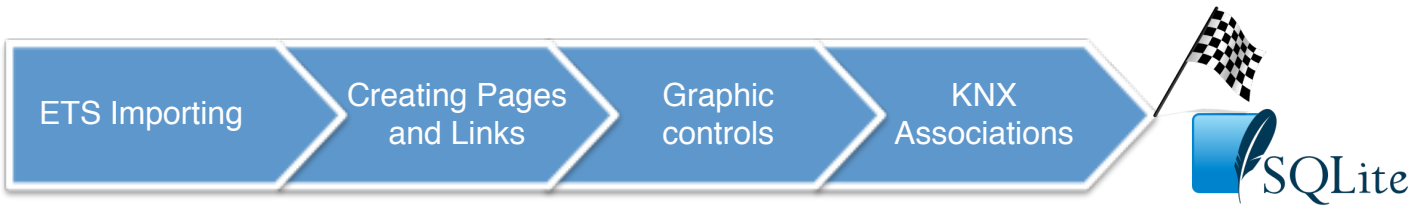
Quick Start Guide

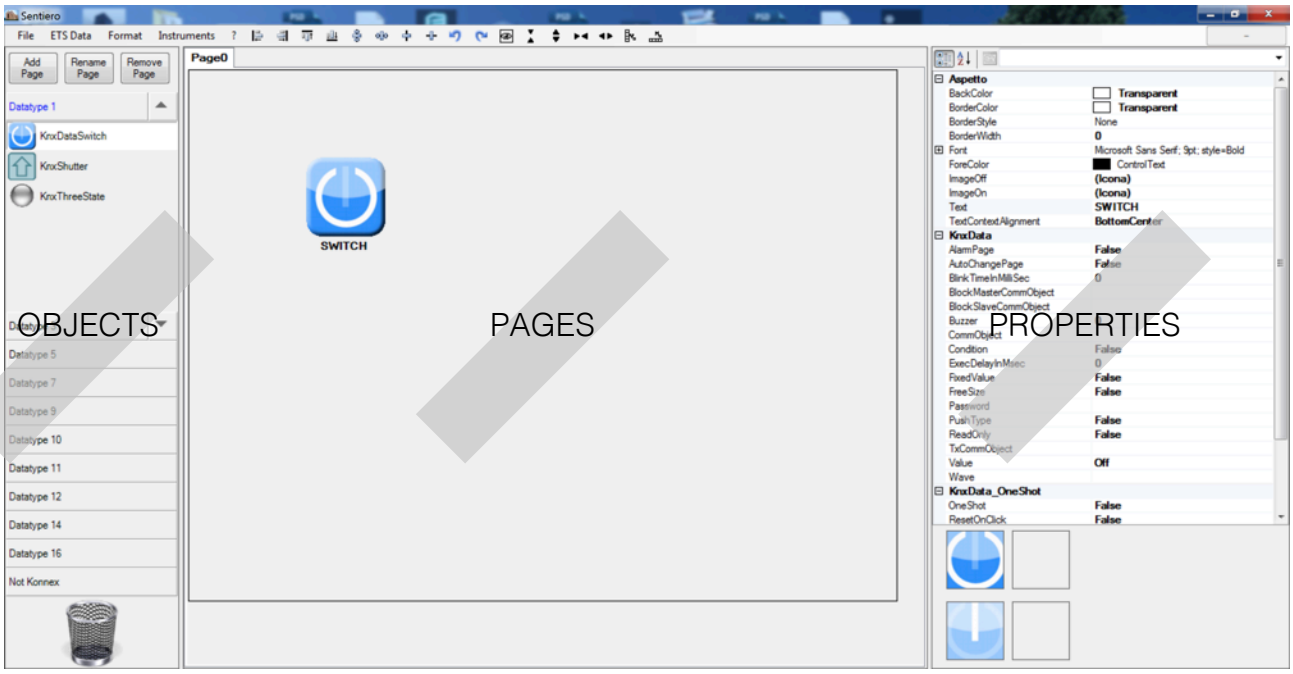
The programming of a Touch Panel consists of the creation of a synoptic (graphic) display, i.e. a navigation tool for Home information, complete with all of the necessary controls to control the system.
Blumotix supplies a software tool to facilitate the customisation of the graphic display, called Sentiero ("Pathway") to install on your PC and with which to create graphic pages, links and controls, according to the indications and the expectations coming from each end customer.
Sentiero is a highly versatile tool because it allows environments to be designed freely, without any restrictions in terms of number of pages, controls or viewable information, in order to obtain a truly user-friendly interface.

