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.
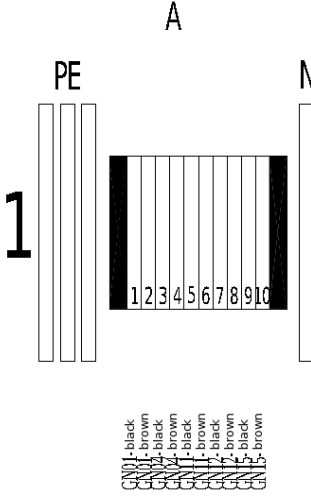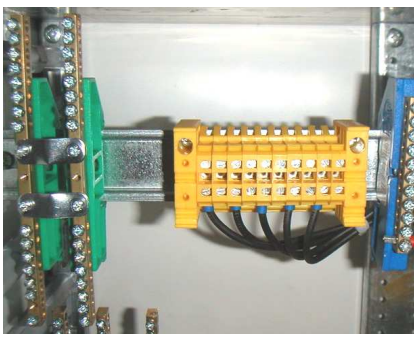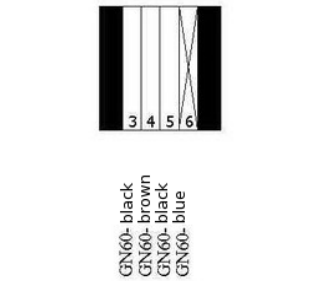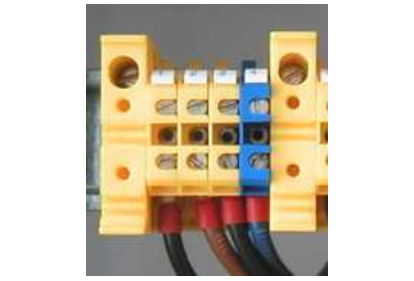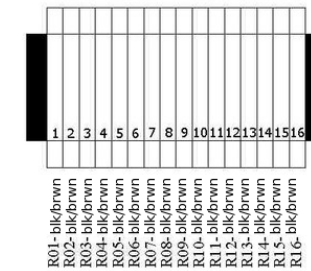
- Put the protective devices, KNX modules and terminals on the eurorails just like it is presented in the documentation, in the cabinet sketch. The terminals should be installed in the upper part of the cabinet or on the lower rails (depending on the type of cabinet and agreement with the electrician, 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).

Description	Diagram view	Photograph
• green PE strips at the left side (only two are visible in the photo) • single terminals ('single level') with holding clamps • neutral N strip, blue, at right • wires are only connected to terminals marked 'black'	A PE N 1 1 2 3 4 5 6 7 8 9 10 GN01-black GN02-brown GN03-black GN04-brown GN11-black GN12-brown GN13-black GN14-brown GN15-black GN15-brown	
• individual terminals of three-phase circuit with holding clamps • instead of N strip a blue N terminal is used • colours of the wires are described in PHASE B, p. 8	3 4 5 6 GN60- black GN60- brown GN60- black GN60- blue	
• multi-level terminals with holding clamps • in case of window blinds, dimmers and gates use both terminal inputs, in remaining cases only the 'lower' ones	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 R01-blk/brwn R02-blk/brwn R03-blk/brwn R04-blk/brwn R05-blk/brwn R06-blk/brwn R07-blk/brwn R08-blk/brwn R09-blk/brwn R10-blk/brwn R11-blk/brwn R12-blk/brwn R13-blk/brwn R14-blk/brwn R15-blk/brwn R16-blk/brwn	
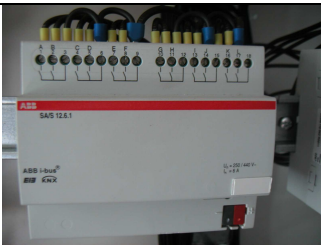
Remarks
- Multi-level terminals are always to be placed on rails with short support beams (retracted row - usually the second one)

