IQ3/XNC KNX

Installation and configuration

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Electrocom
Rødeledsvej 95
DK-5700 Svendborg
Denmark
Tel : +45 8880 7580
www.electrocom.dk

1. Introduction

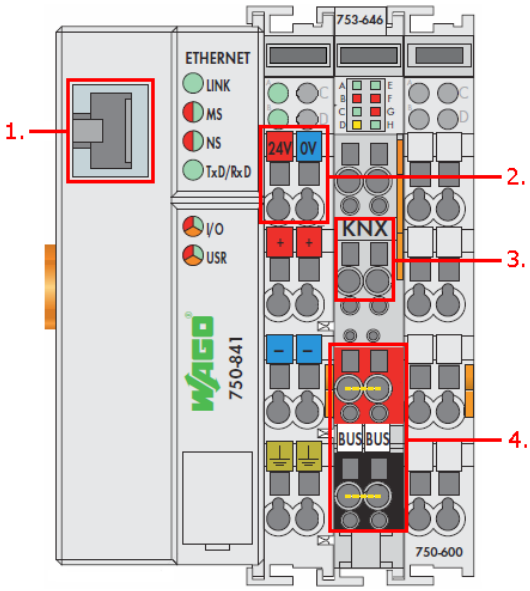
The XNC KNX provides the functionality for an IQ3 Controller to be able to communicate with a KNX network. The IQ3 Controller will be able to read 130 different KNX variables and write another 70 KNX variables.

The 200 KNX variables available to the IQ3 Controller can be combined with your KNX network in the ETS3 software.

With the XNC KNX comes a piece of hardware which works as a gateway between the IQ3 Controller and the KNX network. The gateway is called the XNC KNX Gateway.

2. XNC KNX Gateway

The XNC KNX Gateway hardware has the following layout.



1. RJ45 connector for ethernet network with the IQ3 Controller
2. Power for the XNC KNX Gateway. 24V DC
3. Short circuit these two connectors equals KNX Program Address button press
4. Insert two wires for the Twisting Pair connection to the KNX network
   One red wire and one black wire

The XNC KNX Gateway should be mounted on a DIN rail.

Dimensions of the XNC KNX Gateway. The units are millimeters.

- Height 100 mm
- Width 75 mm
- Depth 70 mm

2.1. XNC KNX Gateway settings

There is a webpage server on the XNC KNX Gateway. It is possible to configure the several different settings. The XNC KNX Gateway is preprogrammed with a static IP of 10.0.0.149. To enter the webpage use the following link.

http://10.0.0.149

The address will be different if the IP has been changed on the XNC KNX Gateway.

There is needed a login for entering the webpages to configure the different settings. Following users are created on the XNC KNX Gateway.

User: admin

Password: wago

In the settings it is possible to setup the network configuration under TCP/IP or change the user access on XNC KNX Gateway webpages under Security.

3. XNC download

The KNX XNC driver consists of two files:

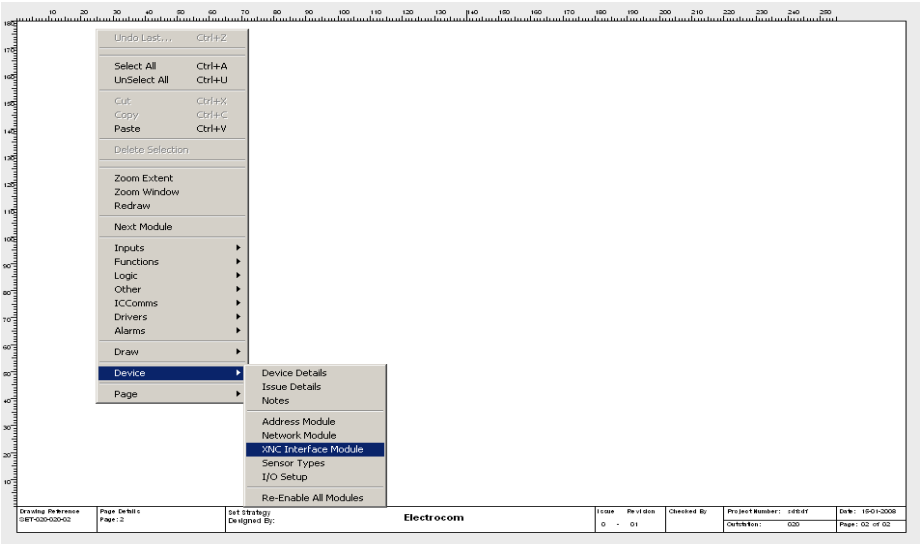
- .xnc file – Application file
- .xnp file – Configuration file

Quick list for the installation:

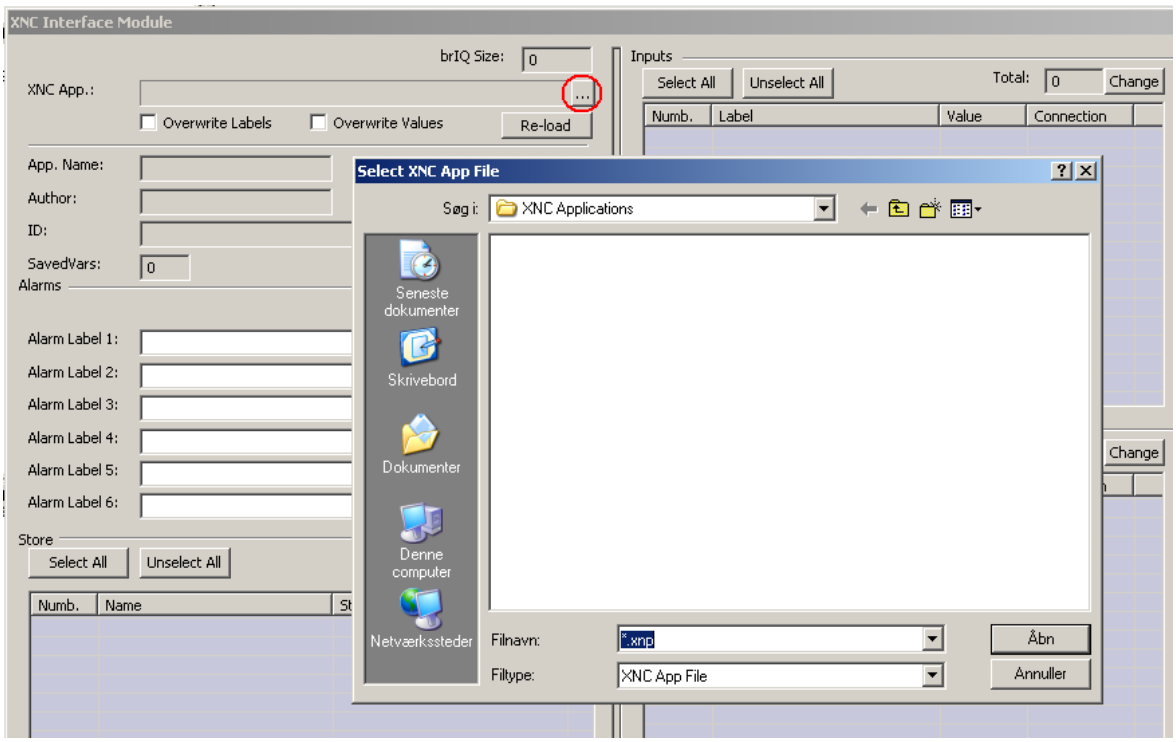
1. Download the strategy with the .xnp file
2. Download the .xnc file

3.1. Download the strategy with the .xnp file

Start up SET (System Engineering Tool) and open your strategy. Right-click on the strategy with the mouse and you will get a menu popping up. In the menu choose “Device”->”XNC Interface Module”.