The purpose of this Quick Start Guide is to help the user quickly familiarise with the basic, essential steps that lead to the creation of a synoptic display.
Slightly more technically, we could say that a graphic display is nothing more than a simple file with the extension SQLITE, created with the Sentiero Tool, and containing a relational Database of all the information needed to represent our user-friendly interface on the Blumotix touch panel.
Let us now analyse the different stages that lead to the creation of this SQLITE file.



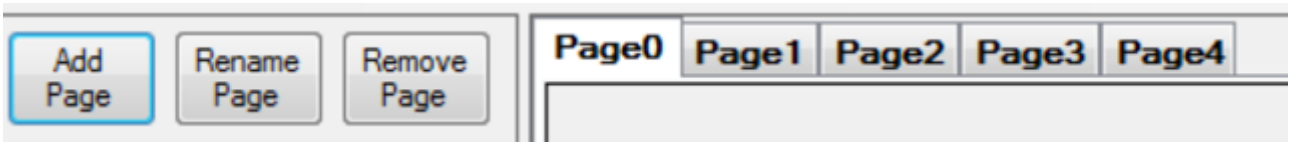
(1) Sentiero: Development Environment

The first thing to do is take a look at the Development Environment offered by the Sentiero software in order to become familiar with the available work tools.



In the centre of the window is the Area intended to show **PAGES** for our graphic display.

The pages are viewed as superimposed sheets, which can be selected by clicking on the



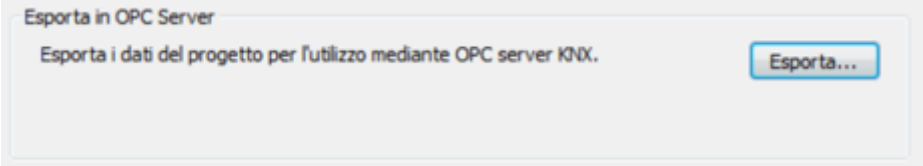
corresponding tabs visible at the top.
It is possible to create a new page by pressing the ADD PAGE control.
It is possible to assign a name to the page by pressing the RENAME PAGE control.
It is possible to delete a page by pressing the REMOVE PAGE control.

On the left side of the window are OBJECTS that can be dragged and dropped into the work area to create controls for our Synoptic display.
These Objects are divided into folders named Datatypes - according to the KNX nomenclature.
Each Datatype identifies the type of data exchanged by a KNX telegram.
There are 1 bit-Datatypes (Datatype 1) to transmit binary controls of the OFF/ON, high/low type,
4-bits datatype (Datatype 3) to adjust light dimming,
1 Byte-Datatypes (Datatype 5) to adjust the percentage value of a variable,
2 Byte-Datatypes (Datatype 9) to read a temperature sensor value etc.
The objects present in the work area can be deleted by dragging them into the Trash can.

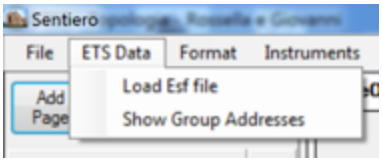
The right side of the screen shows the **PROPERTIES** of the objects.
The Properties can be modified to customise the appearance and operating mode of each Object.
There are editable icons representing the Objects on the screen, their position, the text that describes the type of function, the colours, fonts, etc.
An Object enabled to transmit a control on the KNX bus has as its most important property its action target Group Address.

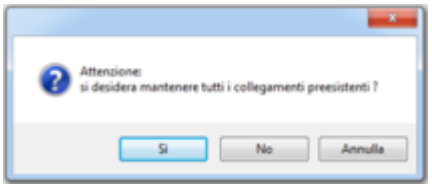
(2) ETS Data Importing

ETS is the application software allowing for KNX system device programming according to the controls and parameters provided by the automation project.
A KNX control corresponds to the transmission of a telegram on the bus, containing a new datum to express the occurrence of an event, i.e. a change in the value of the variable that is shared by a homogeneous group of devices in the field.
For this reason, this control is also known as Group Address - intended as the virtual recipient of the modification notified on the bus.
The list of Group Addresses therefore matches the list of actions that can be performed on the KNX bus.
This list must be exported to Sentiero to make all ETS-programmed functions available.
The Blumotix touch panels can only perform ETS-programmed actions.
To export the list of Group Addresses, complete with their Datatypes, the ETS function named "Export to OPC Server" should be used to generate the data file with the extension ESF.



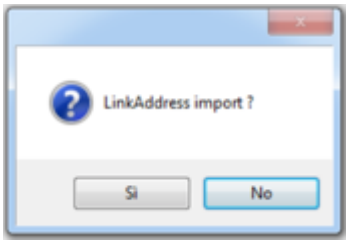
This is the file that should be imported from Sentiero via the function **Load Esf file** in the ETS Data menu.
The procedure begins with choosing an ESF file from within the traditional File System navigation menu available in Windows.
Before starting the importing process, a few basic questions are asked to ensure the best possible efficiency of the List creation process.

