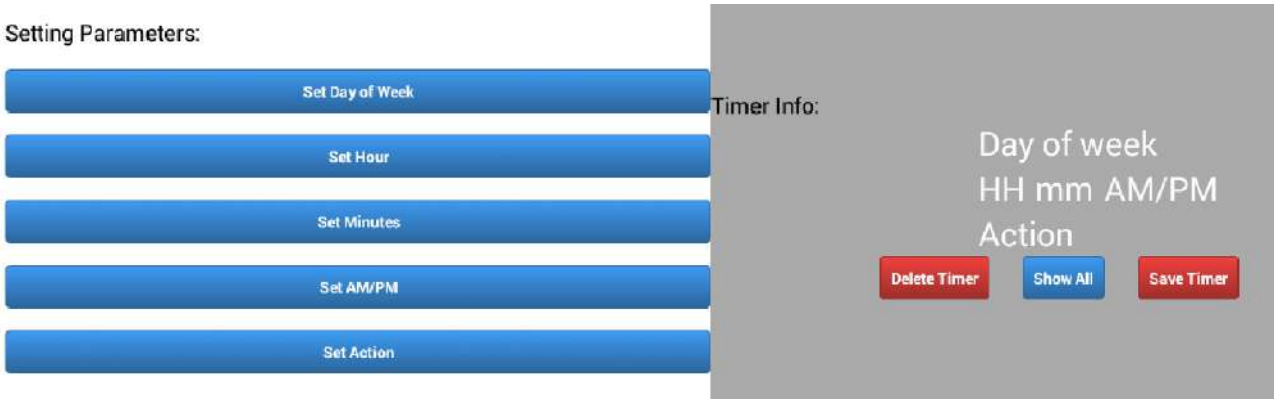
User Guide BX - THEO 10

The User Guide should contain all those instructions that could be helpful for the end-user.
It should therefore be up to the electrician licensed to install it to complete this document according to the functions that the installer himself has enabled for customer use.
This is only a general outline useful to write the document.

This first User Guide release focuses on the subject of Timers.

Timers are a user-programmable function to enable the running of one specific KNX control at a precise time of the week.
The KNX controls that can be managed are those with Datatypes 1, 5 and 9.
This means that we can turn any one utility on and off, we can lift a shutter to a certain height, we can adjust the intensity of a light and we can adjust the temperature of a room.
In order to program a particular Timer you must first of all activate the Timer function.
When the Timer icon is RED, pressing a control will not cause a KNX telegram transmission, but the opening of the Timers programming window associated with that group address.

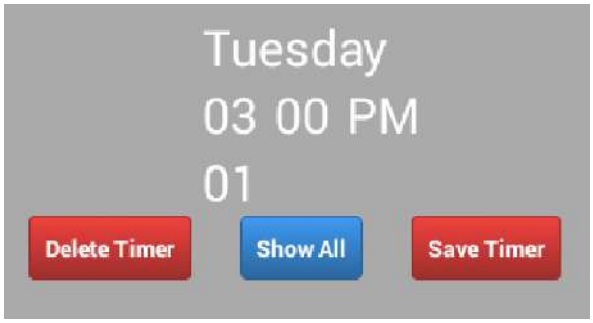


This window allows the Timers to be programmed.
It is a bit like setting an alarm: you decide on a time, a day, a type of ring tone (action) and you enable the Timer.
Then on the specified day, at the specified time, the touch panel will send the selected control on the KNX bus.
To program a Timer 5 parameters must be defined:

Day of week: day of the week on which to carry out the action
Hours: time of the day at which to carry out the action (hours)
Minutes: time of the day at which to carry out the action (minutes)
AM/PM: used to specify morning or afternoon
Action: value to assign to the telegram to send

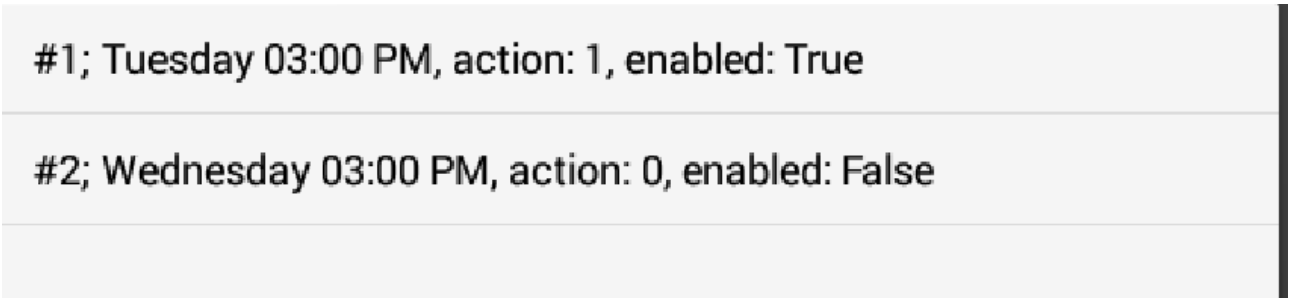
The values of the 5 parameters can be assigned by opening their respective selectors.

As the values are assigned, we will find them transcribed in the Timer Info area.
When the data match the desired setting we can proceed with Timer memory storage by pressing the **Save Timer** control.

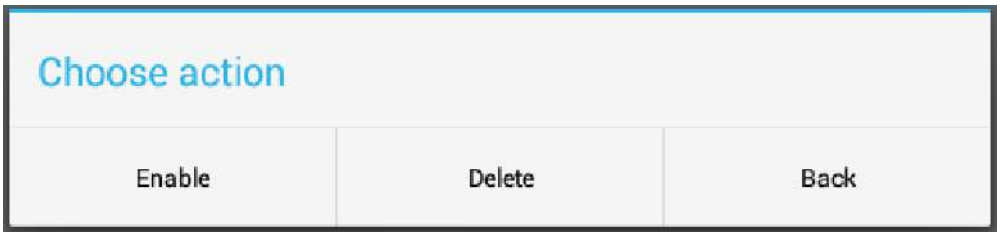


There are no restrictions to the number of actions or controls that can be stored.

If you wish to review the list of all the stored Timers, you can press the **Show All** control.
Then, a page will open with a list of the memory-stored events.
Events can be enabled (enabled: True) or re-enabled (enable: False).



By tapping the Enable writing a popup is displayed prompting to change the enabling.



The proposed type of action depends on the datatype of the group address associated to the selected control.
We have already mentioned that the Timers can only be programmed for Datatypes 1, 5 and 9.

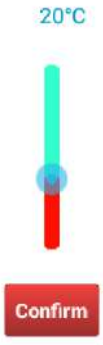
The **Datatype 1**
can only be used to selec
the 2 values 0 and 1.

0 = OFF
1 = ON

0 = UP
1 = DOWN

The **Datatype 5**
can only be used to select
values between
0 and 255.

0 = 0%
128 = 50%
255 = 100%



The **Datatype 9**
concerns
the temperatures
and must be programmed
with a
Slider

Technical manual

BX-THEO10 (T10IP)

10 inch KNX Capacitive Touch Panel

Operating Instruction

for authorized electricians
Rev.1.1

1. What must be present in the package
2. How to test the device
3. How to install
4. How to configure
5. Schematic
6. Warranty Police
7. Technical Data
8. Declaration of Conformity (CE)

via Bedazzo, 2 - 48022 Lugo (RA) - ITALY
tel. +39 0545 1895254
www.blumotix.com

1. What must be present in the package

Touch Panel

Power Connector

KNX Connector

Power Supply

Fastening hooks with screws

⎓ This symbol indicates that the power to provide input must be only a DIRECT CURRENT.

CE This symbol indicates that the device complies with the attached CE Declaration of Conformity.

2. How to test the device

Blumotix delivery every product after having tested all its functionality.
In any case we suggest you always check if the device turns on properly after shipping.
To do this simply connect the power and allow the device to perform the boot sequence until the home screen.
To Restart you can press RESET button located in the lower part of the frame.

3. How to install

BX-T10IP is a wall mounted device.
Therefore necessary to set in advance the appropriate wall mounted junction box labeled BX-KW07.
Inside the box must get the low voltage Power Cable from BX-PW15 (12VDC), the Bus KNX Twisted Pair and the Ethernet Network Cable plugged to RJ45.
See more details about connections in Schematic.
This Area must be free of any danger high voltage!
Final assembly is accomplished by pushing the computer in the supporting springs.
Supporting springs installed in final destination must be able to carefully support the weight of the product, then it is necessary to test the mounting means by applying an additional weight of 50N on the center of gravity of the product for 1 minute and verify their effectiveness.

4. How to configure

To use properly the BX-T10IP you need to set Ethernet Port and to install KNX Synoptic.

Ethernet Port is configured to ask DHCP service to obtain dynamic IP address.
Unfortunately it is not best choice if you want to support remote device to control KNX system.
Then we suggest to set Static IP with ETHERNET application available in APPS panel.
ETH0 is configurable only if RJ45 cable is plugged.