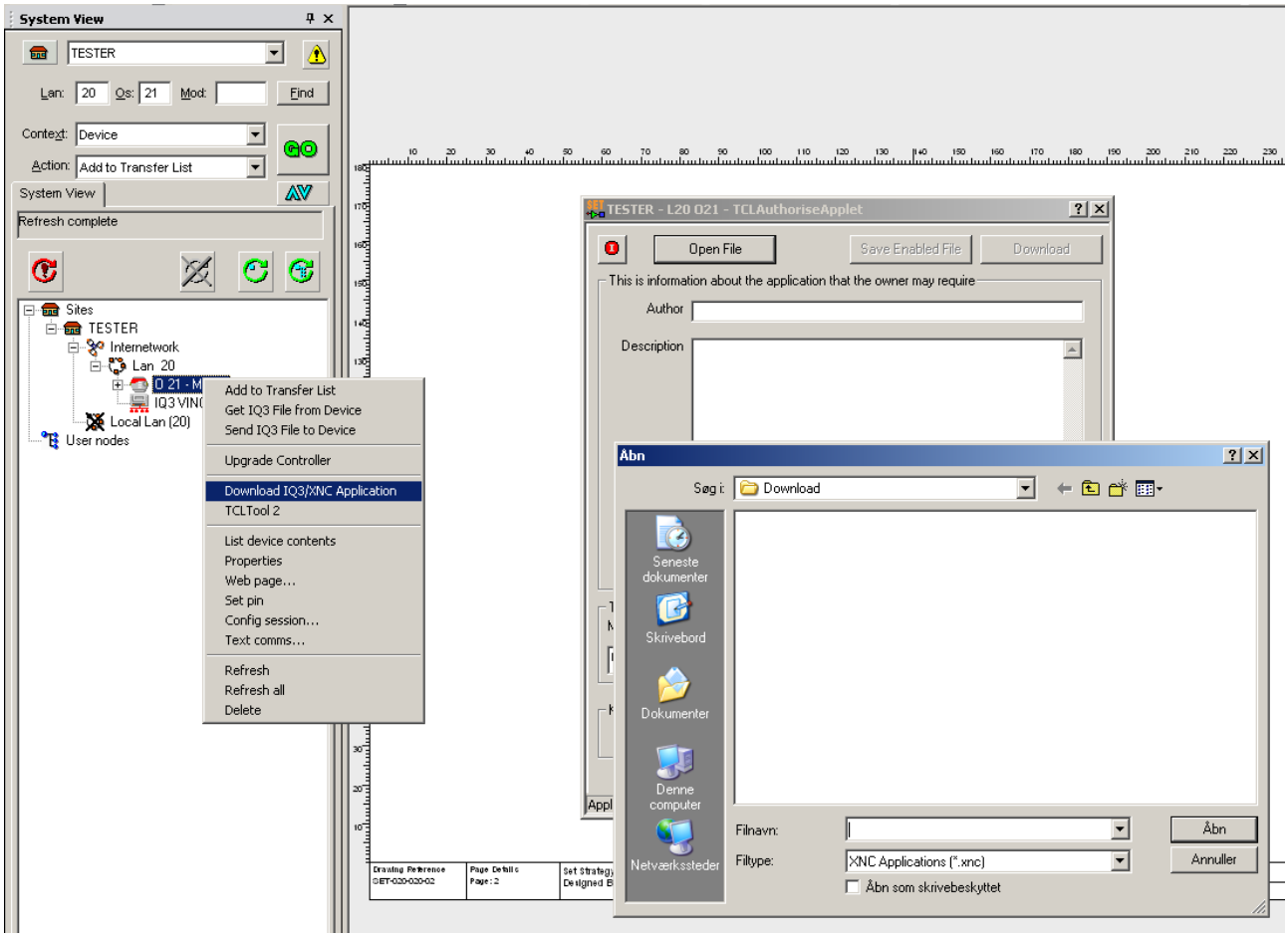
XNC Interface module is opened then press the “...” button which can be seen in the next screenshot marked by a red ring. There will be an open dialog and you can choose the .xnp file.



Now download the strategy to the Trend Controller.

3.2. Download the .xnc file

Switch to “System View” and find the Trend Controller. Right-click on it and choose “Download IQ3/XNC Application”. This will open a new dialog where you press the “Open File” button and an open dialog will appear which is used to find the .xnc file.



Now press the download button and the KNX XNC driver will be installed on the Trend Controller but still needs configuration.

4. XNC KNX variables

With the IQ3 Controller and XNC KNX it is possible to read or write XNC KNX variables. Here is a full list of the different variable types.

XNC KNX variable	Size	Description
Switch	1	Can be ON (1) or OFF (0)
Switch Control	2	Like Switch but can also be deactived (0) or activated (1)
Small Value	1	Unsigned 8 bit contains numbers 0
Value	1	Unsigned 16 bit contains numbers 0 to 65535
Value Negative	1	Signed 16 bit contains numbers -32767 to +32767
Value Decimal	1	16 bit Float contains decimal numbers
Big Value Decimal	1	32 bit Float contains a wider range of decimal numbers
Date	3	Contains Year (only last 2 digits), Month and Day
Time	4	Contains Day of week, Hours, Minutes and Seconds

Here is a list with the amount of each XNC KNX variable type supported by the XNC KNX.

XNC KNX variable	Read Amount	Write Amount
Switch	25	20
Switch Control	8	5
Small Value	20	15
Value	15	5
Value Negative	15	5
Value Decimal	20	10
Big Value Decimal	20	10
Date	1	0
Time	1	0

5. Supported KNX Datapoint Types

In your KNX network you will have several different KNX Datapoint Types. Here is a list with all the KNX Datapoint Types supported by the XNC KNX. Each type of XNC KNX variables only support a certain amount of different KNX Datapoint Types. DPT is short for Datapoint Type.

DPT ID	DPT Name	XNC KNX Variable
1.001	DPT_Switch	Switch
1.002	DPT_Bool	Switch
1.003	DPT_Enable	Switch
1.004	DPT_Ramp	Switch
1.005	DPT_Alarm	Switch
1.006	DPT_BinaryValue	Switch
1.007	DPT_Step	Switch
1.008	DPT_UpDown	Switch
1.009	DPT_OpenClose	Switch
1.010	DPT_Start	Switch
1.011	DPT_State	Switch
1.012	DPT_Invert	Switch
1.013	DPT_DimSendStyle	Switch
1.014	DPT_InputSource	Switch
1.015	DPT_Reset	Switch
1.016	DPT_Ack	Switch
1.017	DPT_Trigger	Switch
1.018	DPT_Occupancy	Switch
1.019	DPT_Window_Door	Switch
1.021	DPT_LogicalFunction	Switch
1.022	DPT_Scene_AB	Switch
1.023	DPT_ShutterBlind_Mode	Switch
1.100	DPT_Heat/Cool	Switch
2.001	DPT_Switch_Control	Switch Control
2.002	DPT_Bool_Control	Switch Control
2.003	DPT_Enable_Control	Switch Control
2.004	DPT_Ramp_Control	Switch Control
2.005	DPT_Alarm_Control	Switch Control
2.006	DPT_BinaryValue_Control	Switch Control