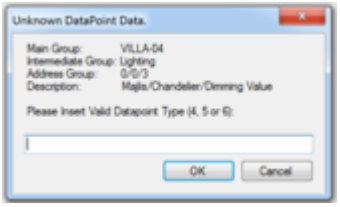




If your project already contains a list of Group Addresses, the software will ask you if you wish to create a new List or update the existing list.
Updating an existing list means to import from ESF only the new, not previously existing Group addresses.
Please note that this action does not include any updating of pre-existing Addresses to Datatypes.

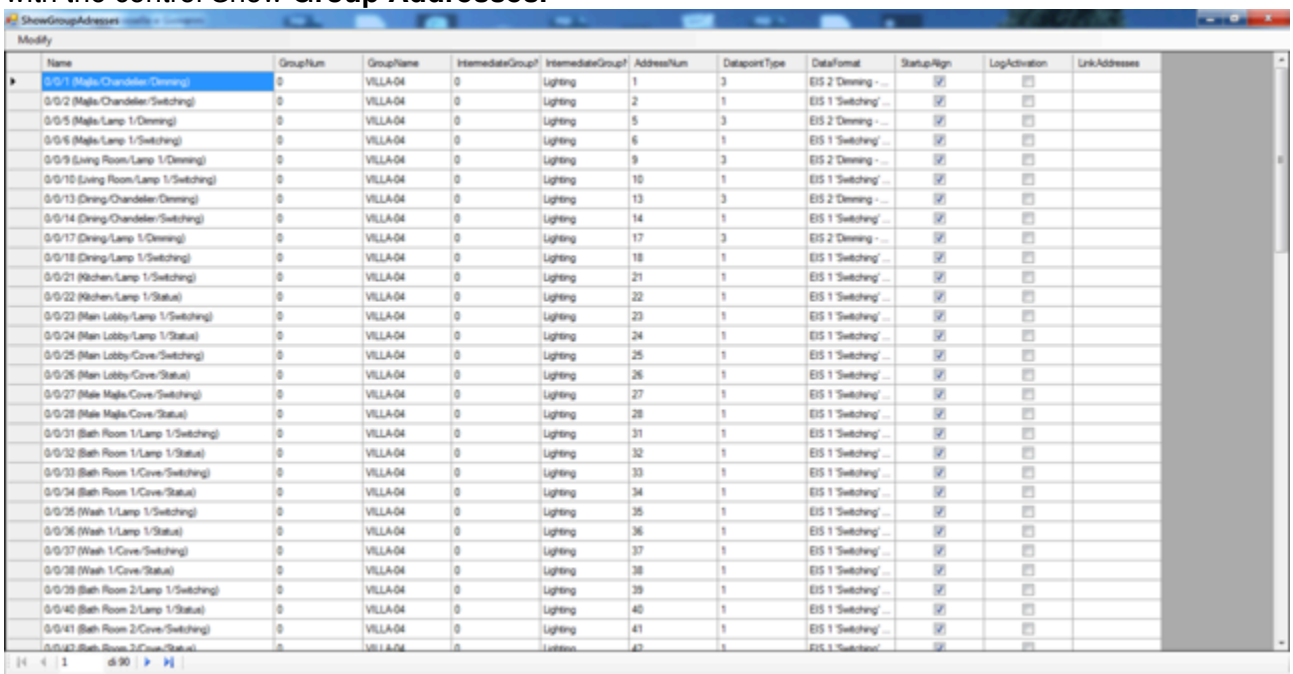
Then, the procedure will require instructions on whether or not to import Link Addresses.
Link Addresses indicate whether a variable is dependent on another Group Address than its own (typically, General Power-off). They are extremely useful when working with a programming routine that does not involve State notification, otherwise, they should not be used.
Dependencies will only show on Group Addresses comprising Communication Objects assigned on first demand, designed to notify a Read (Property S), if any, when that Communication Object is assigned also to another Group Address on second demand. The latter will then be a Link Address of the former.





Finally, more operator action requests can be submitted when the software encounters a Group Address labelled UNCERTAIN.
In this case, the operator is asked to resolve the uncertainty by assigning the correct Datatype to that Group Address.

At the end of the importing procedure it will be possible to check its outcome by opening the List with the control Show **Group Addresses.**



In this table, a column is present named **StartupAlign**, enabled by default.
A confirmation flag on this column indicates that in the data alignment phase, when the touch panel is powered on, a READ function will be controlled for that address, in order to determine its value.

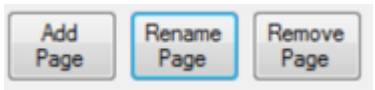
Intuitively, in order to optimise performance, it is advisable not to control non-significant READ functions - e.g. for Group Addresses without any Communication Objects enabled to respond (property R).
It is equally pointless to read the status of a Group Address used as a main switch, because all the many Communication Objects would be sure to respond simultaneously in a misaligned and not significant manner.

