



# Multi Monitor Setup



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# 1 General Considerations

Since BatchXpert is based on the SCADA system VisXpert from the company MLogics it supports the same multi monitor features as the underlying SCADA system.

An Multi monitor system can be installed in any automation project that is using BatchXpert. This feature is very helpful to extend the Monitoring capabilities of the Operators on an automated factory. One should however consider, that an additional monitor does **NOT** improve the FailSafe capabilities of the plant, since an additional monitor also is connected to the same PC station. If this PC Station fails, both monitors will also be out of order.

To improve the Fail-safe capabilities of the automation system, one should consider an additional PC Station. However it is always recommended to have at least 2 functional PC Stations at any time. This way at least a minimum security can be guaranteed.

# 1 Hardware Requirements

To enable a PC station to support multiple monitors, a multi monitor capable graphics card is required. It does not matter which manufacturer is used as graphics card. Generally speaking, all graphics cards with more than one monitor output are capable of handling multiple monitors.

It is always recommended to use the newest version of the available graphics driver of the graphics card that will be used.

# 2 License Requirements

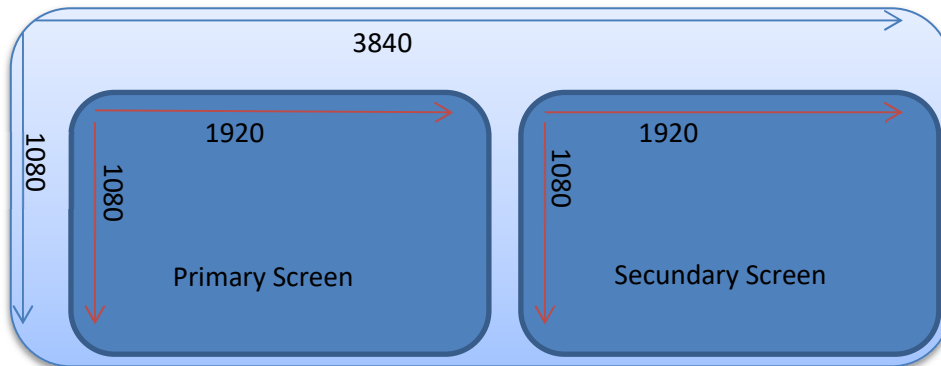
In VisXpert Scada, there are no additional licenses required.

# 3 Adjustment on the Operating System

## 3.1 General

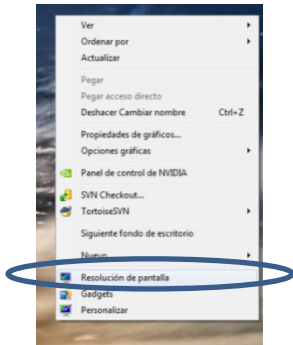
Generally the functionality to “Extend the Desktop” to a second monitor must be selected in the graphic settings dialog of the operating system. The name of this setting and where to adjust can vary depending on the used operation system of the PC-Station

Basically this option extends the primary display monitor by adding the second monitor to the right sided of the screen, and thus basically doubling the horizontal screen resolution. This forms an virtual Screen with the same height but the width of both minitores together. In the below example the second monitor starts at position: 1920, 0.

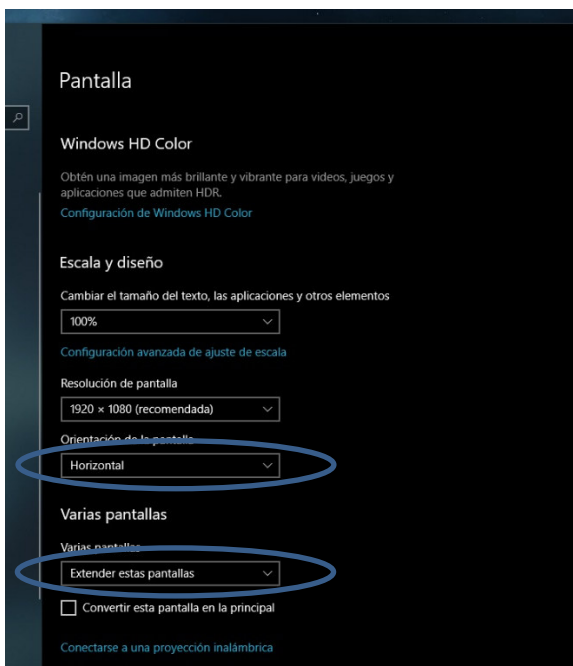


## 3.2 Windows 10

Once the second monitor is connected, one has to right click on the desktop background, to open the desktop options and select “Screen Resolution”.