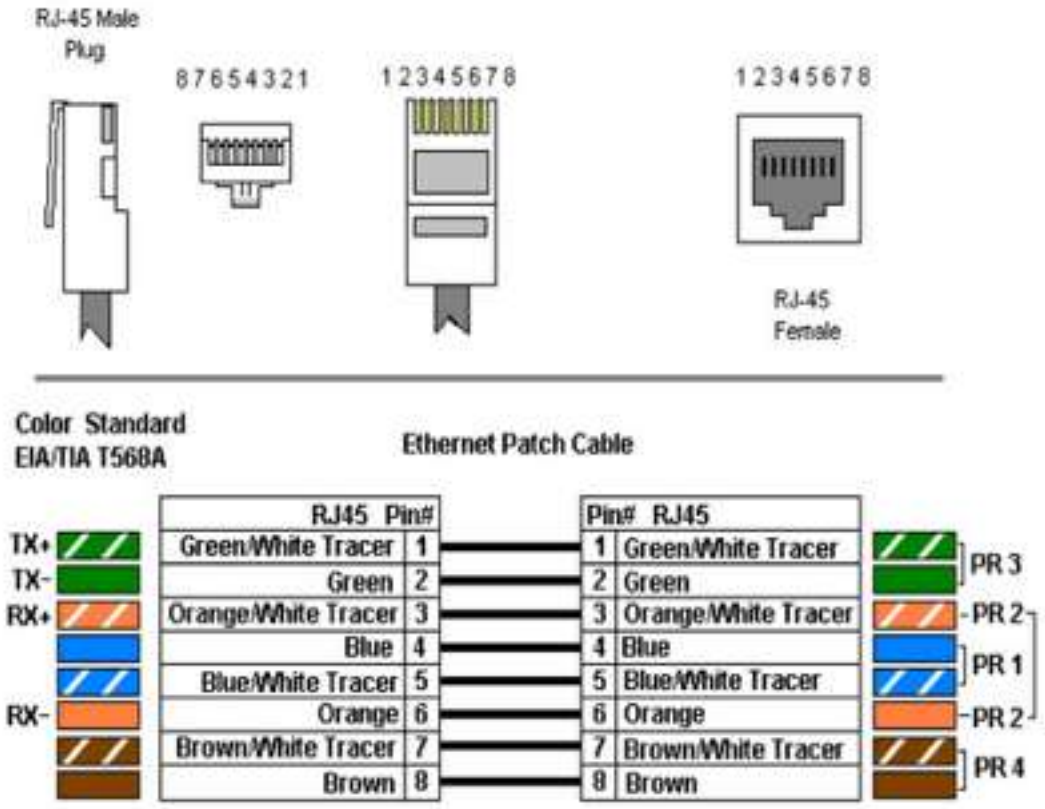
KNX Synoptic is generated with Sentiero software
(see more in Program Manual).
To install KNX Synoptic means to copy your SQLITE file created with Sentiero.
Connect BX-T10IP to PC with micro USB cable.
Then you should see the new device ARIANNA.
Use Drag and Drop to move your SQLITE inside Internal Storage.

5. Schematic

When routing cables in the wall then connectors must be crimped in the end.
Here you find schematics to complete wiring.
BX-T10IP must be supplied with a limited power device according to standard IEC 60950-1 under sub clause 2.5.

Power and KNX patch cable:

Ethernet Patch Cable according to EIA T568A:



6. Warranty Police

Blumotix warrant to the original purchaser for a period of twenty four (24) months from the date of shipment ex-factory of the equipment that should the equipment prove defective by reason of improper workmanship or material.
Blumotix will replace the same without charge provided the equipment has not been improperly installed, operated, repaired, damaged or abused.
The warranty granted herein is limited to replacement only.
Blumotix has the right to substitute any warranty item not on the current price/equipment list.
As far as the law permits, Blumotix shall not be liable for any loss or damage caused to property or persons arising from any cause whatsoever.
This warranty is subject to the return of the equipment to Blumotix, by prepaid freight within the twenty four (24) months warranty period.
Where Blumotix, or the Supplier, agree to a site visit during the warranty period and it is found to be an operational problem, and not subject to warranty in that event, then a field service call out charge will apply.
Contact Blumotix for details.

Technical Data

Mechanical	Case	ABS Plastic
	Frame Color	Chrome
	Glass Color	White or Black
	Dimension out of wall	282mm x 168mm x 12mm
	Mounting Box	225,5mm x 127,5 mm x 70mm
	Protection Class	IP20 (EN60529) indoor use
User Interface	Display	10 inch IPS display (16:9) full view
	Resolution	1280 x 800 pixel
	Color	18 bpp
	Touch	Capacitive / Multifinger (Focaltech Driver)
	Speaker	3W
	Microphone	omnidirectional
Mother Board	CPU	iMX6 Dual Lite 1GHz
	RAM	1GBytes
	Flash	Micro SD 8GByte
Port	Ethernet	1Gbit with RJ45 (CAT6)
	KNX	TP1 bus with Wago plug (0,8mm
	Auxiliary Port	Micro USB OTG
Electrical Input	**Power Source**	**1A, 12-24V** ⎓
	Fuse F1	**5A, 32V**
	Connection	Pluggable terminal blocks
	Recommended wiring	Conductor section more then 1mm
External Power Supply	Input Voltage	100-240 VAC 50/60Hz
	Output Voltage	12VDC 1,25A
	Power	15W
	Isolation	Double insulated (Class II)
	Protecton Class	IP30 (EN60529)
Environment (Max Ratings)	Storage temperature	max 70°C
	Operating temperature	**max 50°C**
	Humidity	max 90%
Compliance	Directives EMC 2004/108/EC	EN 50090-2-2:1996 EN 50491-5-1:2010; EN 50491-5-2:2010 EN 55022:2010; EN 55022/EC:2011 EN 61000-4-4:2012 EN 61000-4-5:2014 EN 61000-4-11:2010 EN 61000-6-1:2007 EN 61000-6-3:2001; EN 61000-6-3:2007+A1:2011
	Directives LVD 2006/95/EC	EN 60730-1:2013 EN 60664-1:2007 EN 60950-1:2006 EN 50491-4-1:2012 EN 60529:1991 EN 60529/A1:2000 EN 60529/A2:2013

Dichiarazione di Conformità
EC Declaration of Conformity

Produttore / Manufacturer: **Blumotix** s.r.l.

Indirizzo / Address: via Bedazzo, 2
I – 48022 Lugo (RA)

Descrizione prodotto / Product description:

BX-T10IP Touch Panel KNX capacitivo 10 pollici
10 inch KNX Capacitive Touch Panel

Si dichiara che il prodotto qui indicato è conforme ai requisiti essenziali fissati dalle seguenti Direttive Europee:
The product described above in the form as delivered is in conformity with the provisions of the following European Directives:

2006/95/CE (LVD) Direttiva Bassa Tensione
Electrical equipment designed for use within certain voltage limit

2004/108/CE (EMC) Direttiva Compatibilità Elettromagnetica
Electromagnetic Compatibility

Sulla base dei Test Report disponibili il sottoscritto dichiara la conformità alle seguenti norme armonizzate:
Based on the available Test Report hereby declare compliance with the following standards:

EMC

EN 50090-2-2:1996
EN 50491-5-1:2010; EN 50491-5-2:2010
EN 55022:2010; EN 55022/EC:2011
EN 61000-4-2:2012
EN 61000-4-3:2012
EN 61000-4-4:2012
EN 61000-4-5:2014
EN 61000-4-6:2012
EN 61000-4-11:2010
EN 61000-6-1:2007
EN 61000-6-3:2001;EN 61000-6-3:2007+A1:2011

LVD

EN 60730-1:2013
EN 60664-1:2007
EN 60950-1:2006
EN 50491-4-1:2012
EN 60529:1991
EN 60529/A1:2000
EN 60529/A2:2013

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Firmato per conto di:
Signed for and behalf of: .....

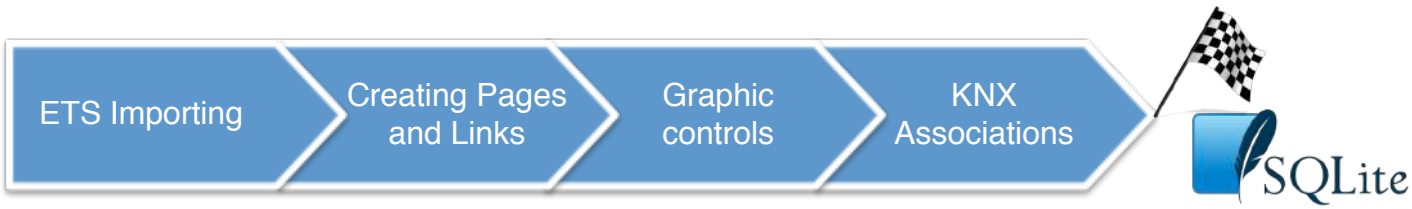
Luogo e data: Lugo, 01/06/2015
Place and date:

Carlo Orsi
Amministratore Unico .....