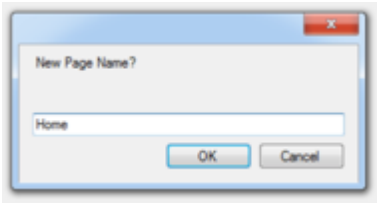
(3) Creating Pages and Links

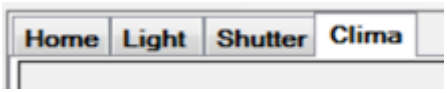
The creation of a new Synoptic display is an operation very similar to the designing of a Web site, the only difference being that the information to navigate is our own home's.
First of all, we must think of what we would like to see in the Home page and above all, which links we would like to use to reach all the available information.
Some users prefer to browse through data by grouping them according to their function, creating links to Lights, Climate control, Shutters etc.; while others prefer to reassign data according to the 'geography' of the house, for example by assigning links to the different areas of a topographic map including the Living room, Bedroom, Bathroom, etc.
The Sentiero tool leaves all users free to implement their preferred solution without introducing any restrictions in terms of number of pages and controls that they wish to implement.

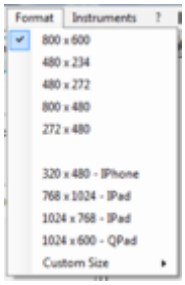
Let us start with a very simple example.
Let us create 4 pages...
Page0 will always be the 'landing' page, in other words, the Home page.

Let's now rename the pages that we have created as Home, Light, Shutter, and Climate ...

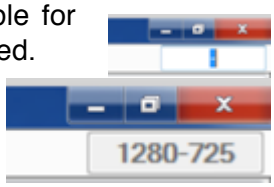




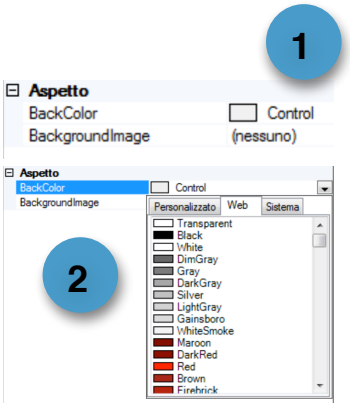




And now, we can personalise them…
First, we should assign to them a Video Resolution suitable for the type of device on which our graphic chart will be displayed.
The BX-T10IP touchscreen computer requires 1280x752 resolution - which can be assigned using the **Format /Custom Size/Set Size control.**
The new value must be set from the right side of the screen by pressing Enter to confirm.



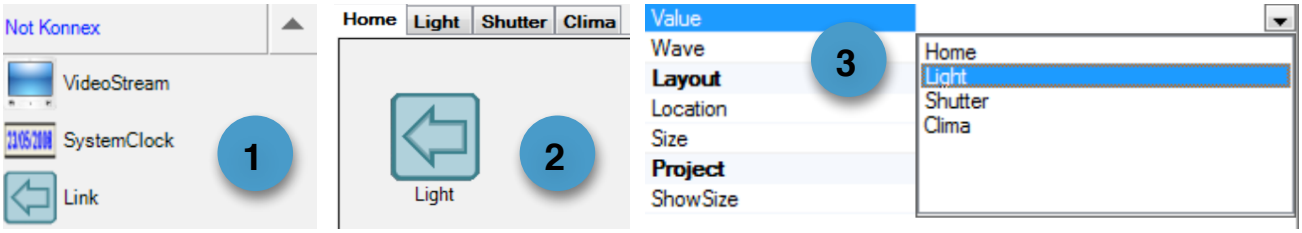
Now we can customise our pages, too.
To do this, we must access **Properties**.
The Properties of any Graphic Object are displayed in the right part of the screen when we select that Object by clicking on it.
To display the Properties of a Page, just select it with the corresponding tab or click on its background.
The Properties of a Page are only two **(1)**:
you can assign a background colour (**Back Color**) or you can upload a background image (**Background Image**).



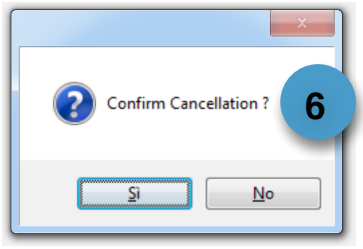
The selection of a Back Color can be performed by choosing a colour from one of the available palettes; generally, it is advisable to use the one named Web **(2)**.

The choice of a Background Image is made by selecting the name of the file containing the desired image. It is advisable to always choose small-sized files, such as JPEG compressed images, in order to minimise the storage space.
As there aren't any other properties to determine the image loading procedure, it is advisable to use images with the same graphic resolution as the video, in order to avoid any unwanted misalignments with respect to Sentiero designs.