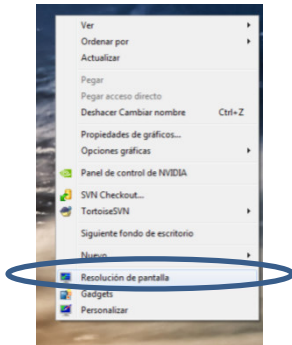


In the following Dialog one need to select “Extend Desktop on the second Screen”

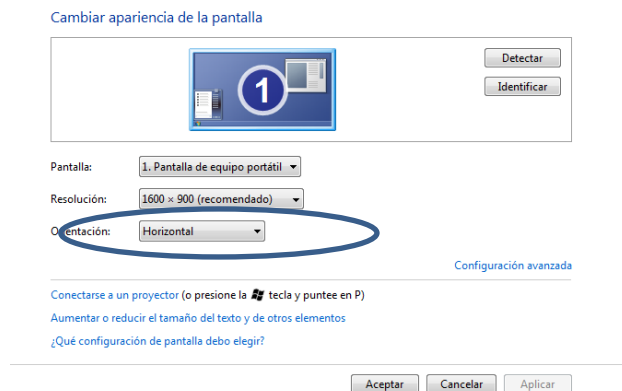


### 3.3 Windows 7

Once the second monitor is connected, one has to right click on the desktop background, to open the desktop options and select “Screen Resolution”.



In the following Dialog one need to select “Extend Desktop on the second Screen”



## 4 Adjustment in VisXpert (using MultiMon)

To enable Multi Monitor support in the BatchXpert system, one has to add the “MultiMon” VisXpert Module to the Module list in the VisXpert Project. The “MultiMon” module is not specific to BatchXpert, and can also be used for other projects. However it is only automatically installed together with BatchXpert 1.6 or higher.

The Requirements for the MultiMon modules are:

- **VisXpert Version 9 or higher.** Multmon is not available on Verion 8 or 8.5
- **BatchXpert Version 1.6.1** or higher.
- **BatchXpert Visu 1.5 or higher.** The reason for this is, that up until Visu 1.4, the VisXpert visualization used an “Tab-based” main menu. This menu shares some common variables, and would not work on both monitores, unless the second monitors HMI is reconfigured in the Graphics editor. On an instructon on how to do this, please refer to Chapter “Adjustment in VisXpert (without MultiMon)”. After the change, it is possible to use the “MultiMon”, even though the advantage is minimal compared to the old method since both HMI files have to be edited.

### 4.1 What does MultiMon do

MultiMon is an Application that start together with all other VisXpert Runtime modules and waits for the configured HMI’s for each monitor to be started up. When it detects one of its HMI’s to be started up, it automatically positions the HMI precisely to the corresponding monitor.

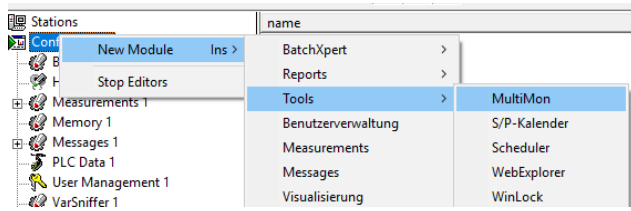
Optionally the application also synchronizes the two HMI’s Projects, so that you can change only one and the other one gets Synchronized automatically.

Also it can handle the appropriate HMI startup depending on the current Monitor count. This is useful to use the same project on Single monitor and multi monitor systems. In that case multiMon will check how many Monitors are connected, and then start up the correct HMI systems.

### 4.2 Add MultiMon to an Project

Adding and activating the MultiMon module is performed the same way as adding any other VisXpert module. You have to open the Aproiate Project, and have Administrator Privileges in the Project in order to add an new module.