BX - THEO 10 - Quick Start Guide

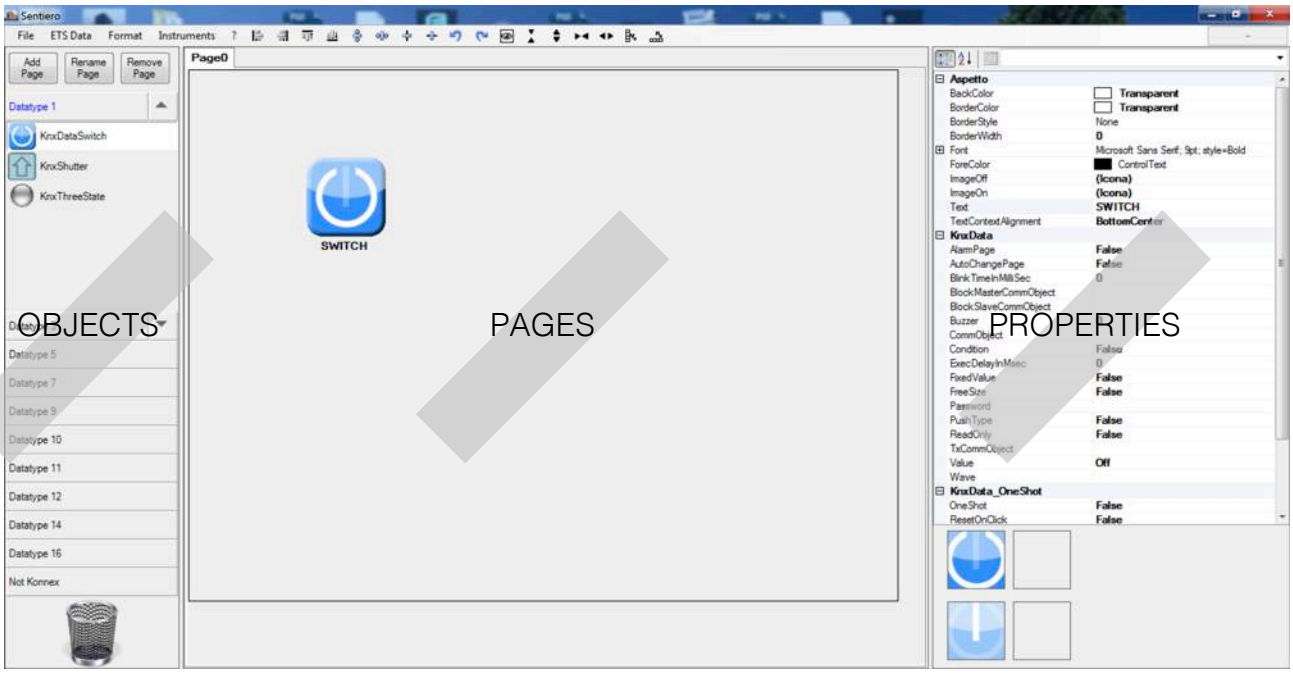
The programming of a Touch Panel consists of the creation of a synoptic (graphic) display, i.e. a navigation tool for Home information, complete with all of the necessary controls to control the system.
Blumotix supplies a software tool to facilitate the customisation of the graphic display, called Sentiero ("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.

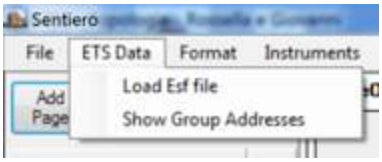
On the left side of the window are OBJECTS that can be dragged and dropped into the work area to create controls for our Synoptic display.
These Objects are divided into folders named Datatypes - according to the KNX nomenclature.
Each Datatype identifies the type of data exchanged by a KNX telegram.
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.

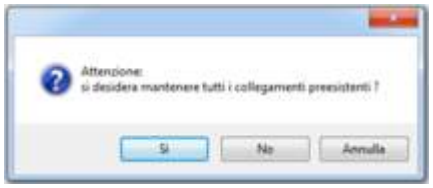
The right side of the screen shows the **PROPERTIES** of the objects.
The Properties can be modified to customise the appearance and operating mode of each Object.
There are editable icons representing the Objects on the screen, their position, the text that describes the type of function, the colours, 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.



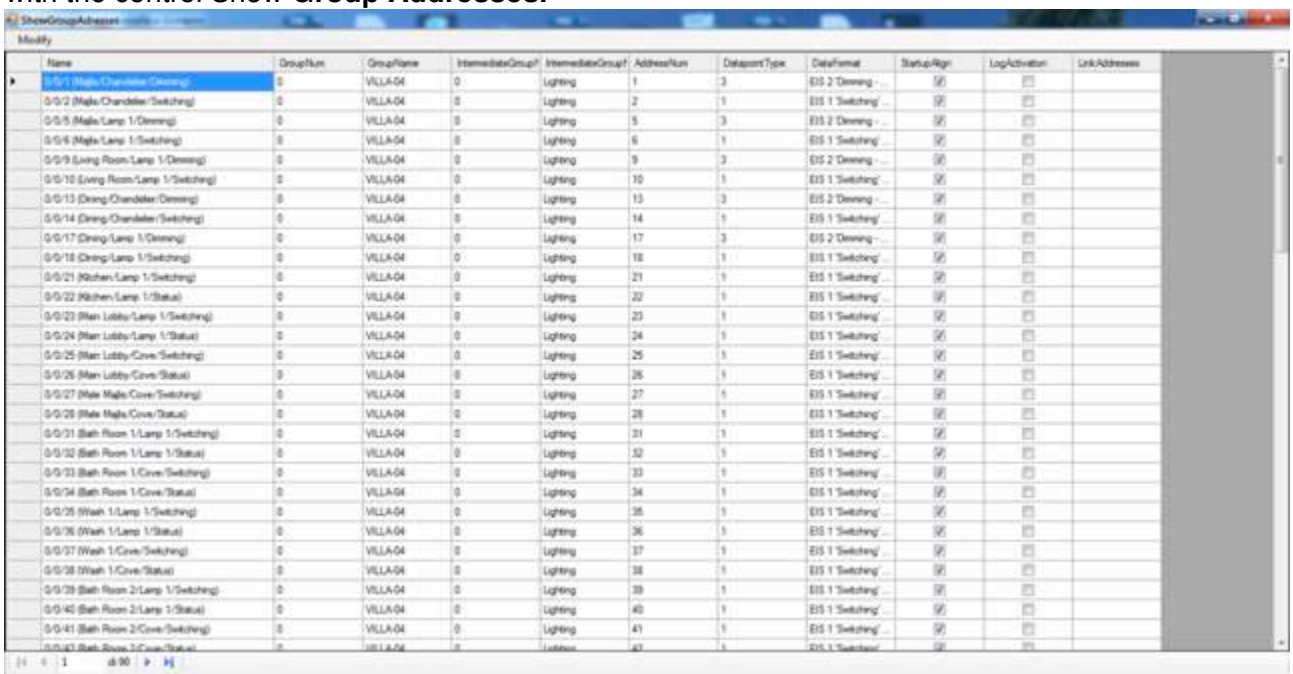


If your project already contains a list of Group Addresses, the software will ask you if you wish to create a new List or update the existing list.
Updating an existing list means to import from ESF only the new, not previously existing Group addresses.
Please note that this action does not include any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



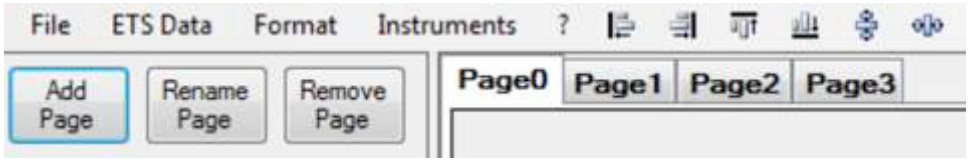
In this table, a column is present named **StartupAlign**, enabled by default.
A confirmation flag on this column indicates that in the data alignment phase, when the touch panel is powered on, a READ function will be controlled for that address, in order to determine its value.

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.

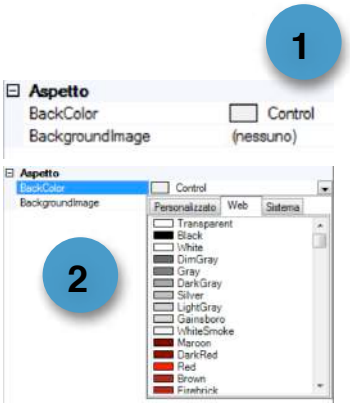
Let us start with a very simple example.
Let us create 4 pages...
Page0 will always be the 'landing' page, in other words, the Home page.



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.

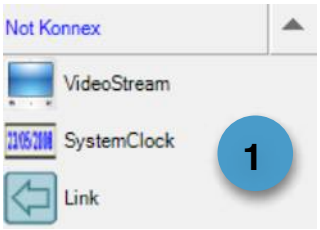
Now we can customise our pages, too.
To do this, we must access **Properties**.
The Properties of any Graphic Object are displayed in the right part of the screen when we select that Object by clicking on it.
To display the Properties of a Page, just select it with the corresponding tab or click on its 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**).

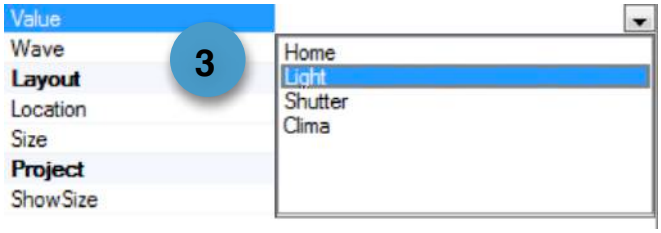


The selection of a Back Color can be performed by choosing a colour from one of the available palettes; generally, it is advisable to use the one named Web **(2)**.

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.

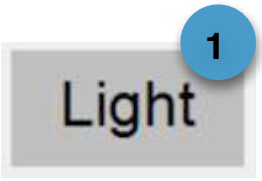
We are now ready to add the connecting **Links** between pages.
Always remember that, for each page input Link, there must be at least one output Link, to prevent the risk of becoming locked in that page.



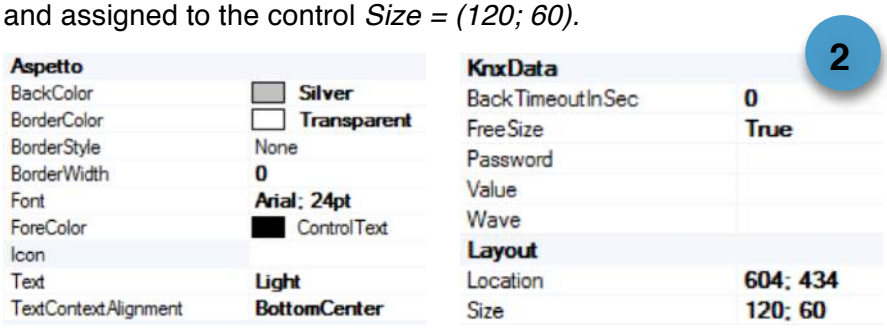


The links are controls contained in the Not Konnex folder **(1).**
Let's drag our first Link into our Home Page **(2).**
We should ensure that this control enables the user to jump to the Lights page by correctly assigning the **Value (3)** property.
Finally, let's assign the Lights name by defining 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)**.