We are now ready to add the connecting **Links** between pages.
Always remember that, for each page input Link, there must be at least one output Link, to prevent the risk of becoming locked in that page.



The links are controls contained in the Not Konnex folder **(1).**
Let's drag our first Link into our Home Page **(2).**
We should ensure that this control enables the user to jump to the Lights page by correctly assigning the **Value (3)** property.
Finally, let's assign the Lights name by defining the **Text (4)** property.
If we happen no to like the icon assigned by default, we can replace it by changing the **Icon** property.
A different icon can be assigned by selecting a new .ICO or .PNG file from the File System.
If the selection is aborted the system will ask if you wish to delete the pre-assigned entry, leaving the control with text only **(5)**.



The text-only option can be graphically appealing **(1)** and can be improved with some finishing touches like in the picture opposite.

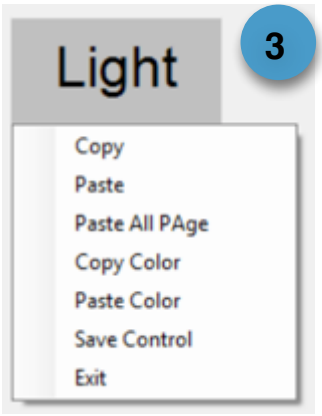
To obtain this effect we have changed the properties of the Link **(2) by selecting** *Back Color = Silver* and changing *Font=Arial 24pt.*.
Then, we enabled the *Freesize = True* function
and assigned to the control *Size = (120; 60).*

Aspetto	
BackColor	**Silver**
BorderColor	**Transparent**
BorderStyle	None
BorderWidth	**0**
Font	**Arial; 24pt**
ForeColor	ControlText
Icon	
Text	**Light**
TextContextAlignment	**BottomCenter**

KnxData	
BackTimeoutInSec	**0**
FreeSize	**True**
Password	
Value	
Wave	
Layout	
Location	**604; 434**
Size	**120; 60**

2

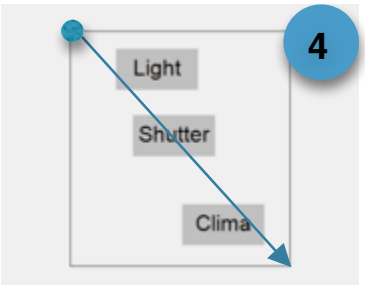
This operation can be replicated with the Copy & Paste function to create the 3 required Links.



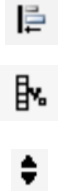
The Copy & Paste functions are available by right-clicking with your mouse on the object that you wish to duplicate **(3)**.
Then, simply edit the Text and Value properties to customise the new controls.

To align the lettering, we have used the Alignment tools available in the Controls Bar.

The only required operation was selecting the area containing the 3 new controls **(4).**
This selection is performed by pointing your mouse to a blank area, left-clicking and then dragging to generate the desired Rectangle.



After selecting the Area, the only thing to left do was to align vertically to the left.
Then, we moved the controls closer to each other into a back-to-back arrangement.
Finally, we spaced them out by 'n' steps as required **(5).**



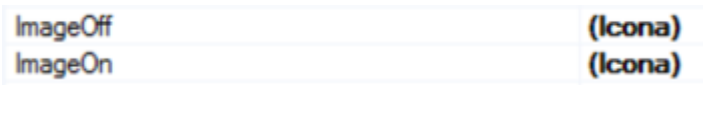
Do not to forget to add to the Light, Shutter, and Climate pages links to return to the Home Page.

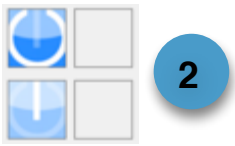
The last link that can be added is the **Exit** key.
It is an optional control, allowing access to the **Welcome Page**.
Without an Exit function, a Synoptic display can only be quitted by opening the Task Manager and re-routing the control to another application.
From the Welcome page you can create new accounts or terminate the application.

For more information please refer to the Reference Manual.

(4) Graphic Controls

Start by entering the controls designed to turn on and turn off the Lights.
The main control to use is called **KnxDataSwitch (1).**
Let's drag and drop one into the Light page and take a look at its Operation and Properties.
This control corresponds to a KNX button programmed to work in **Toggle** mode.
This means that every time it is pressed, it can turn the light alternately on and off, sending the ON control first and then the OFF control to the KNX bus.
The graphical properties of the object reflect its operation mode.
Therefore, two different icons are associated to it to represent its On or Off States on the graphic display.
ImageOff is the property that contains the image referring to the OFF state.
ImageOn is the property that contains the image referring to the ON state.
These images are visible in the bottom right corners, in their dedicated boxes **(2).**





These images can be replaced by the designer to obtain the desired customisation.
Images cannot be resized.
They are reproduced according to the original file settings.
Therefore, each image should be preliminarily chosen with suitable dimensions for obtaining the desired graphical result.
Resizing is not an option because the Synoptic displays generated with Sentiero can be installed on different operating systems with different operating modes, resulting in restrictions applied to the available graphic functions.