DPT ID	DPT Name	XNC KNX Variable
2.007	DPT_Step_Control	Switch Control
2.008	DPT_Direction1_Control	Switch Control
2.009	DPT_Direction2_Control	Switch Control
2.010	DPT_Start_Control	Switch Control
2.011	DPT_State_Control	Switch Control
2.012	DPT_Invert_Control	Switch Control
5.001	DPT_Scaling	Small Value
5.003	DPT_Angle	Small Value
5.004	DPT_Percent_U8	Small Value
5.005	DPT_DecimalFactor	Small Value
5.010	DPT_Value_1_Ucount	Small Value
7.001	DPT_Value_2_Ucount	Value
7.002	DPT_TimePeriodMsec	Value
7.003	DPT_TimePeriod10Msec	Value
7.004	DPT_TimePeriod100Msec	Value
7.005	DPT_TimePeriodSec	Value
7.006	DPT_TimePeriodMin	Value
7.007	DPT_TimePeriodHrs	Value
7.010	DPT_PropDataType	Value
7.012	DPT_UElCurrentmA	Value
7.013	DPT_Brightness	Value
8.001	DPT_Value_2_Count	Value Negative
8.002	DPT_DeltaTimeMsec	Value Negative
8.003	DPT_DeltaTime10MSec	Value Negative
8.004	DPT_DeltaTime100MSec	Value Negative
8.005	DPT_DeltaTimeSec	Value Negative
8.006	DPT_DeltaTimeMin	Value Negative
8.007	DPT_DeltaTimeHrs	Value Negative
8.010	DPT_Percent_V16	Value Negative
9.001	DPT_Value_Temp	Value Decimal
9.002	DPT_Value_Tempd	Value Decimal
9.003	DPT_Value_Tempa	Value Decimal
9.004	DPT_Value_Lux	Value Decimal
9.005	DPT_Value_Wsp	Value Decimal
9.006	DPT_Value_Pres	Value Decimal
9.007	DPT_Value_Humidity	Value Decimal