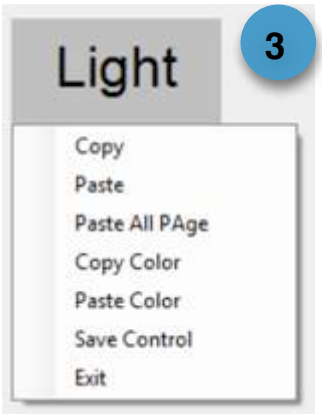
The text-only option can be graphically appealing **(1)** and can be improved with some finishing touches like in the picture opposite.



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).*



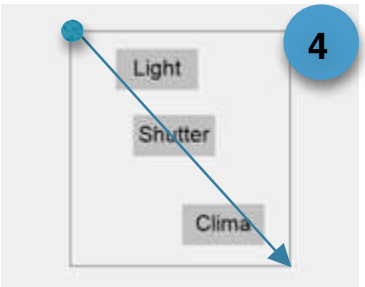
This operation can be replicated with the Copy & Paste function to create the 3 required Links.



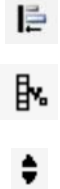
The Copy & Paste functions are available by right-clicking with your mouse on the object that you wish to duplicate **(3)**.
Then, simply edit the Text and Value properties to customise the new controls.

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

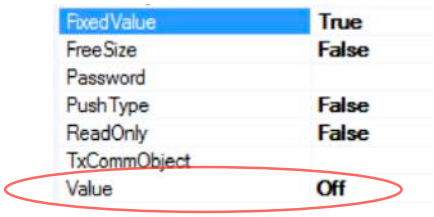
Start by entering the controls designed to turn on and turn off the Lights.
The main control to use is called **KnxDataSwitch (1).**
Let's drag and drop one into the Light page and take a look at its Operation and Properties.
This control corresponds to a KNX button programmed to work in **Toggle** mode.
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).**

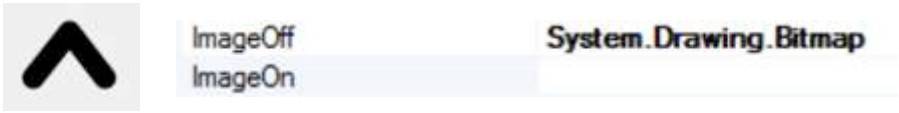
These images can be replaced by the designer to obtain the desired customisation.
Images cannot be resized.
They are reproduced according to the original file settings.
Therefore, each image should be preliminarily chosen with suitable dimensions for obtaining the desired graphical result.
Resizing is 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.





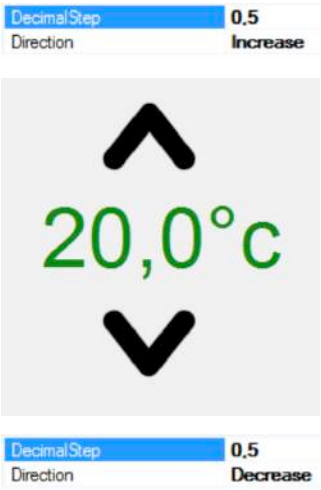
At this point we could assign to our **UP** control a single icon with an arrow pointing up and leave the other image indefinite.
The other control **DOWN** will be the exact mirror image, with Value = On and a single icon with an

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.



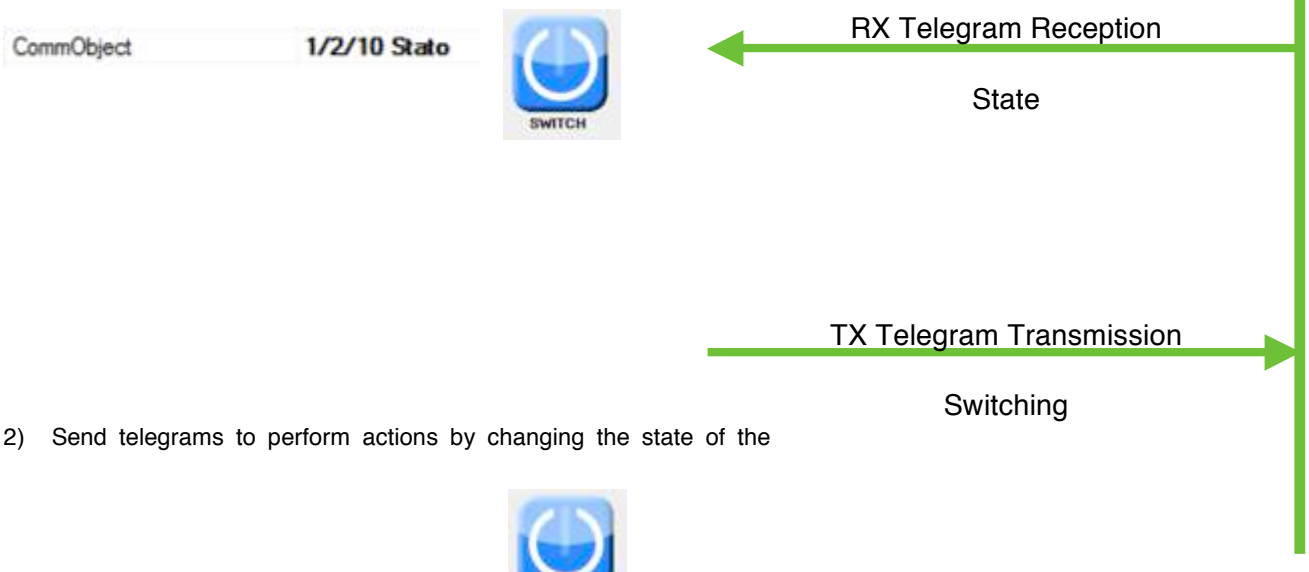
All 3 items must be assigned to the same Group Address - as will be described in the next Section.

(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

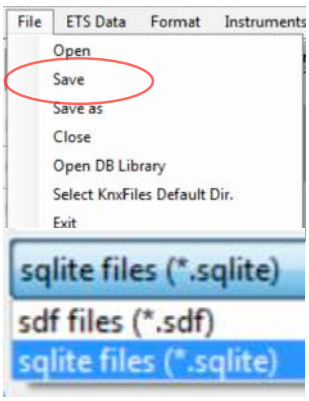
Reading or Receiving a State (RX) is carried out via the **CommObject** Property.

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

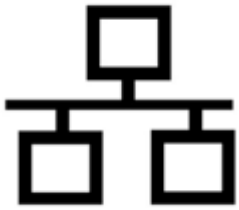


We have now reached the end of our Synoptic display implementation.
We should now save it and transfer it to our touch device memory.
The project is saved by hitting **Save from the File Menu.**
Remember, however, to select the SQLITE memory storage mode - specific for Android and iOS operating systems.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

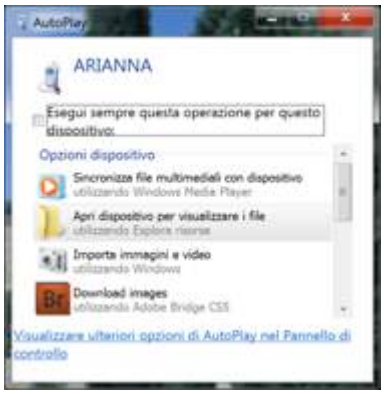


Ethernet

micro USB

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

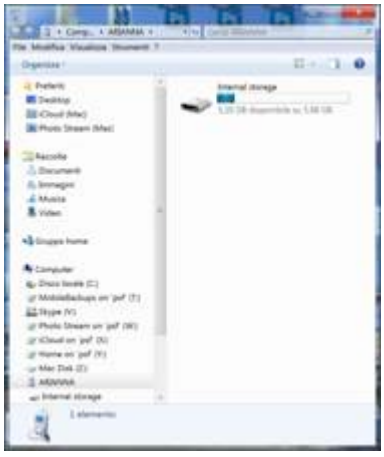
If the connection is successful, a window will open on our PC indicating the presence of a new electronic device named ARIANNA.



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

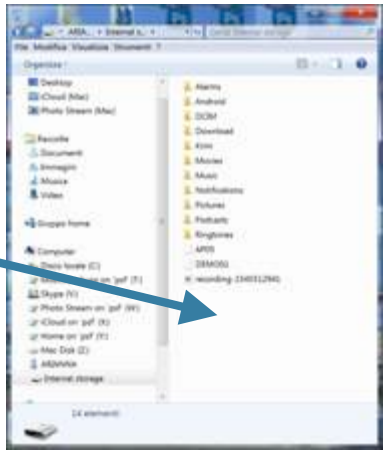
By clicking on Internal Storage, we can view all the files contained in the memory of our Touch device.

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



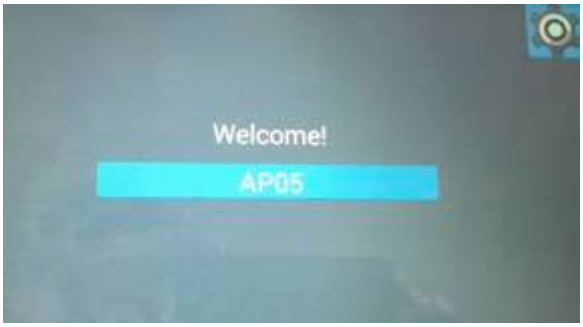
This is a simple operation that can be carried out with the Drag and Drop function - dragging the file icon into the window with your mouse.

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.

