How to build KNX electrical cabinet?
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Fragment 1 - Assembly of the components of the cabinet

Gather all required modular units (protective devices, KNX devices, protection strips (PE), usually yellow or green, neutral strips (N) - blue, terminals, cables and other required tools.

- Put the protective devices, KNX modules and terminals on the eurorails just like it is presented in the documentation, in the cabinet sketch. The terminals should be installed in the upper part of the cabinet or on the lower rails (depending on the type of cabinet and agreement with the electrician, in most cases these are 1 or 2 rows), next to each group of terminals install the appropriate number of strips to connect neutral 'N' wires. The protection devices are to be installed under the terminals. Leave about 30% reserve space, and install the KNX and UPS equipment at the bottom.

- Usually each circuit will be protected by a residual current device.

- The residual current device is to be installed onto the DIN rail from the left side looking at the cabinet; then next to it install the appropriate number of overcurrent protection devices protecting the individual circuits. An exception are the three-phase circuits, for which the residual current devices are installed on the right side looking at the cabinet.

- The terminals are usually installed in the upper part of the cabinet. Rails for PE protective cables should be installed on the left side.

- For each circuit (group of terminals) install the appropriate number of green N strips (number of strips depends on the number of terminals)

- Connect the residual current device to the overcurrent protection devices using copper fingered strips, attached from the bottom; these cover the lower right terminal of the RCD and all overcurrent devices.

- The lower left terminal of the residual current device is to be connected by the blue neutral wire (N), the cross section of which depends on the current rating with an appropriate N strip located to the right of the terminals of the particular circuit.

- Run wires from the binary outputs of KNX devices to the appropriate terminals.

- For connections use soft LgY wires with an appropriate cross section, installing appropriate clamping sleeves on the ends.

- For lighting circuits inside the building use YDY 1.5mm2 wires.

- For lighting circuits outside the building use YDY 2.5mm2 wires.
• Remaining controlled circuits, like controlled outlets, to be served by wires of cross section depending on receiving device rated power.
• Power to the KNX devices to be run by 2.5 mm2 or 4 mm2 wires
• Power of each circuit should be run from the top terminal of the overcurrent device.
• Power to 'non-KNX' circuits to be run directly to the terminals keeping to the appropriate cross section, usually 2.5 mm2.
• Power of the circuits is run from the main terminal strip to the upper terminals of the residual current device, remembering the correct phase for each circuit described in the electric diagram.
• Running the power to the main terminal rail from the lower side of the main disconnector should be run with a wire of the same type as the connection to the building is executed.
• From the main terminal rail to the surge protection device run wires of at least 16 mm2, and a diversion line via grounding wire of 16 mm2, installing it in such a way so as to keep continuity.
• KNX devices should be connected with YCYM 2x2x0.8 cable using one pair of cables - red for live, black for negative. Trim the wire to appropriate length and connect using WAGO terminal blocks.
• Install the surge protection unit in place of the WAGO terminal block in the KNX power supply, and ground it properly (screwing it into the frame)
• Power to the KNX power supply should be run via the UPS.
• Remember to leave some slack for all wires and to gather them in a bunch and bind together with a compression band tied to the frame.
• Terminals should be labelled with a permanent pen according to the electric diagram, or using special labels.
• Install the protective cover panels.
• Each panel has weak spots that should be appropriately trimmed.
• Assemble panels into pairs using panel joints.
• Place screws at the sides, and in the middle part put cover caps
• Upon installation of the panels, replace the labels for each circuit.
• Install the door.
Fragment 2 - Layout of terminals and modular devices

A cabinet has to have its protective panels and doors detached before commencing phase A.

- Read carefully the cabinet documentation, consisting of:
  - Electric wiring diagram
  - Cabinet sketch
  - Terminal layout

- Layout of the terminals, zero strips, PE strips:
  - Terminals and strips to be laid out according to the Terminal Layout (in most cases two 'top' rows).

<table>
<thead>
<tr>
<th>Description</th>
<th>Diagram view</th>
<th>Photograph</th>
</tr>
</thead>
<tbody>
<tr>
<td>- green PE strips at the left side (only two are visible in the photo)</td>
<td><img src="image1.png" alt="Diagram view A" /></td>
<td><img src="image2.png" alt="Photograph" /></td>
</tr>
<tr>
<td>- single terminals ('single level') with holding clamps</td>
<td><img src="image3.png" alt="Diagram view B" /></td>
<td><img src="image4.png" alt="Photograph" /></td>
</tr>
<tr>
<td>- neutral N strip, blue, at right</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- wires are only connected to terminals marked 'black'</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remarks**

- Multi-level terminals are always to be placed on rails with short support beams (retracted row - usually the second one)
• Blue neutral strips N
• Green or yellow PE protective strips
• The number of places on zero N strip and protective PE strip has to be one higher than the number of receiving devices in the given circuits - check if this is so.
• In the terminal layout, the cross X is the blue (neutral) terminal.
• Each circuit is held by clamps - black in the electric diagram.