One of the most popular images used to make a Switch is the LED image.
The library attached to Sentiero contains many different sizes.
To assign the new image just open the properties ImageOff or ImageOn and select the new image from the folders in the File System, by using standard Windows instructions.
It is possible to assign .ICO files and .PNG files.

If you wish to immediately see the resulting effect, it is possible to modify the Value property to toggle the OFF and ON state views. Simply double-click on a property!
Value is the default value assigned to the Object on starting out.
As is the case with the Link, you can replicate the obtained result by simply copying and pasting.
In the case pictured opposite, the Text property was modified to differentiate among different icons.
At this point, to complete the operation, the Group Address KNX where to transmit the telegram should be assigned; however, this step will be described in the next section.

The KnxDataSwitch control can also be used to control the windows **(Shutters)**.
When controlling the windows with a touch panel, you hardly ever have a direct perception of movement, therefore, you will generally tend to control a full travel to a given position (e.g. a full opening or a full closing).
This operation can be performed directly on the communication object designed to control shutter movement, by sending the value 0 to raise or the value 1 to lower the window shutter.
To do this, the best option is to create two KnxDataSwitch controls always sending the same data - 0 to raise, or 1 to lower - and cancelling the Toggle property used for the lights.
The Toggle property is cancelled by enabling the property **FixedValue** = True.
Consequently, the control will always send the value specified in the **Value** property.

FixedValue	**True**
FreeSize	**False**
Password	
PushType	**False**
ReadOnly	**False**
TxCommObject	
Value	**Off**

ImageOff	**System.Drawing.Bitmap**
ImageOn	

At this point we could assign to our **UP** control a single icon with an arrow pointing up and leave the other image indefinite.
The other control **DOWN** will be the exact mirror image, with Value = On and a single icon with an

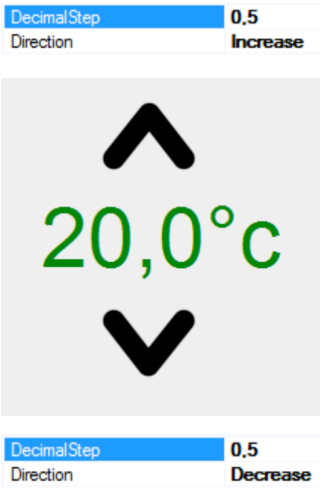
ImageOff	
ImageOn	**System.Drawing.Bitmap**
Value	**On**

arrow pointing down.

This is the final effect that can be achieved.
The lettering has been added by modifying the Text property of the Down controls.

Finally, let us now program the 'Clima' (Climate) page.
The Climate Control page is generally designed to allow for temperature adjustment in different environments.
An ETS project where thermostats are provided to adjust room temperature should display some Group Addresses named **Setup Temperatures**, where the desired value can be set.

To perform this function, Sentiero makes a few Objects available in the folder named **DataType 9** (2 bytes).
A first element is named **KnxThermometer**, able to display any temperature reading notified on the KNX bus - whether relating to an environmental measurement or relating to a device setting.
A second element is named **KnxSetpoint**, designed to increase or lower the Setpoint temperature of a KNX Thermostat.
This object - represented here opposite by the arrows pointing up and down - should be parametrised to specify whether you wish to increase or decrease the temperature and to determine the width of each step.