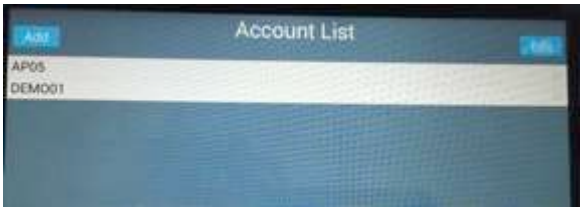


(5) Creation and management of an Account

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).

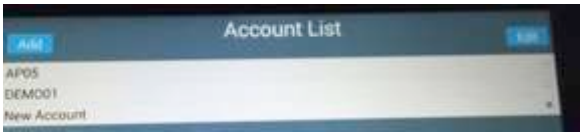


AP05 can be selected from the list of acknowledged Accounts, which can be accessed via the GEAR button at the top right.
The user can select the one to run by ticking the Check Box on the side.



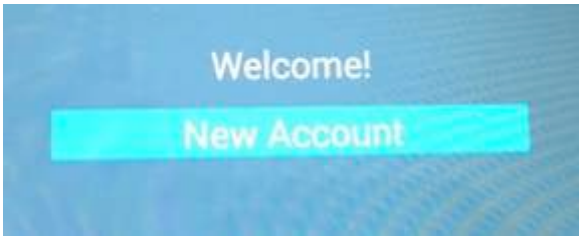
Whenever you copy a new SQLITE file to the memory of your touch panel, in order to make it visible in the List you will have to create a new Account with the ADD control.
Account ID will be its listed name.
Username is the name of the SQLITE graphic file stored in File System that the system will search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

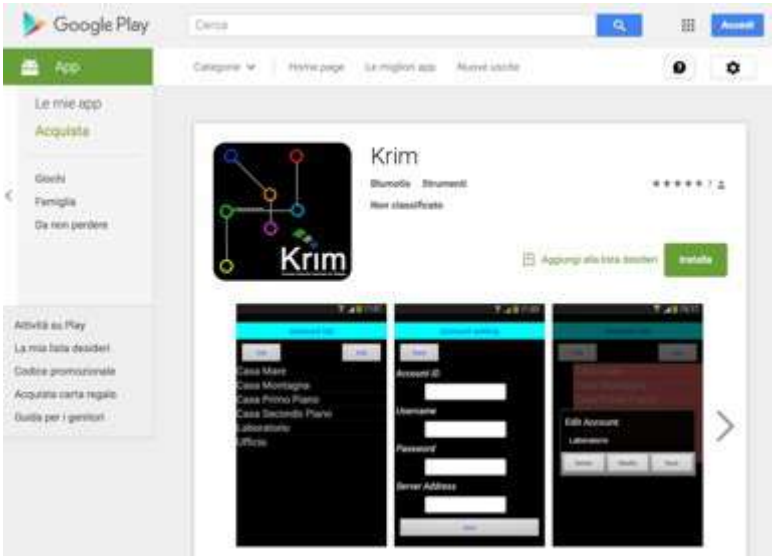
Finally, the New Account can be launched.



BX - THEO 10 Smartphones and Tablets

One of the main features of the BX-T10IP touch panel is the connectivity it provides for remote devices such as Smartphones and Tablets used to control a KNX system.
For this feature to be available, the KRIM (Konnex Remote Interface for Mobile) application should be installed on your mobile device; this application is available for the operating systems iOS on Apple iTunes and Android on Google Play.

The application is free of charge.



Once you have downloaded the application, a Synoptic display suitable for your mobile device must be created and installed on your touch panel by creating an account for the connection.
Just like the resident version, the Synoptic display for your Smartphone can also be created with Sentiero.

(1) Creation of the Synoptic display

A mobile device-dedicated display unit is quite similar to the one created for the resident application. It is nothing other than the SQLITE file already presented and analysed in the Quick Start Guide.
Here, we are only going to examine the special features related to its use with Mobile devices.

The first thing to know is that mobile device-dedicated Synoptic displays cannot rotate following the orientation of the screen.
iOS-dedicated displays work only in Portrait mode (vertically).
Android-dedicated displays work only in Landscape mode (horizontally).

The second important thing to remember is that you must configure the resolution of the Synoptic display so that it matches the resolution set on your Mobile device.
Remember that this function can be performed on Sentiero with the control
Format / Custom Size.

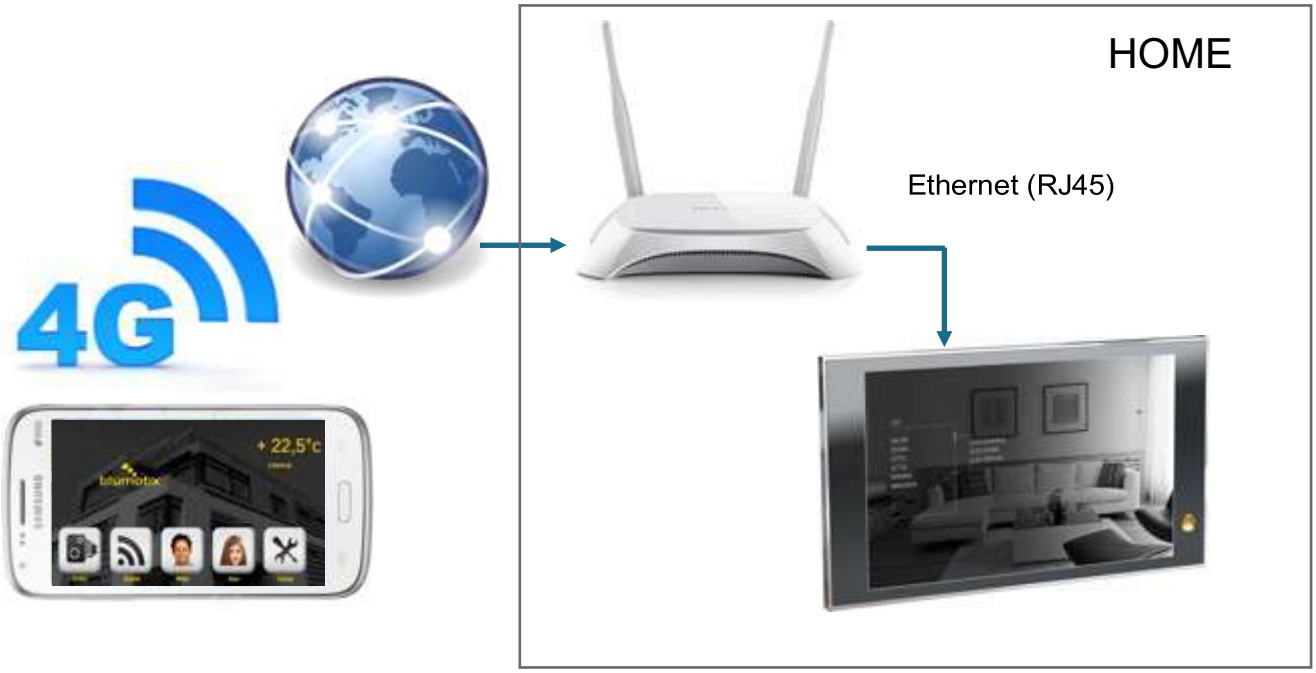
Don't forget that the free application for your Smartphone does not have all Sentiero-programmable features.
This is because some controls programmable with Sentiero are only significant on a local device, therefore, they are not implemented on the Mobile version.
However, all the main controls are available including Link, Dataype 1, Datatype 5, Datatype 9 etc.

Finally, note that the SQLITE file will not be stored in the Mobile device but in the KNX Server memory, i.e. in the memory of the BX-T10IP touch panel, according to the same procedure followed for all other SQLITEs.

(2) Network Configuration

Communication between the KNX Server resident in the BX-T10IP touch panel and the Mobile device occurs via the TCP/IP network.
The Mobile device will call the KNX Server via its network address.
Indoor communication always relies on a Wifi network, normally active through an ADSL router, by

directly accessing the network address of the touch panel.
Out-of-house communication can take place via the 3G/4G data network, accessing the public address of the ADSL connection of our router.



In this case, it is necessary to open the 8081 port of the router by controlling a Port Forwarding at the touch panel address.

The public address of the ADSL router can be either static or dynamic.
If it is static, it can be accessed directly at the input to the router without any intermediary.
While if the address is of the dynamic type, you will need to register it with a DNS service and recall it through such registration.

If the 8081 port is already being used by some other service you can access the server by specifying a different port, using the usual syntax that requires adding to the network address the character **:** followed by the number of the desired port.
In this case Port Forwarding will be performed on the port number that you intend to use.

(3) Account Setting

We use the term ACCOUNT to refer to the definition of a user's credentials, necessary to access the KNX services available on the server.
The credentials consist in a set of 4 parameters named ID, USER, PASSWORD and SERVER ADDRESS.

ID is the account identifier.
This will be the name with which our account is listed among the available connections.

USER is the name of the Synoptic display that the account will try and open.
This means that trying to access the system will initiate a search in the KNX Server memory for a synoptic display called USER.SQLITE.
If the file is not found access is denied.

The next field is the **PASSWORD** used to secure the access.
If the USER.SQLITE file is found, then before the connection is opened a check is run to ensure that the associated password is correct.
The password is stored in the memory of the touch panel, in a text file named USER.PWD.
The password is sensitive to the difference between uppercase and lowercase letters.

The last field is the address where to search for the server, called **SERVER ADDRESS**.
The address of the Server was dealt with in the previous chapter.

(4) Start-up

Now, we can finally control our system from a mobile device.

Let us open our Krim application and launch the account that we have created.

The first thing that happens is that our device tries to start a communication with the KNX Server at the address specified in the Settings.
When the KNX server search starts, the screen shows the timer in progress with the writing Getting database Hash…

If a device is found at that address that does not have KNX services, the connection is immediately denied and the error CONNECTION REFUSED is notified.