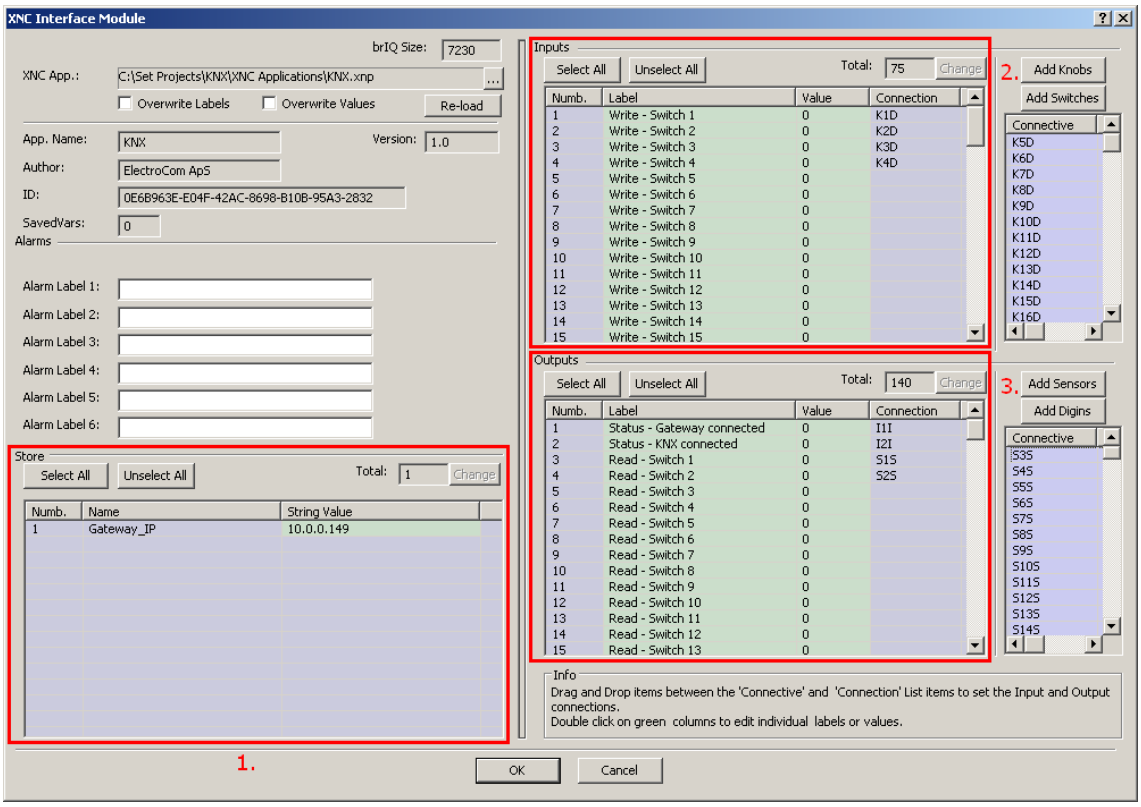
DPT ID	DPT Name	XNC KNX Variable
9.008	DPT_Value_AirQuality	Value Decimal
9.010	DPT_Value_Time1	Value Decimal
9.011	DPT_Value_Time2	Value Decimal
9.020	DPT_Value_Volt	Value Decimal
9.021	DPT_Value_Curr	Value Decimal
9.022	DPT_PowerDensity	Value Decimal
9.023	DPT_KelvinPerPercent	Value Decimal
9.024	DPT_Power	Value Decimal
9.025	DPT_Value_Volume_Flow	Value Decimal
10.001	DPT_TimeOfDay	Time
11.001	DPT_Date	Date
14.000	DPT_Value_Acceleration	Big Value Decimal
14.001	DPT_Value_Acceleration_Angular	Big Value Decimal
14.002	DPT_Value_Activation_Energy	Big Value Decimal
14.003	DPT_Value_Activity	Big Value Decimal
14.004	DPT_Value_Mol	Big Value Decimal
14.005	DPT_Value_Amplitude	Big Value Decimal
14.006	DPT_Value_AngleRad	Big Value Decimal
14.007	DPT_Value_AngleDeg	Big Value Decimal
14.008	DPT_Value_Angular_Momentum	Big Value Decimal
14.009	DPT_Value_Angular_Velocity	Big Value Decimal
14.010	DPT_Value_Area	Big Value Decimal
14.011	DPT_Value_Capacitance	Big Value Decimal
14.012	DPT_Value_Charge_DensitySurface	Big Value Decimal
14.013	DPT_Value_Charge_DensityVolume	Big Value Decimal
14.014	DPT_Value_Compressibility	Big Value Decimal
14.015	DPT_Conductance	Big Value Decimal
14.016	DPT_Value_Electrical_Conductivity	Big Value Decimal
14.017	DPT_Value_Density	Big Value Decimal
14.018	DPT_Value_Electric_Charge	Big Value Decimal
14.019	DPT_Value_Electric_Current	Big Value Decimal
14.020	DPT_Value_Electric_CurrentDensity	Big Value Decimal
14.021	DPT_Value_Electric_DipoleMoment	Big Value Decimal
14.022	DPT_Value_Electric_Displacement	Big Value Decimal
14.023	DPT_Value_Electric_FieldStrength	Big Value Decimal
14.024	DPT_Value_Electric_Flux	Big Value Decimal

DPT ID	DPT Name	XNC KNX Variable
14.025	DPT_Value_Electric_FluxDensity	Big Value Decimal
14.026	DPT_Value_Electric_Polarization	Big Value Decimal
14.027	DPT_Value_Electric_Potential	Big Value Decimal
14.028	DPT_Value_Electric_PotentialDifference	Big Value Decimal
14.029	DPT_Value_ElectromagneticMMoment	Big Value Decimal
14.030	DPT_Value_Electromotive_Force	Big Value Decimal
14.031	DPT_Value_Energy	Big Value Decimal
14.032	DPT_Value_Force	Big Value Decimal
14.033	DPT_Value_Frequency	Big Value Decimal
14.034	DPT_Value_Angular_Frequency	Big Value Decimal
14.035	DPT_Value_Heat_Capacity	Big Value Decimal
14.036	DPT_Value_Heat_FlowRate	Big Value Decimal
14.037	DPT_Value_Heat_Quantity	Big Value Decimal
14.038	DPT_Value_Impedance	Big Value Decimal
14.039	DPT_Value_Length	Big Value Decimal
14.040	DPT_Value_Light_Quantity	Big Value Decimal
14.041	DPT_Value_Luminance	Big Value Decimal
14.042	DPT_Value_Luminous_Flux	Big Value Decimal
14.043	DPT_Value_Luminous_Intensity	Big Value Decimal
14.044	DPT_Value_Magnetic_FieldStrength	Big Value Decimal
14.045	DPT_Value_Magnetic_Flux	Big Value Decimal
14.046	DPT_Value_Magnetic_FluxDensity	Big Value Decimal
14.047	DPT_Value_Magnetic_Moment	Big Value Decimal
14.048	DPT_Value_Magnetic_Polarization	Big Value Decimal
14.049	DPT_Value_Magnetization	Big Value Decimal
14.050	DPT_Value_MagnetomotiveForce	Big Value Decimal
14.051	DPT_Value_Mass	Big Value Decimal
14.052	DPT_Value_MassFlux	Big Value Decimal
14.053	DPT_Value_Momentum	Big Value Decimal
14.054	DPT_Value_Phase_AngleRad	Big Value Decimal
14.055	DPT_Value_Phase_AngleDeg	Big Value Decimal
14.056	DPT_Value_Power	Big Value Decimal
14.057	DPT_Value_Power_Factor	Big Value Decimal
14.058	DPT_Value_Pressure	Big Value Decimal
14.059	DPT_Value_Reactance	Big Value Decimal
14.060	DPT_Value_Resistance	Big Value Decimal