- 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.
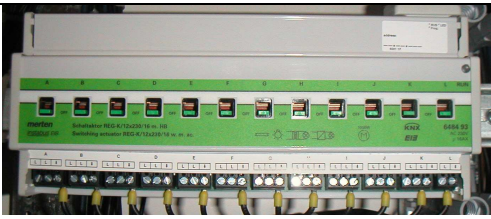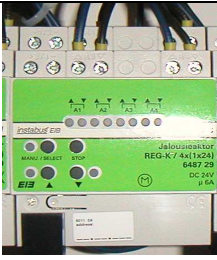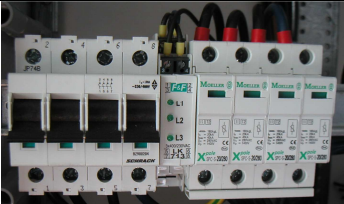- Each circuit is held by clamps - black in the electric diagram.

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

KNX devices usually mounted in switch cabinets (examples)

Description	Photograph
Binary output, output with terminal groups, primarily for currents of 6A/terminal	
Binary output, output with independent terminals, primarily for currents of 10A/terminal, 16A/terminal	
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	
Dimmer unit for light bulbs and halogen light bulbs marked DIM Dimmer unit for fluorescent bulbs marked DIM 1-10V (look differs from the photo) The equipment bears markings in the form of icons symbolising their intended use	
Three devices, from left: main disconnector, phase signal lamps, OVR surge protector	

Fragment 3 - connecting 24 V DC window blind control units
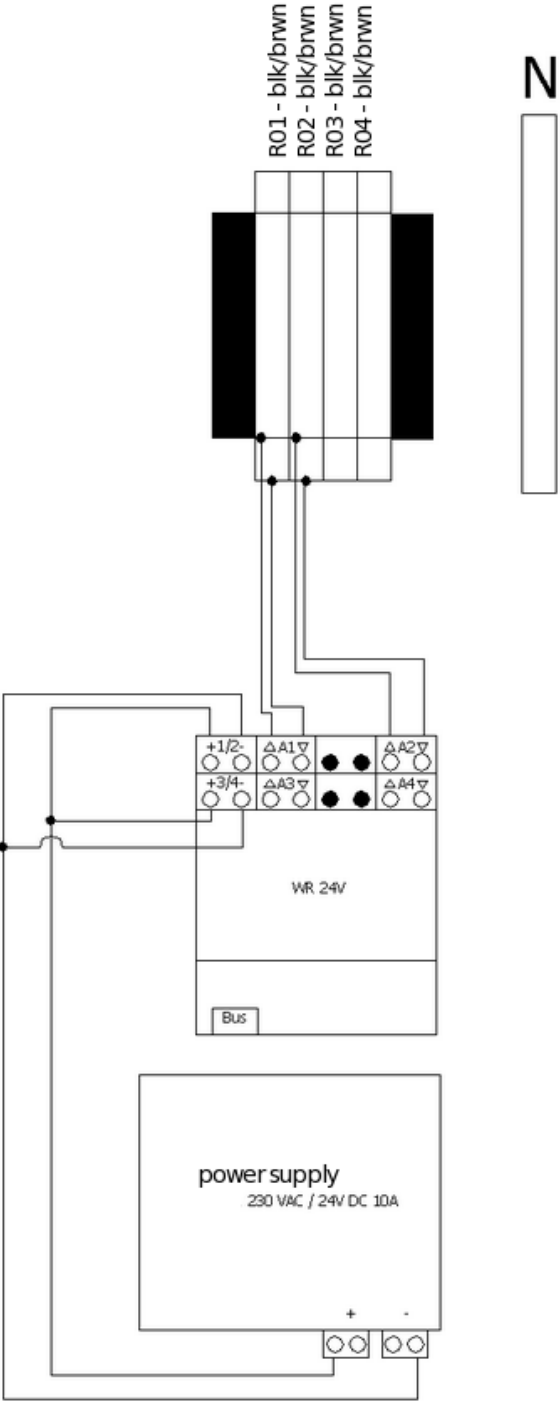
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