If nothing is found at that address, after repeated attempts that continue for a minute, a Timeout error is declared.

Finally, if the connection is established, the writing *Getting database Hash…* changes from lowercase to uppercase and communication begins.
Initially, the Hash code of the SQLITE file to launch is exchanged, to check if the file in the memory of the Mobile device is the same as that in the Server.
If the files match, supervision is immediately performed by displaying the memory-stored Synoptic view.

Conversely, if the files are different, then the Server will have to transfer the new SQLITE from the KNX Server memory to that of the mobile device.
Before doing this, it must be ensured that the credentials are correct.
The presence of a new user.sqlite file in the KNX Server memory must be verified, otherwise, an error must be reported.
Then, ensure that the password is correct, or report the corresponding error

When the system has the certainty that the connection can positively be opened, it opens the Synoptic display in the Home Page and starts reading the values of group addresses stored in the KNX Server memory.

When the Server does not have an available value, it performs a READ on the bus to cause the enabled device to notify it.
Once reading is completed, control is definitively taken over by the Synoptic display and our KNX can finally be controlled from our Mobile device.

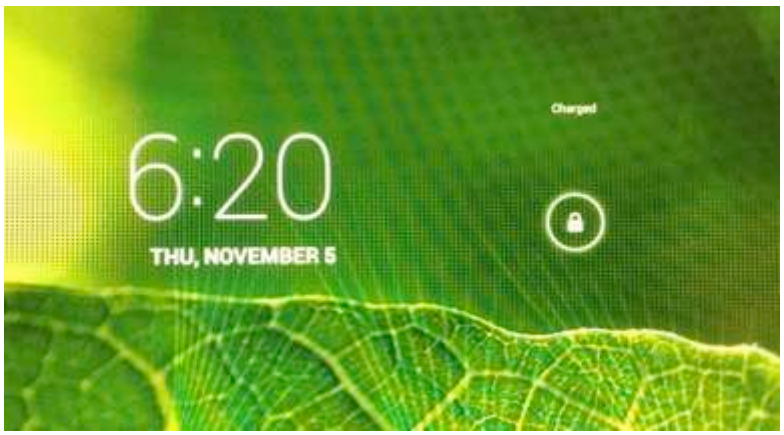
BX - THEO10 Configuration Guide

This manual deals with the configuration of the Operating System to improve the performance of our touch panel.

(1) Boot

First of all, let us take a look at what happens when we power on the touch panel.

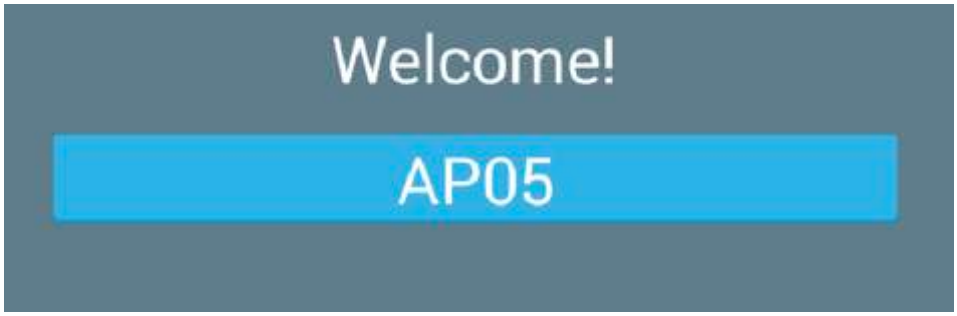
A few seconds after power-on, the display unit shows the Splash Screen with the Blumotix logo.
This animation corresponds to the period of time necessary to upload the Android OS to the memory and initialise it.
At the end, the screen will display the usual starting page with the padlock.
By now, our computer will have already loaded and launched the KNX Server dedicated to communication with the bus.
This means that even if the padlock of Android is not unlocked, KNX services such as the Timer, Timed Thermostats, and Smartphone and Tablet communication supports are already running.
Therefore, a possible power cut in the electrical system will not affect the automatic restart of KNX



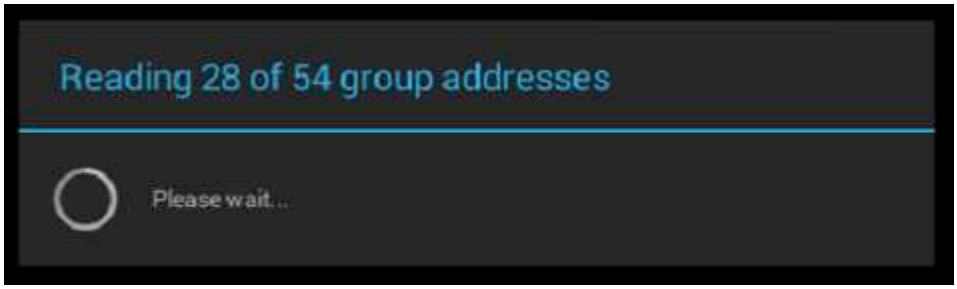
services, even if the computer is locked and will not go past the Home Page.

To unlock, drag the padlock off the screen.

After a few seconds, the system automatically launches the Welcome! page



The customer can now manually launch Supervision by tapping the set-up Account.
(In our example, it is the blue rectangle with the reference to the AP05 Synoptic display.)



When 60 seconds have elapsed, the system automatically launches the set-up Account.
When Supervision is launched, the first operation performed is reading Group addresses to synchronise the touch device data with those of the KNX bus
At the end, the Home Page of our Synoptic display takes control.

(2) Android navigation controls

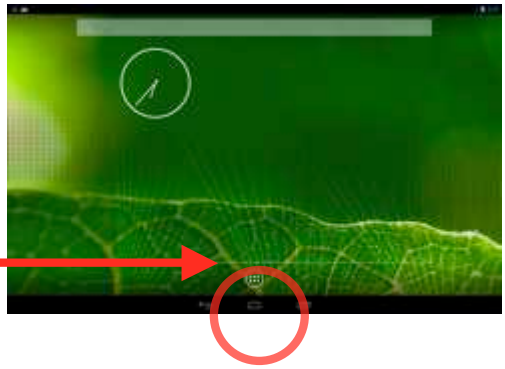
The lower part of our touch panel is always reserved for the use of a small keypad with standard Android controls.

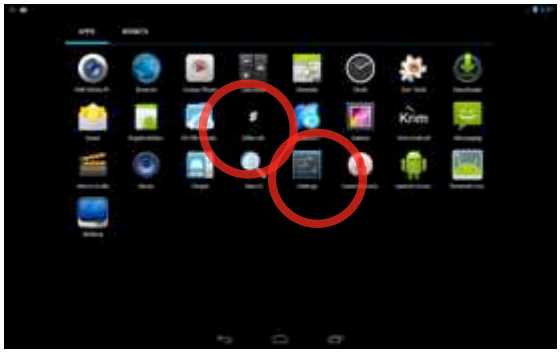
BACK	HOME	TASK MANAGER
Goes back to the previous screen	Opens the Home Page	Opens the list of running Applications

Let us now become familiar with how these 3 keys work.

BACK: It is the control that allows for going back from any page you may have reached.
It can be used to return to the previous page with respect to the currently displayed page.

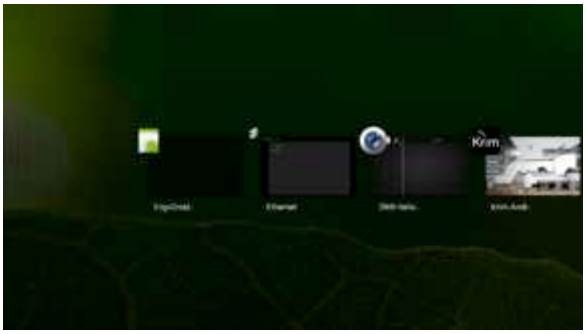
HOME: It is the control with which to access the Home page from any page you may have reached.
The Home Page is Android's main page, from which you can navigate to all your computer functions. In particular, it is the page containing the access control to the Applications Window.





The **Applications Window** is the page containing all the applications installed on a computer.
From this page, you can simply tap applications to launch them.
We are interested in particular in the Apps called SETTINGS and ETHERNET, necessary to properly configure our computer.

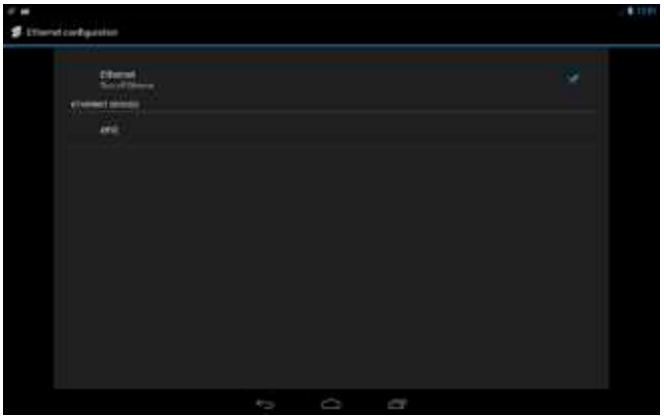
TASK MANAGER: It is the control used to open the page where all the applications being run are displayed. From this page, you can shift control over the computer to one of the running applications simply by tapping it. Alternatively, you can terminate the running of a process by dragging its image off the screen.