DPT ID	DPT Name	XNC KNX Variable
14.061	DPT_Value_Resistivity	Big Value Decimal
14.062	DPT_Value_SelfInductance	Big Value Decimal
14.063	DPT_Value_SolidAngle	Big Value Decimal
14.064	DPT_Value_SoundIntensity	Big Value Decimal
14.065	DPT_Value_Speed	Big Value Decimal
14.066	DPT_Value_Stress	Big Value Decimal
14.067	DPT_Value_Surface_Tension	Big Value Decimal
14.068	DPT_Value_Common_Temperature	Big Value Decimal
14.069	DPT_Value_Absolute_Temperature	Big Value Decimal
14.070	DPT_Value_TemperatureDifference	Big Value Decimal
14.071	DPT_Value_Thermal_Capacity	Big Value Decimal
14.072	DPT_Value_Thermal_Conductivity	Big Value Decimal
14.073	DPT_Value_ThermoelectricPower	Big Value Decimal
14.074	DPT_Value_Time	Big Value Decimal
14.075	DPT_Value_Torque	Big Value Decimal
14.076	DPT_Value_Volume	Big Value Decimal
14.077	DPT_Value_Volume_Flux	Big Value Decimal
14.078	DPT_Value_Weight	Big Value Decimal
14.079	DPT_Value_Work	Big Value Decimal

6. XNC Configuration

The XNC KNX is configured in the XNC Interface Module.



1. The Stores are the configuration for the XNC KNX.
   Gateway_IP is the IP address of the XNC KNX Gateway

2. The XNC Inputs are the IQ3 Controller's inputs to the KNX network. XNC KNX variables will be written to the KNX network.

   4 Knobs are connected to Write – Switch 1 to 4 in this example. The 4 Knobs will be able to set 4 switches in the KNX network.

3. The XNC Outputs are the outputs from the KNX network to the IQ3 Controller. A XNC KNX variable will present a read value from the KNX network.

   XNC Output 1 and 2 shows status for the XNC KNX connection to the KNX network.
   Status – Gateway connected can be 0 or 1
   1 means there is a connection from the XNC KNX to the XNC KNX Gateway
   0 means that the connection failed
   Status – KNX connected can be 0 or 1
   1 means that the XNC KNX Gateway is connected to the KNX network
   0 means that the connection to the KNX network failed

   2 Sensors are connected to Read – Switch 1 to 2 in this example. The 2 Sensors will be able to show the status of 2 switches from the KNX network.

7. ETS3 Configuration

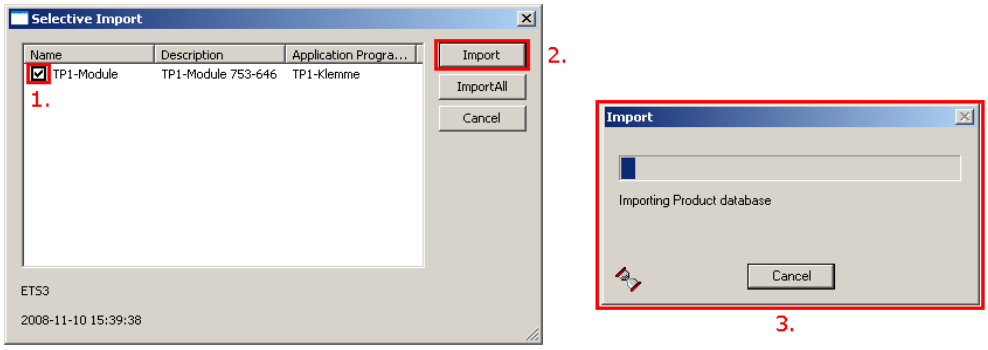
In ETS3 you start by installing software support for the XNC KNX Gateway. The ETS3 software support for the XNC KNX Gateway is a .zip file and can be downloaded from the following link:

http://www.electrocom.dk/downloads/ETS3/XNC_KNX_Gateway.zip

The software support is installed by doing the following in the ETS3:

File Import...

