexmosphere interface asset.
- Open the "Triggers and Actions" Window by pressing ALT+T.
- Click "Add a Trigger ... and link it with...". The "Trigger and Actions" panel appears.
- Below "TRIGGER category", "**X-Script command received**" should be selected.



2. Set Trigger parameters

Right next to the "Trigger category", the "Trigger Parameters" are displayed. Here you can indicate in which Scene the Trigger you are working on should be activated. The options are: "**Any scene**", "**Any scene except**" or "**Selected Scenes**". The most suitable option you need depends on the use case. In all examples following in this document, the required trigger parameter will be provided.

3. Add Conditions

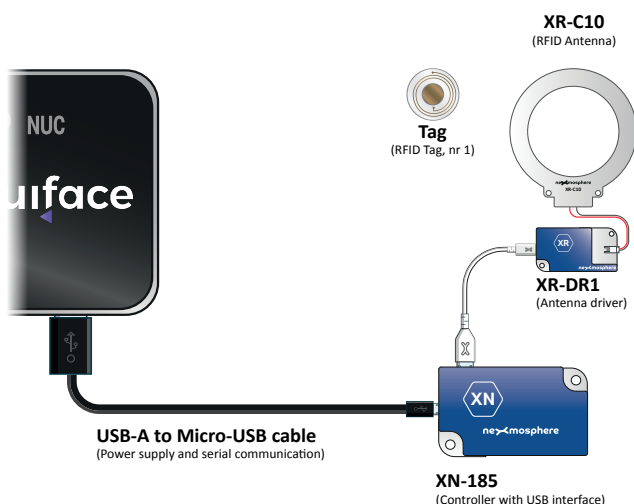
The Condition determines what serial input will trigger an action. In order to add a Condition:

- Click "+ Add a condition".
- Click the drop-down below "Condition 1". The Property binding window appears.
- Select "X-Script command received" as Source item.
- Select "X-Script command (full line)". Close the property window.
- Select "Equals" in the 2nd drop-down.



In the 3rd drop-down, 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 1 detects an object in distance zone 4, the serial command will be: **X001A[4]**

Example - RFID "pick-up" Trigger



On the following page, a practical step-by-step example is provided on how to implement a Nexmosphere RFID trigger in Intuiface. In this specific example:

Hardware Setup

- XN-185 or XN-135 controller
- XR-DR1 + antenna + RFID tags
- Intel NUC - Intuiface Player

Functionality

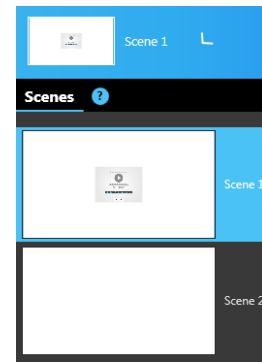
- The Intuiface experience contains 2 Scenes, each containing a full-size video. Default, Scene 1 is looping.
- When RFID tag 1 is picked up, the Intuiface experience switches to Scene 2.
- Then RFID tag 1 is placed back, the Intuiface experience switches back to Scene 1.

Step 1 - Create 2 Scenes

1. Select the "Scene" drop-down menu and click on "Add a Scene".

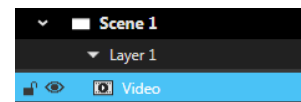
Step 2 - Add a video to each Scene

2. Open the Assets panel by pressing ALT + A.
3. Select Scene 1 and drag the Video Asset on Layer 1 in the Scene structure. **Scene Structure**
4. Select the video asset and resize it to fit the entire canvas.
5. Double click on the Video Asset in the canvas to add content. The "Video Selection" window appears. Add your desired content.
6. Repeat steps 2 to 5 for Scene 2.



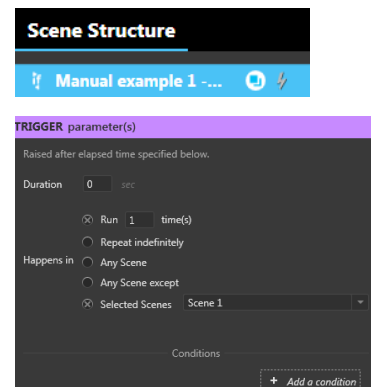
Step 3 - Set the video asset properties

7. Select the Video Asset in Scene 1.
8. In the properties panel, select the Behavior **Behavior** section.
9. Select Autoplay and Play loop .
10. Select the Appearance section.
11. Below the "When stopped" section, change Time to 0m and 0s **0 m 0 s**.
12. In the "Controls" section, unselect "Show controls" .
13. Double click on the Video Asset in the canvas to add content. The "Video Selection" window appears. Add your desired content.
14. Repeat steps 8 to 12 for Scene 2.



Step 4 - Connect with the Nexmosphere controller

15. In "Scene Structure", select the <Presentation name>.
16. In the "Triggers and Actions" window click "Add a Trigger ...".
17. Select "Timers" **Timers** and "Timer has elapsed".
18. Make sure the Trigger Parameters are set as shown on the right.
19. Click on the "THEN" input field. **Select an action below**
20. Below "Action target", select the Nexmosphere Interface Asset.
21. In the "Action category" section, select "Nexmosphere".
22. In the "Action" section, select "Connect the Nexmosphere device".
23. Close the "Triggers and Action" window.




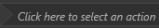



Step 5 - Add a Nexmosphere RFID "pick up" Trigger

24. Select the Nexmosphere asset **Nexmosphere** and Click "Add a Trigger ... and link it with...".
25. In the "Triggers and Actions" window, select "X-Script commandreceived".
26. For "Happens in", select "Selected Scenes", and select only Scene 1.
27. Click "+ Add a condition".
28. Click the drop-down below "Condition 1" and Select "X-Script command received" as Source item.
29. Select "X-Script command (full line)". Close the property window.
30. Select "Equals" in the 2nd drop-down and fill in **XR[PU001]** **Equals** **XR[PU001]**
31. Click on the "THEN" input field. **Click here to select an action**
32. Below "Action target", select "Scene-to-Scene Navigation". **Scene-to-Scene Navigation**
33. In the "Action" section, select "Go to Scene".
34. In the "Action parameters" section, select "Scene 2" as Target. Select "No animation" as Transition.
35. Close the "Triggers and Action" window.

Note that the serial input **XR[PU001]** is the API command which is sent from the XN controller to the Intuiface Player when RFID tag 1 is picked up.

Step 6 - Add a Nexmosphere RFID "place back" Trigger

36. Select the Nexmosphere asset  and Click "Add a Trigger ... and link it with...".
37. In the "Triggers and Actions" window, select "X-Script commandreceived".
38. For "Happens in", select "Selected Scenes", and select only Scene 2.
39. Click "+ Add a condition".
40. Click the drop-down below "Condition 1" and Select "X-Script command received" as Source item.
41. Select "X-Script command (full line)". Close the property window.
42. Select "Equals" in the 2nd drop-down and fill in **XR[PB001]**  
43. Click on the "THEN" input field: 
44. Below "Action target", select "Scene-to-Scene Navigation". 
45. In the "Action" section, select "Go to Scene".
46. In the "Action parameters" section, select "Scene 1" as Target. Select "No animation" as Transition.
47. Close the "Triggers and Action" window.

Note that the serial input **XR[PB001]** is the API command which is sent from the XN controller to the Intuiface Player when RFID tag 1 is placed back

The presentation can now be published and tested on the Intuiface player.