Arrangement of KNX devices and protective equipment:
• Lay the equipment out according to the Cabinet sketch

KNX devices usually mounted in switch cabinets (examples)

<table>
<thead>
<tr>
<th>Description</th>
<th>Photograph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binary output, output with terminal groups, primarily for currents of 6A/terminal</td>
<td><img src="image1.jpg" alt="Binary output" /></td>
</tr>
<tr>
<td>Binary output, output with independent terminals, primarily for currents of 10A/terminal, 16A/terminal</td>
<td><img src="image2.jpg" alt="Binary output" /></td>
</tr>
<tr>
<td>Roller blind control module. There are two types depending on power voltage: 24V DC and 230V AC. The control unit usually has a marking for movement up and down in form of triangular arrows, which eases recognition</td>
<td><img src="image3.jpg" alt="Roller blind control module" /></td>
</tr>
<tr>
<td>Dimmer unit for light bulbs and halogen light bulbs marked DIM</td>
<td><img src="image4.jpg" alt="Dimmer unit" /></td>
</tr>
<tr>
<td>Dimmer unit for fluorescent bulbs marked DIM 1-10V (look differs from the photo)</td>
<td><img src="image5.jpg" alt="Dimmer unit" /></td>
</tr>
<tr>
<td>The equipment bears markings in the form of icons symbolising their intended use</td>
<td><img src="image6.jpg" alt="Dimmer unit" /></td>
</tr>
<tr>
<td>Three devices, from left: main disconnector, phase signal lamps, OVR surge protector</td>
<td><img src="image7.jpg" alt="Three devices" /></td>
</tr>
</tbody>
</table>
Fregment 3 - Connecting 24 V DC Window Blind Control Units
Other guidebooks by this author

How to make your house intelligent? (an e-mail training course in 20 parts)
This is the only free publication on the market to gather all basic information about intelligent home systems in a reader-friendly guide form. The guide is targeted primarily at persons building or designing a house or flat, but also at specialists and designers who would like to get to know the basics or have them all together in one publication. The guide has over 160 pages and is distributed via e-mail in 20 parts (with the option of downloading it in whole). You can read more and sign in at www.smarthome.eu/general-guide

How not to forget that one little cable?
Do you know that forgetting one little cable can cause you to break down your walls again and cause the family to complain that you weren’t diligent enough to read the list of over 200 cables that you need to account for when designing the installation for your house? Learn more about this guide and order it at www.smarthome.eu/order-cables-guide

How to create a KNX design and installation?
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How To Pick And Choose KNX Equipment?
There are already over 10000 devices for the KNX system on the market, offered by over 400 manufacturers. How to handle such a mass? How to select the right device to suit user requirements? From among over 10000 devices, this guide contains on over one hundred pages descriptions and/or photos of over 250 of the most important or most interesting devices and their uses, including a handful of practical tips. Learn more about this guide and order it at www.smarthome.eu/order-units-guide

How to build an electric switch cabinet for the KNX system?
Step by step we will guide you through the process of assembly and construction of large electric switch cabinets. We will also tell you what you definitely cannot forget, and where you should
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**A KNX system design for a house of 200 sq m**

Based on this design you will learn how to execute other smart home designs and installations. The smart electric installation on its own (the design includes others as well) for a house of 200 sq m contains 171 modules in the switch cabinet, 130 cables running from the cabinet to the building, and several thousand connections. An experienced designer needs about 112 hours of work to create such a design. The time and money saved through the use of ready elements - this would be enough to calmly recommend the smart system design specifically to you. Learn more about this design and order it at [www.smarthome.eu/order-plans-pdf](http://www.smarthome.eu/order-plans-pdf)

**KNX system design - ETS files**

Thanks to this, you can implement changes and load ready programmes to devices according to your system within a few hours. You can be certain that everything will work correctly. This set consist ETS database and project files and list of functions implemented in typical 200m2 house. Learn more about this design and order it at [www.smarthome.eu/order-plans-ets](http://www.smarthome.eu/order-plans-ets)