This will open a dialog box where you will choose the .vd5 file contained in the .zip file.

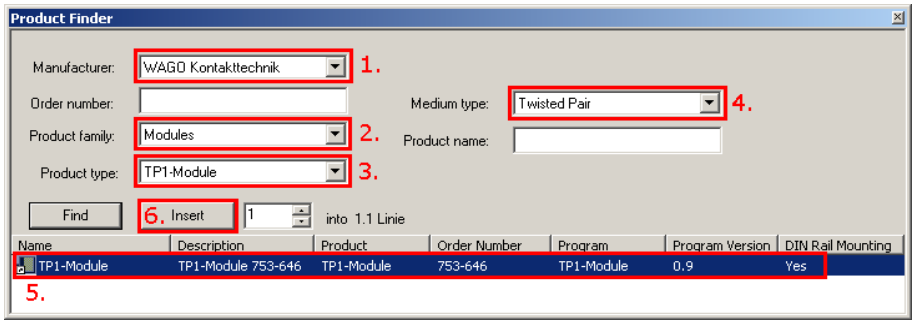


1. Select the TP1-Module (XNC KNX Gateway). Set the checkbox
2. Press Import button
3. Wait for the XNC KNX Gateway software to be installed in ETS3

The XNC KNX Gateway software is now installed in ETS3 and you will be able to setup your KNX network with the IQ3 Controller (XNC KNX).

7.1. Add and configure XNC KNX Gateway

You will get the following dialog box when you add a device in ETS3.



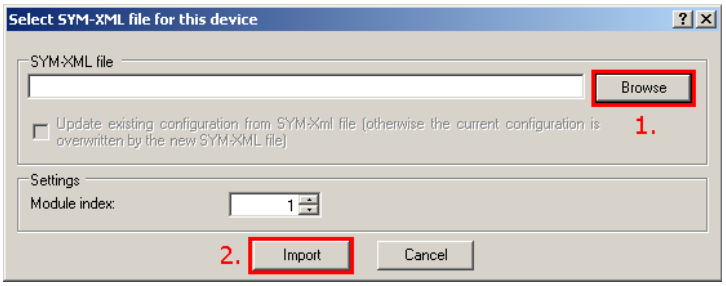
To add the XNC KNX Gateway follow these instructions:

1. Choose WAGO Kontakttechnik
2. Choose Modules
3. Choose TP1-Module
4. Choose Twisted Pair
5. Press Find button and mark the TP1-Module which will have occured
6. Press Insert button

The XNC KNX Gateway is now added as a device called TP1-Module.

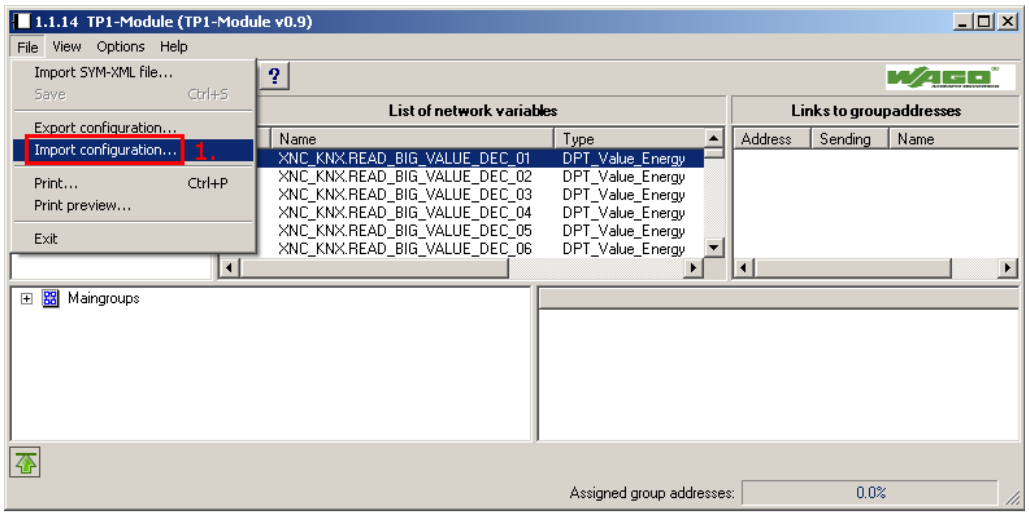
Two configuration files are needed for the XNC KNX Gateway and they are part of the zip file with the XNC drivers. Start the configuration with a right click on the device representing the XNC KNX Gateway in ETS3.

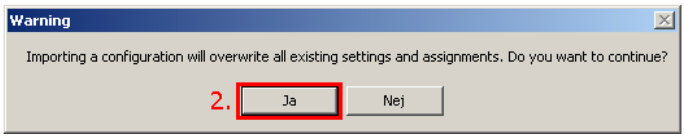
Mouse right click Edit Parameters...