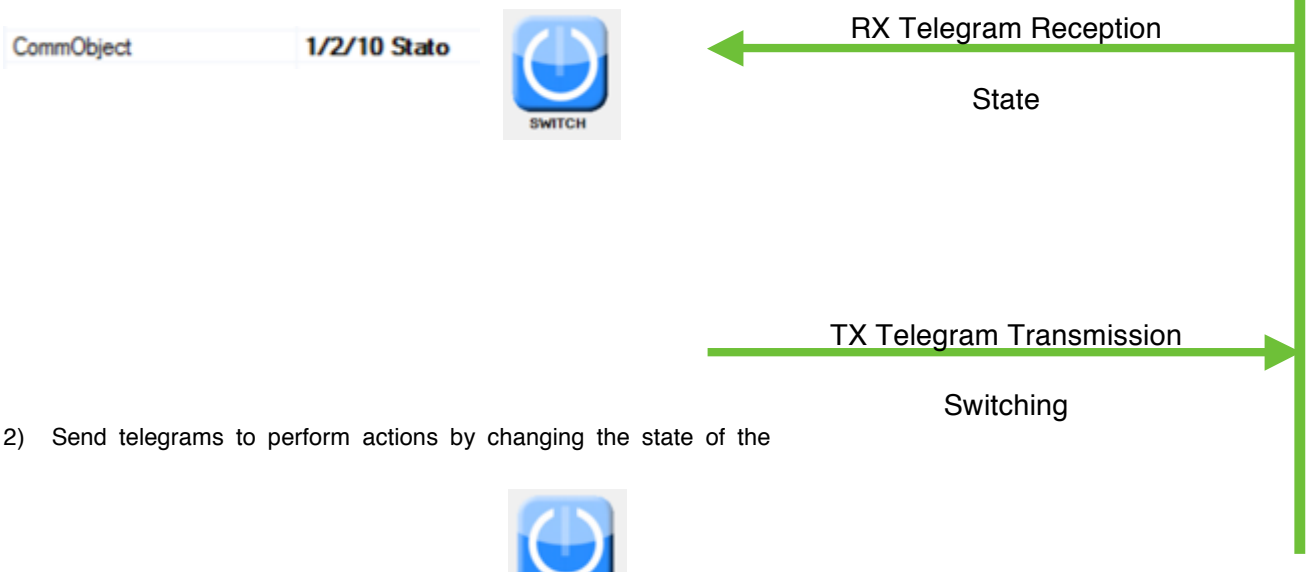
All 3 items must be assigned to the same Group Address - as will be described in the next Section.

(5) KNX Assignments

The final part of a Graphic display parametrisation procedure is the assignment of KNX Group Addresses.
We already introduced the topic earlier on when mentioning the importing of KNX addresses from ETS and the fact that this list represents the list of actions that can be carried out in our system.
Now, we must finalise the programming operations by assigning these actions to the graphic controls that we have set up.

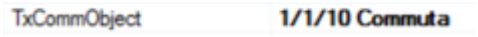
Each graphic object can perform two functions on the KNX bus:

1) Read object-specific telegrams to synchronise its State with the events notified on the bus



2) Send telegrams to perform actions by changing the state of the

devices sharing the same Group



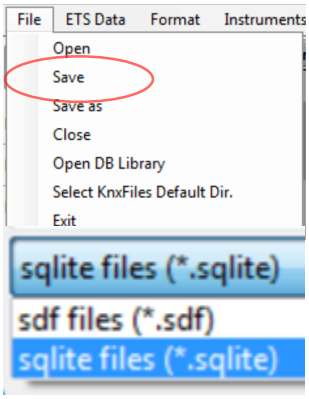
Reading or Receiving a State (RX) is carried out via the **CommObject** Property.

Reading or Switching (TX) is carried out via the **CommObject** Property.

The two Group Addresses might also coincide when working without States.
Similarly, when working without States, it is only possible to define the **CommObject** Property, in which case both functions are carried out from that single address.

When pulling down the menu containing CommObject and TxCommObject properties, only the Group Addresses should be displayed that have a Datatype in line with the Object with which they are trying to associate.
Therefore a Switch will only open Datatypes 1 (1 bit), and similarly, a temperature will only open Datatypes 9 (2 bytes).

(5) Generating and transferring the SQLITE file

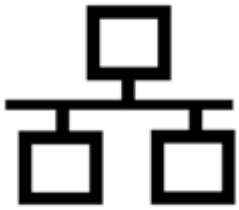


We have now reached the end of our Synoptic display implementation.
We should now save it and transfer it to our touch device memory.
The project is saved by hitting **Save from the File Menu.**
Remember, however, to select the SQLITE memory storage mode - specific for Android and iOS operating systems.
For Windows applications, the SDF mode can be selected.

The last operation to perform is transferring the SQLITE file from the memory of our PC to that of our Blumotix touch panel.

Since this is a plain file copying operation, any standard file transfer procedure will be equally as effective.

Pendrive + OTG cable

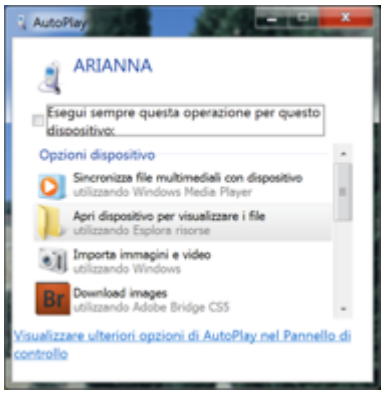


Ethernet

micro USB

The simplest method is, without a doubt, establishing a connection with a micro USB cable between our PC and Blumotix touch panel.