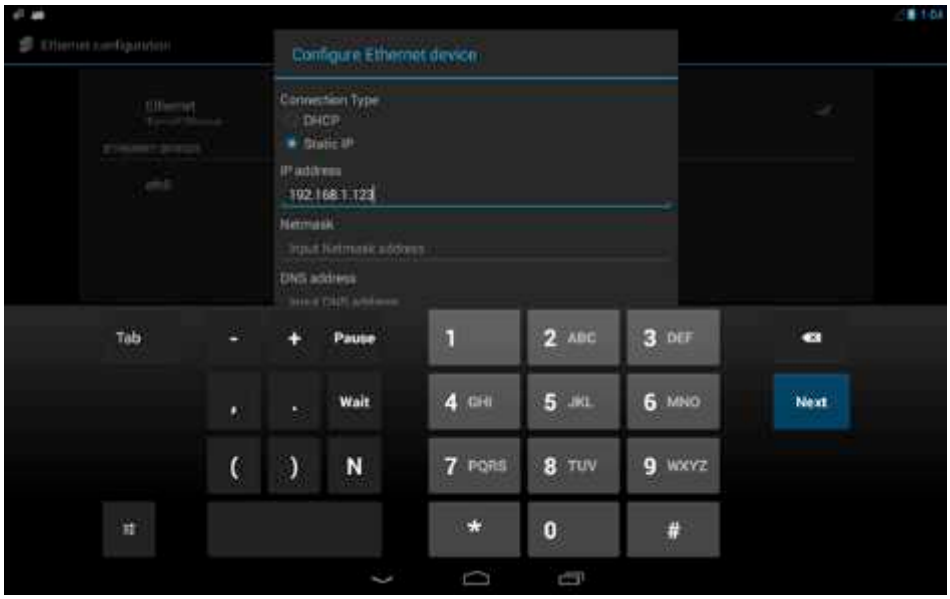
(3) Network board configuration

BX-T10IP allows for network board configuration via an application called ETHERNET available in the Applications Window.

To access the configuration, the network cable must be correctly connected, otherwise, the eth0 connection to be accessed will not become visible.

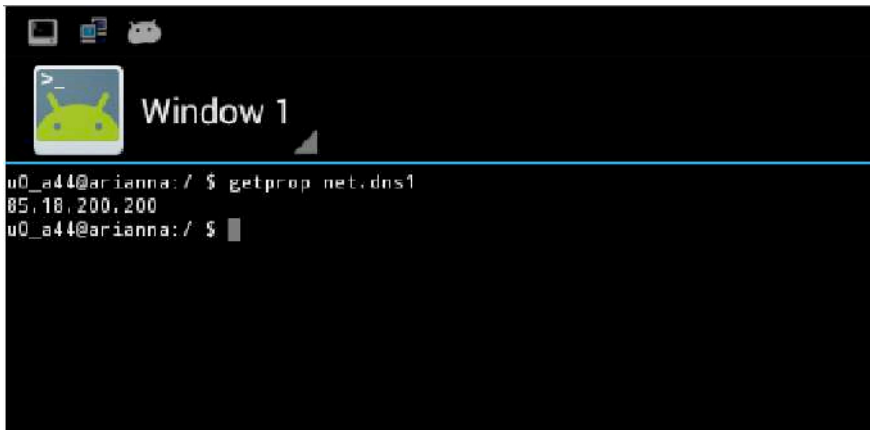


Usually, BX-T10IP is delivered from the factory with DHCP enabling pre-activated.
DHCP means Dynamic Host Configuration Protocol and indicates the possibility of using the network board configuration service with dynamic IP.
In this way, our computer can be immediately used to access the network.
When BX-T10IP is used as a KNX server or as an indoor video door phone, then a static



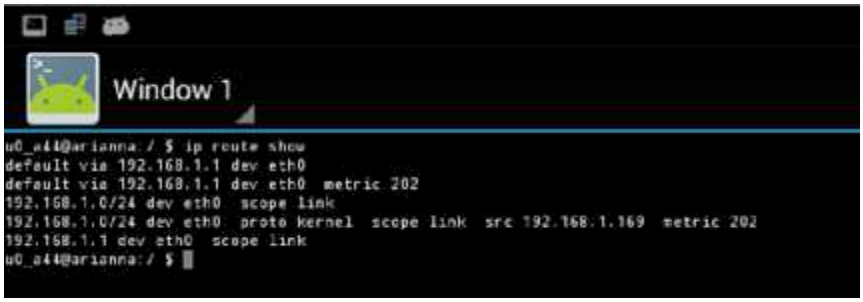
IP address must be assigned.
When a static IP address is assigned, it is necessary to complete the entire information table by also adding the Netmask, DNS address and Default Router.
Netmask is the subnet address masking system; usually, in small-sized systems its value is 255.255.255.0
DNS address is the DNS server address that allows for network node names to be resolved with the real addresses. It is strictly necessary only to surf the Internet.

It is generally not easy to know the DNS address.
Therefore, as long as you are in the automatic DHCP configuration, it is advisable to open the Terminal and type the command **getprop net.dns1**
By doing so, you will be able to retrieve the address of the primary DNS



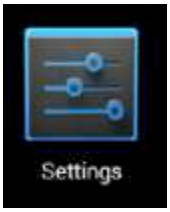
server from the Terminal to enter it in manual programming.

Finally, manual programming requires entering the **Default Router**.
This is the address to access our ADSL Router that will allow us to surf the Internet.
In this case, too, we can use the active DHCP service and the Terminal to read the assigned routing rules.
The control to use is **ip route show**.
Then, you will only have to read the first line with the default settings.
In the example below the router is located at the address 192.168.1.1

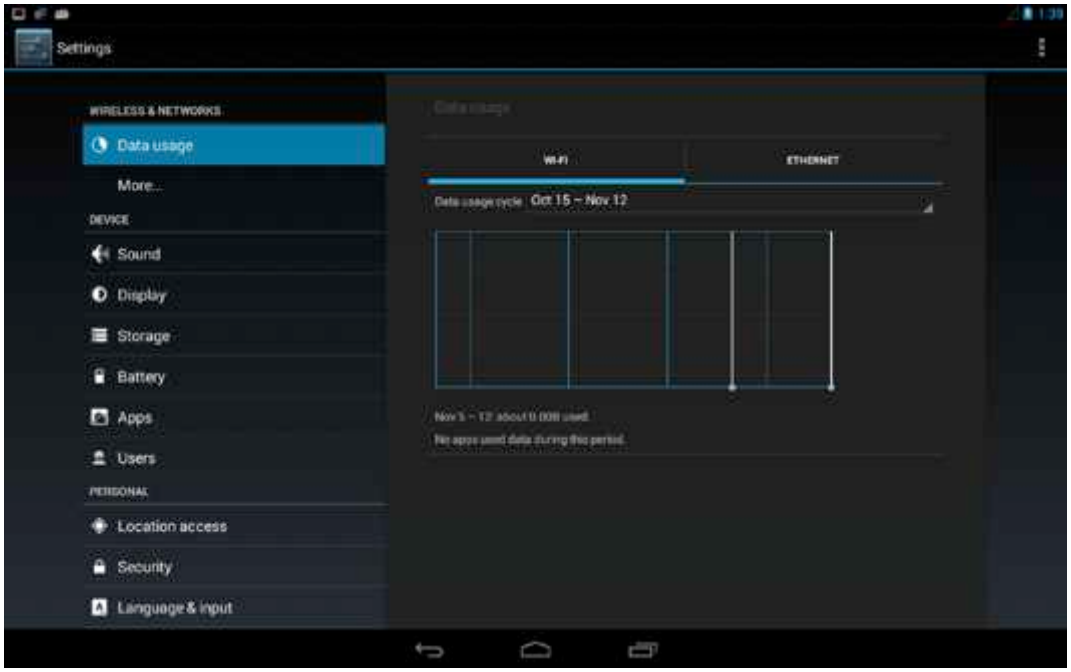


To end the manual programming of the Network Board press the **SAVE** control.

(4) Settings

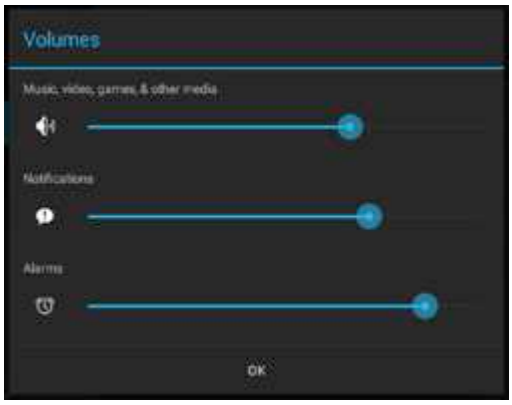


Each Android machine has a Settings page for the adjustment of the main



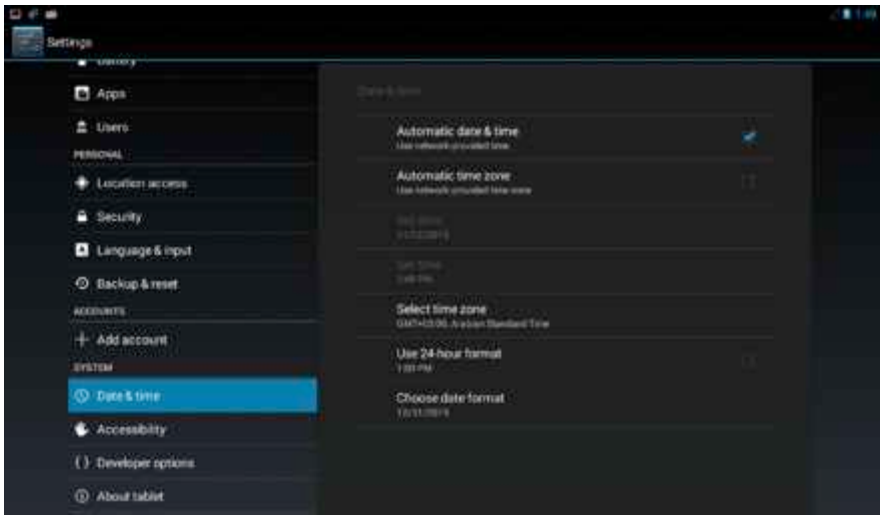
parameters which can be accessed from the page with the APPS.