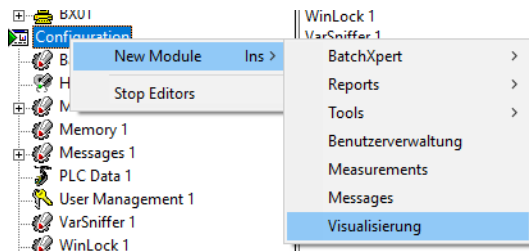
### 4.2.1 Add Module “MultiMon”



Right click on Configuration and add the “MultiMon” tool found under “New Module”->”Tools”. After adding it to the Project, the module can be found in the Configuration section. Also it gets automatically added to the “Runtime

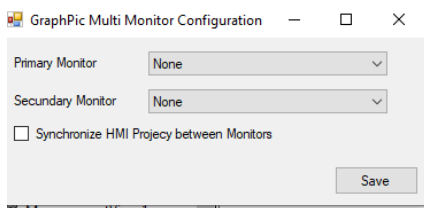
Modules” as well.

### 4.2.2 Add Module “Visualisierung”



To enable a second Visu Runtime, one must add an new “Visualisierung” Module to the Configuration. After adding it to the Configuration, one should change its name apropriatly, such as “HMI2” or such. After that the “MultiMon” Module can be configured.

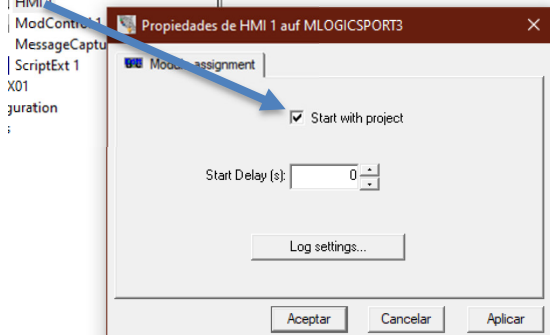
## 4.3 Settings



When opening the configuration by doubleclicking on the MultiMon module icon under the configuration tree, the configuration dialog opens. It allows the selection of the Module that should be started an each monitor. Here the appropriate HMI should be selected for each Monitor.

Furthermore it allows tho activate the “Synchronization” between the two HMI modules configuration. This is usefull when both monitors should execute the same HMI configuration. Before starting the module synchronizes the both selected HMI configurations, and then releases them for Startup.

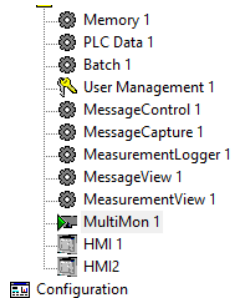
It is also advised to turn on the option “Handle HMI Startup”. In that case the Multi mon will check how many Monitors are actually connected, and then start up only HMI 1 or both, depending on the actual monitor count. This makes it possible to use the same project for Single and Multi monitor stations, without adjustments.



Be advised, that if you use the “Handle HMI Startup” (Recommended) option, then you **MUST** turn off the automatic start of both HMI’s during an station startup, since they will be started by the Multi mon Module. In order to do this, right click on both HMI 1 modules and deactivate te Startup ticket for both of them.



## 4.4 Runtime



In order for the Synchronization process to work properly, the MultiMon module should be started before both of the HMI modules are being started. Otherwise the HMI starts up, before the VisXperts can be synchronized and the HMI will continue to show the old configuration until restarted again.