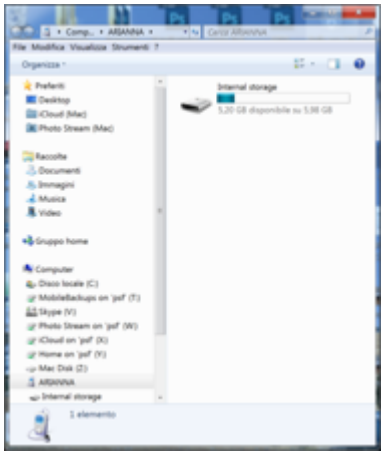
If the connection is successful, a window will open on our PC indicating the presence of a new electronic device named ARIANNA.



Now, simply select
Open device to view file
and a window should open with the File System of our Touch Panel (**Internal Storage**).

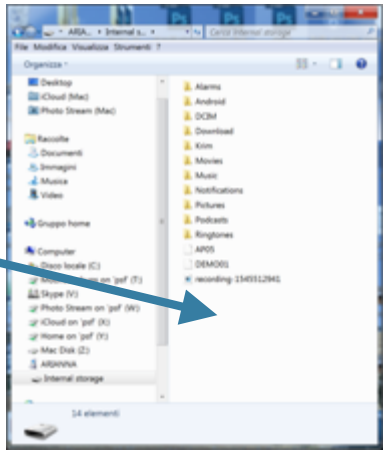
By clicking on Internal Storage, we can view all the files contained in the memory of our Touch device.

Internal Storage is the folder where the SQLITE file that we created must be copied.



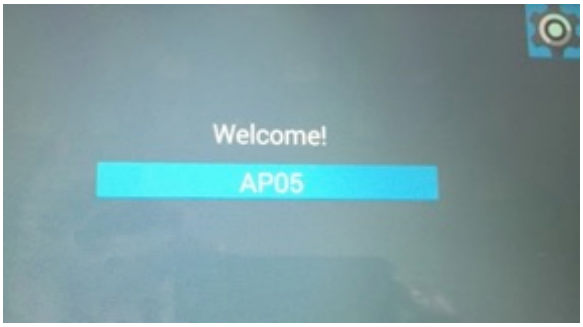
This is a simple operation that can be carried out with the Drag and Drop function - dragging the file icon into the window with your mouse.

If our touch device already has an Account named after the name of the file that we copied, it will be enough to restart the touch panel, otherwise, please refer to the last section on how to create a new Account.

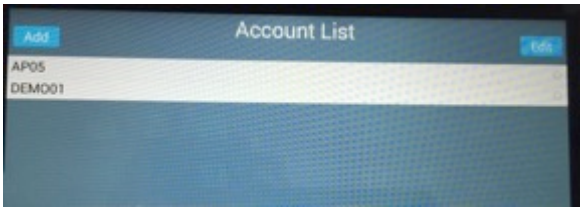


(5) Creation and management of an Account

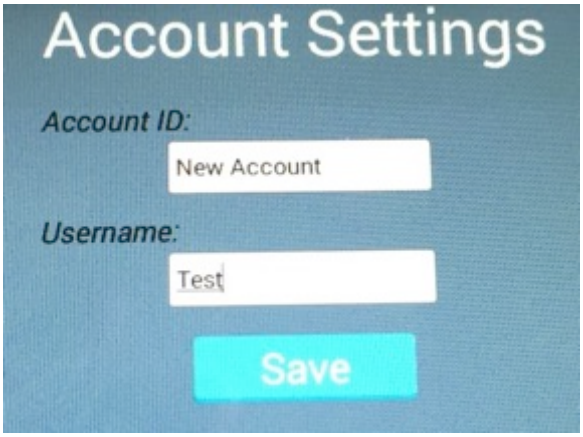
Welcome!
This is the home page of our system supervision tool KNX (Krim), designed to run the Synoptic displays that we created with Sentiero.
Our touch panel memory can contain many graphic displays, but only the one highlighted in blue will be run (in the figure opposite, the active one is AP05).



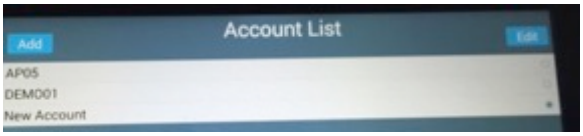
AP05 can be selected from the list of acknowledged Accounts, which can be accessed via the GEAR button at the top right.
The user can select the one to run by ticking the Check Box on the side.



Whenever you copy a new SQLITE file to the memory of your touch panel, in order to make it visible in the List you will have to create a new Account with the ADD control.
Account ID will be its listed name.
Username is the name of the SQLITE graphic file stored in File System that the system will search for.
At configuration completion, **Save** must be pressed to store the new Account.



At the end of the procedure, the new Account will be available in the list, ready to be selected with Check Box.



The Back control can now be used to return to Welcome page.

Finally, the New Account can be launched.