Sound
In this section, volumes can be adjusted.
We are interested, in particular, in the **Volumes** panel.
Here, the speaker volume can be adjusted by moving the slider named
Music, video, games & other media.
Press OK to confirm your changes.



Display unit
In this section, the display unit appearance can be changed.
The changes may involve both the layout of the Desktop (Wallpaper / Live Wallpaper),
and the operation mode (Sleep / Brightness).

Date & Time
Finally, please remember that the Select time zone control



can be used to change the Time Zone to which the system clock refers.

(5) Installation of new Applications (APK)

BX-T10IP cannot download APPs from Google Play.
This is a deliberate choice of Blumotix in order to avoid generating bugs in the configuration phase of your touch panel.
This does not mean that new applications cannot be installed, but simply that the required operations should be carried out manually by the Installer by copying and running APK files.
APK files can be downloaded from Google Play by using one of the many tools available online under the name of APK Downloaders.

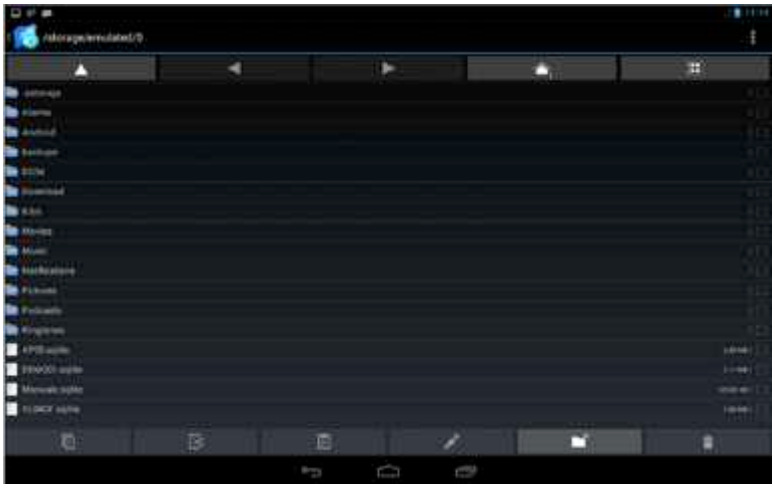
apkpure.com

https://play.google.com/store/apps/details?id=cz.nn.helios_mobile

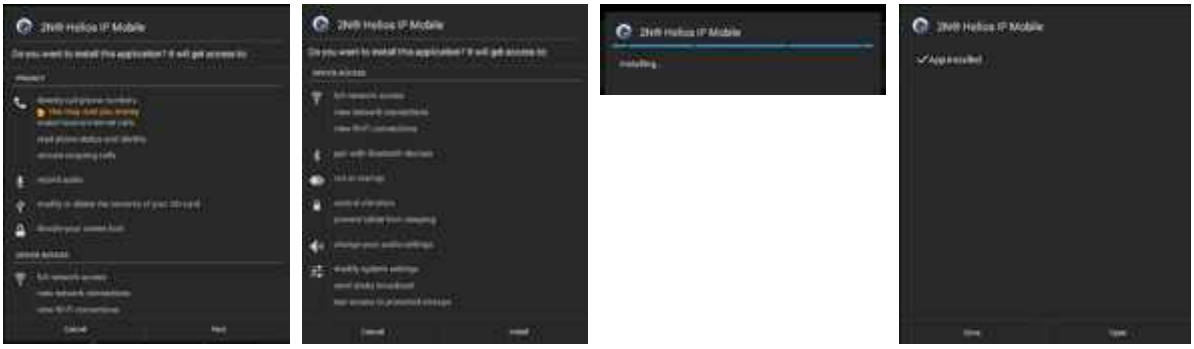
Simply copy the desired Google Play URL and start your download.
For example, if you wish to download the 2N video door phone application, the correct link is:

https://play.google.com/store/apps/details?id=cz.nn.helios_mobile

Once the APK file is downloaded, you must copy it to the touch panel memory and run it.
Generally, APK files are transferred to the Downloads folder.
The easiest way to transfer a file is to connect the touch panel to the PC with the micro USB cable and proceed to copying the file by dragging and dropping it, a method already described in paragraph (5) of the Quick Start Guide.

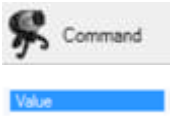


Now you can work directly on the touch panel by opening the APP Explorer+.



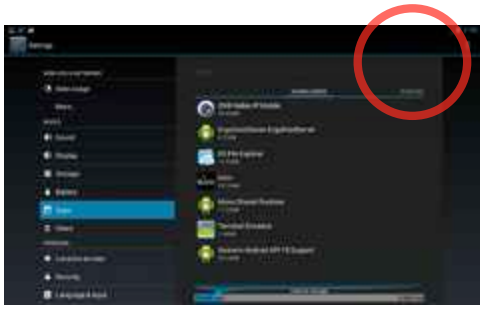
Enter the Downloads folder, and click on APK (2N Helios Mobile IP).

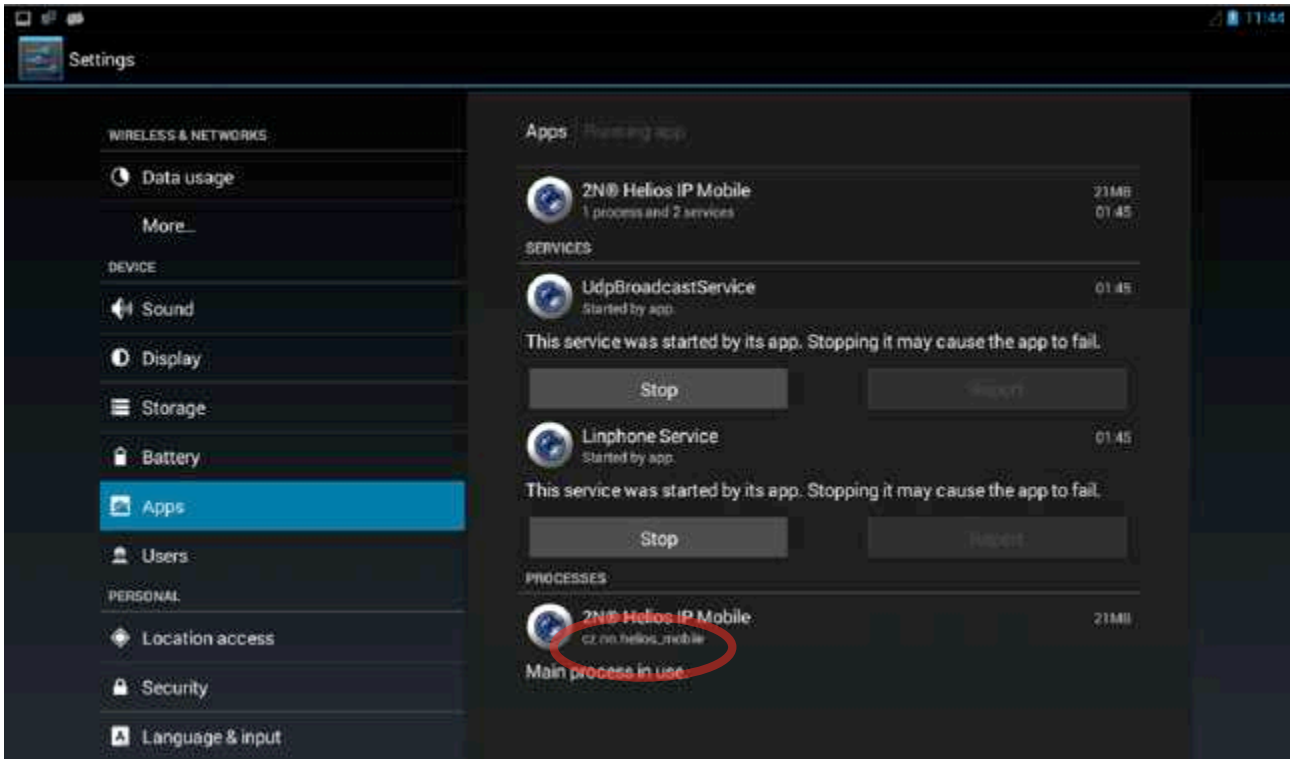
At the end of the procedure, the application will show up in the APPS window.



To use the new application by recalling it directly from our Synoptic display, we will have to add to the project a link of the Command type and assign to its value property the correct string to recall the process being run.

This string can be read in the APPS Settings.
Open the RUNNING APPS window and select the required process.





Our string is located in PROCESSES box under the name of the Application.
It is very unusual for the string to be different from the name of the Application, but in the case of 2N Helios Ip Mobile the string acquires the value **cz.nn.helios _mobile**.

(6) KNX supervision-dedicated applications

The Touch BX-T10IP Computer always performs automatically the Home Automation-dedicated applications named ErgoDroidServer and Krim.Android.
ErgoDroidServer is the application designed to communicate with the KNX bus using the device internal TPUART interface.
ErgoDroidServer is the application that supplies network services to obtain information on the state of our system.
These services are used by Krim and by remote Smart devices to operate the Synoptic displays used by customers.
Krim is the application running the Synoptic display or the User Interface.

ErgoDroidServer and Krim can be upgraded to more recent versions by installing the APKs available on the FTP site of Blumotix.
Upgrading is not an automated service.
This is a deliberate choice of Blumotix to avoid problems generated by the introduction of innovations in perfectly efficient systems.
Therefore, any upgrade must be performed manually by following the same installation procedures applicable to any APK.