## 5 Adjustment in VisXpert (Without MultiMon)

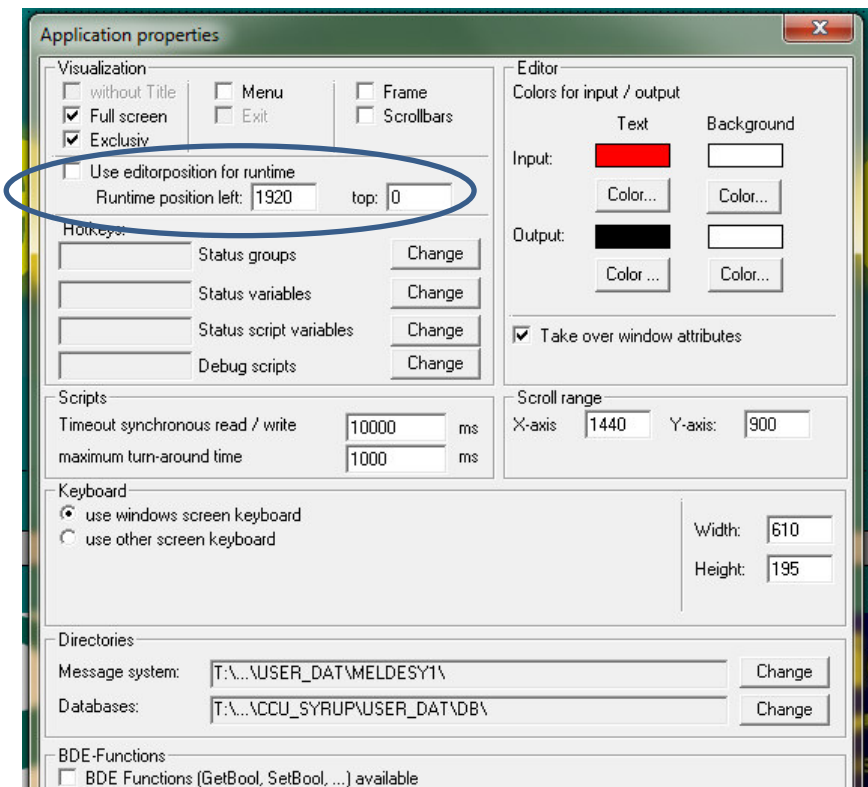
It should be noted, that this method is not Recommended anymore and the “MultiMon” VisXpert module should be used. Please refer to its Chapter.

VisXpert has the option to execute more than one instance of the “Visualisation” runtime. This runtime is responsible for showing all images to the operator and sending all control actions to the corresponding PLC.

In VisXpert every Visualisation is engineered with an specific Resolution setting. Usually 1920x1080 pixels. To enable multi monitor support, one can add an second visualization module to the project, to configure the data to be shown on the second monitor. Since in Windows the Virtual screen is the sum of the horizontal resolution of both monitors, one can assign the visualisation modules to an specific monitor by setting their startup horizontal position.

If the resolution of both monitors is 1920x1080 the total virtual resolution would be 3840x1080. The second monitor has the starting coordinates of its left upper corner at 0,0 and the second monitor at 1920,0. This means that by setting the left startup position of the Visualisation module of the second monitor to the horizontal width of the first monitor, it will always be shown on the second monitor.

The corresponding setting can be done in the Graphics Editor of the Visualisation module. In the Upper Menu Bar under “Properties”-“Application”. In the following dialog the following settings should be chosen for the second monitor:

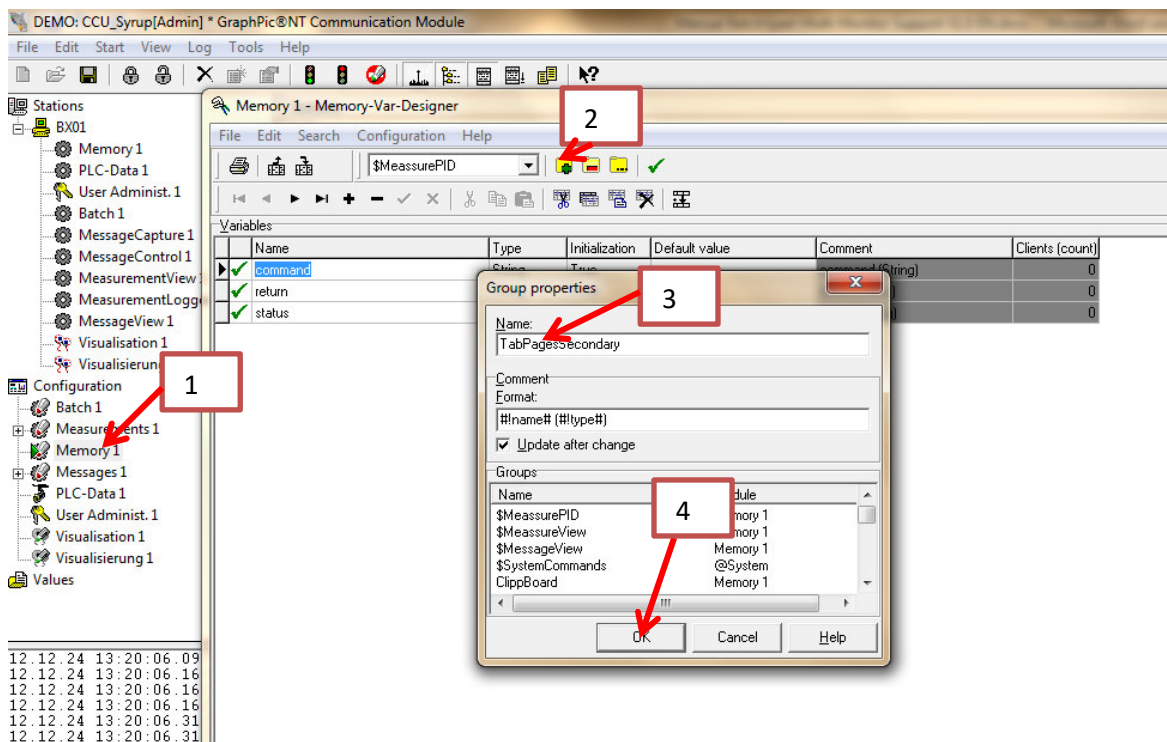


“use Editorposition for runtime” should be deactivated, and the “runtime Position left” should be set to the horizontal resolution of the primary monitor (usually 1920). The Same setting should be adjusted to 0 on the primary monitor. Also the Option Exclusive must be deactivated on both the primary AND the secondary monitor, because this would prevent the second monitor to show its process images

## 5.1 Remapping of Variables

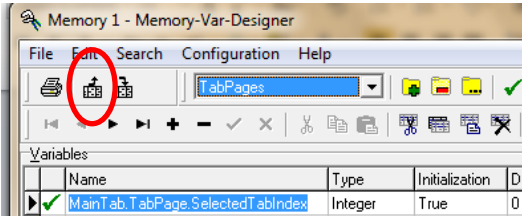
In the BatchXpert System each TabPage control, such as the tabpage on the startwindow of the system, have their own variables. If both runtimes, the runtime of the primary and the secondary runtime use the same variables, they would both always show the same tab. To avoid this behaviour, one has to copy and remap the TabPage variables for the secondary runtime in order to have an independent behaviour for both runtimes.

The best way to accomplish this is, to open the Memory configuration editor and create a new Variable Group, “TabPageSecondary”.

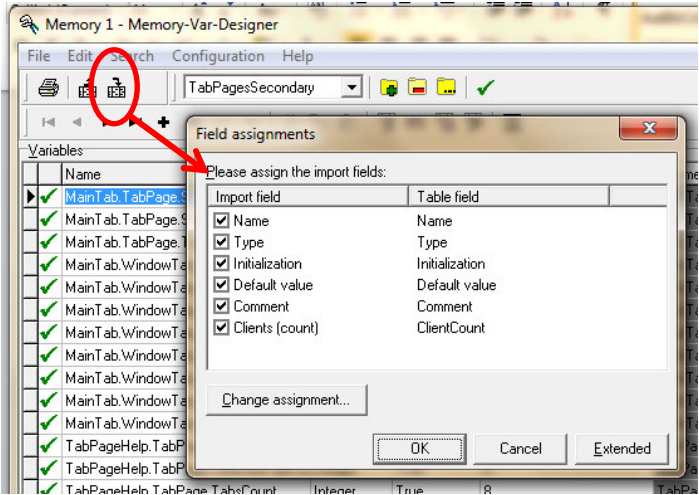


After the new group is created, one must copy the content of the variables of the group “TabPage” to the new Group “TabPageSecondary”. This can be accomplished by exporting the original variables, and importing them into the newly created group.