1. Press Browse button. Find the XNC_KNX_GATEWAY.SYM_XML file and open
2. Press Import button.

Now it is very important to import the configuration file before setting anything else up.



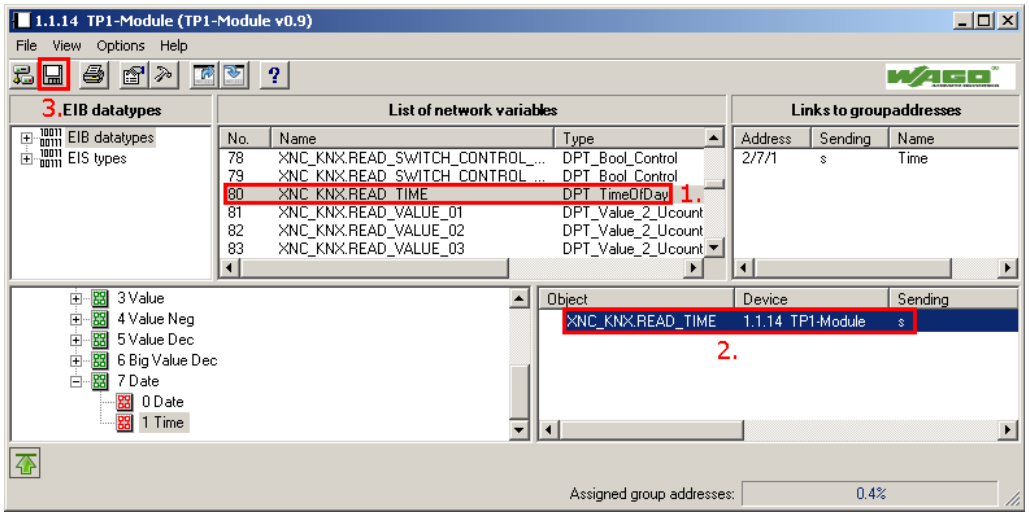


1. Press File Import configuration...
2. Open the file XNC_KNX_Gateway_config.xml and press Yes button.

The XNC KNX Gateway is now added to your KNX network and configured.

7.2. Connect the XNC KNX datapoints to the KNX network

You can now setup the KNX variables from the IQ3 Controller with the rest of the KNX network.

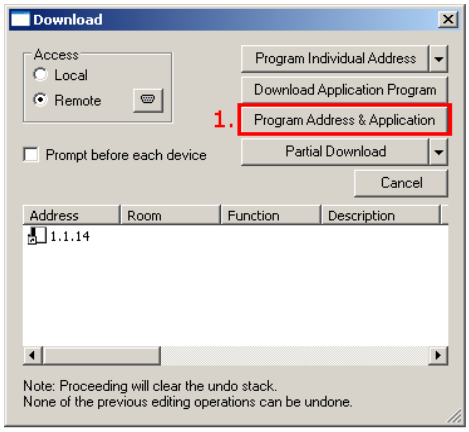


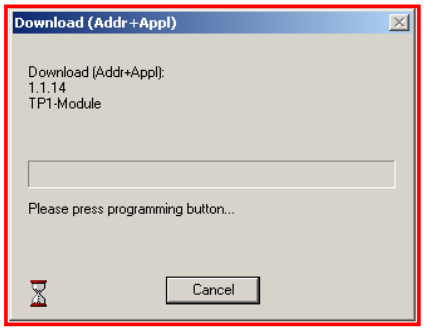
1. Find a KNX variable from the XNC KNX
2. Drag and drop the XNC KNX variable into the KNX network
3. Press Save button when finished connecting XNC KNX variables to KNX network

7.3. Download KNX configuration

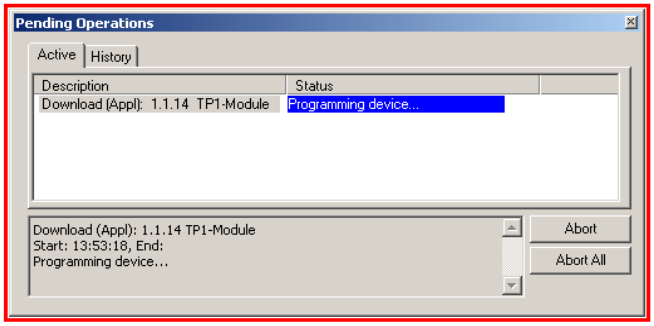
The KNX configuration needs to be downloaded to the XNC KNX Gateway. Start by right click on the XNC KNX Gateway.

Mouse right click Download...





2.



3.

1. Press Program Address & Application button
2. Dialog waiting for press on the KNX Program Address button on the XNC KNX Gateway
3. The XNC KNX Gateway is programmed with the KNX network configuration

If the address already is programmed on the XNC KNX Gateway then it is enough to only press Download Application Program button under instruction 1.