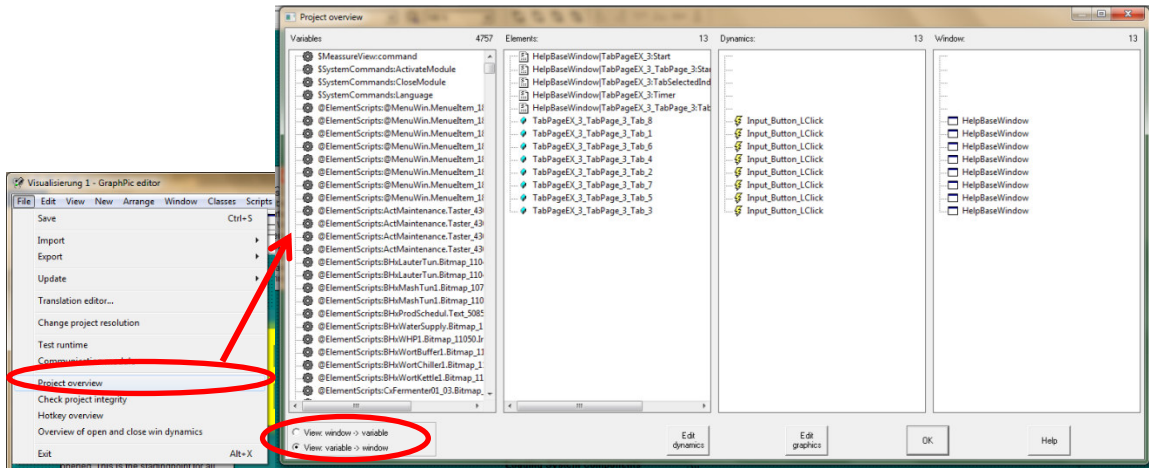
To export the Variables, select the “TabPage” group in the same memory editor, and click the export button and select a file to export the Variables



Then Select the new “TabPageSecondary” Group form the drop down list, and click the import button. Select the same file, that was previously exported, to import all variables, and their configuration.

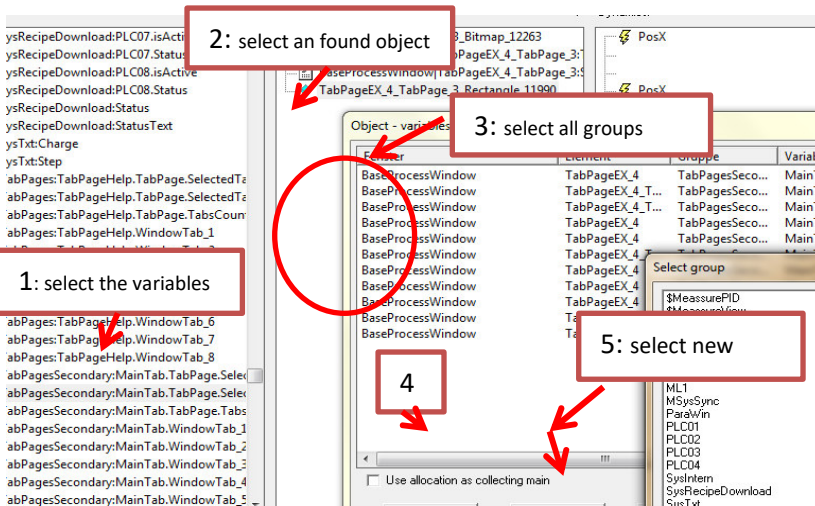


Now all references that point to the Group "TabPages" must be redirected to point to the new group "TabPages Secondary". In order to do this, startup the Visualisation Editor of the secondary visu runtime and select "File->Project Overview" in the following dialog select "view Variable->Window" on the bottom.



Now all variables are sorted by their Group and Variable name. Now search for all occurrences of "TabPages:" in the left most list, and select the variable when found.

In the second list, there will be all occurrences of the selected Variable. Select an object from the list, and click "Edit Dynamics" to open the dynamics dialog. In the upcoming dialog, select all groups, and click "Select Group". In the the third dialog select the new created group "TabPagesSecondary". Repeat the process for all variables found in the Project overview window at step 1.



## 5.2 Best Practices and how to do

The easiest way to build an multi monitor system is, when the engineering takes place on the primary visualization system only. When the Engineering is finished, one can copy the complete content of the primary visualization folder, to the secondary ones, and Replace their variables according the description.