# DIMinBOX DX1

**1-Channel Universal Dimmer for DIN rail mounting (350W@230VAC/200W@110VAC)**

**ZDIDBDX1** **TECHNICAL DOCUMENTATION**

## FEATURES

- 1 channel for R L C loads and for dimmable CFL and LED lamps.
- Automatic detection of R L C load type.
- Automatic frequency detection.
- Dimming pattern selection for CFL and LED lamps.
- Optional manual dimming control.
- Total data saving on KNX bus failure.
- Integrated KNX BCU.
- Dimensions 67 x 90 x 36mm (2 DIN units).
- DIN rail mounting (EN 50022), through pressure.
- Conformity with the CE directives (CE-mark on the right side).

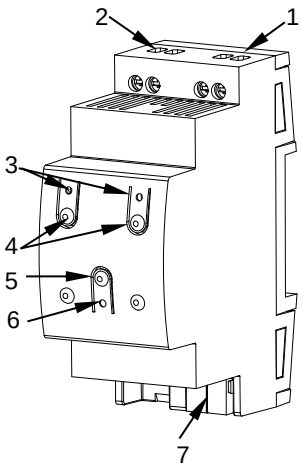



Figure 1: DIMinBOX DX1

| | | | |
|---|---|---|---|
| 1. Output channel | 2. Power supply input | 3. Output status LEDs | 4. Manual control push buttons |
| 5. Programming/Test push button | 6. Programming/Test LED | 7. KNX connector | |

Programming/Test button: short press to set programming mode. If this button is held while plugging the device into the KNX bus, it enters the safe mode. If this button is held for more than 3 seconds, the device enters the test mode.

Programming/Test LED: programming mode indicator (red). When the device enters the safe mode, it blinks (red) every half second. The manual mode is indicated by the green color. During the start-up (reset or after KNX bus failure) and if the device is not in safe mode, it emits a red flash.

## GENERAL SPECIFICATIONS

| CONCEPT | | | DESCRIPTION | |
|---|---|---|---|---|
| Type of device | | | Electric operation control device | |
| KNX supply | Voltage (typical) | | 29VDC SELV | |
| | Voltage range | | 21..31VDC | |
| | Maximum consumption | Voltage | mA | mW |
| | | 29VDC (typical) | 7.05 | 204.45 |
| | | 24VDC[1] | 10 | 240 |
| | Connection type | | Typical TP1 bus connector for 0.80mm Ø rigid cable | |
| External power supply | | | 110/230VAC 50/60Hz | |
| Operation temperature | | | 0°C .. +55°C | |
| Storage temperature | | | -20°C .. +55°C | |
| Operation humidity | | | 5 .. 95% | |
| Storage humidity | | | 5 .. 95% | |
| Complementary characteristics | | | Class B | |
| Protection class | | | II | |
| Operation type | | | Continuous operation | |
| Device action type | | | Type 1 | |
| Electrical stress period | | | Long | |
| Degree of protection | | | IP20, clean environment | |
| Installation | | | Independent device to be mounted inside electrical panels with DIN rail (EN 50022) | |
| Minimum clearances | | | Not required | |
| Response on KNX bus failure | | | Data saving according to parameterization | |
| Response on KNX bus restart | | | Data recovery according to parameterization | |
| Operation indicator | | | The programming LED indicates programming mode (red) and test mode (green). The output LED indicates its status (fixed = active output; flashing = error in the output) | |
| Weight | | | 105g | |
| PCB CTI index | | | 175V | |
| Housing material | | | PC FR V0 halogen free | |

[1] Maximum consumption in the worst-case scenario (KNX Fan-In model)

| OUTPUTS SPECIFICATIONS AND CONNECTIONS | | | |
|---|---|---|---|
| **CONCEPT** | | **DESCRIPTION** | |
| Number of outputs | | 1 | |
| Output type | | Solid state switching device | |
| Short-circuit protection | | YES | |
| Overload protection | | YES | |
| Connection method | | Screw terminal block | |
| Cable cross-section | | 0.5-4mm² (IEC) / 20-12AWG (UL) | |
| **LOADS AND ALLOWED POWER (@ 35°C ambient temperature around the device)** | | | |
| | | **230VAC** | **110VAC** |
| RLC | Individual channel | Up to 350W | Up to 200W |
| CFL and LED [1] | Individual channel | Up to 350W | Up to 200W |

[1]For leading edge, the maximum load could change depending on the load type. Please refer to the link https://zennio.com/download/technical_note_diminbox-dx_list_process_en.
Also, for load characterization process, please refer to the link https://www.zennio.com/download/technical_note_diminbox-dx2_tests_en.

| EXTERNAL POWER SUPPLY SPECIFICATIONS AND CONNECTIONS | | |
|---|---|---|
| **CONCEPT** | | **DESCRIPTION** |
| Power supply protection fuse | Voltage | 250V |
| | Current | 10A |
| | Response type | T (time-lag) |
| Connection method | | Screw terminal block |
| Cable cross-section | | 0.5-4mm² (IEC) / 20-12AWG (UL) |

### WIRING DIAGRAMS

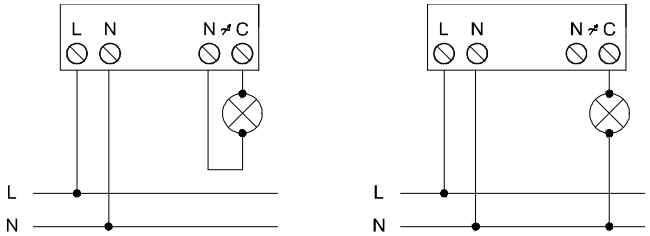
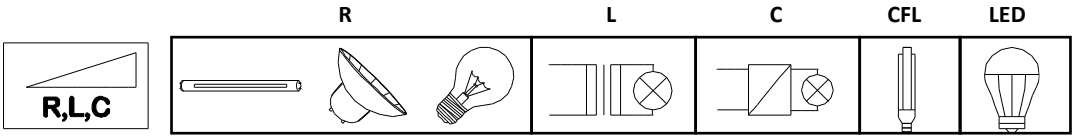



Figure 2: Wiring examples

### SAFETY INSTRUCTIONS AND ADDITIONAL NOTES

- Installation should only be performed by qualified professionals according to the laws and regulations applicable in each country.
- Do not connect the mains voltage nor any other external voltage to any point of the KNX bus; it would represent a risk for the entire KNX system. The facility must have enough insulation between the mains (or auxiliary) voltage and the KNX bus or the wires of other accessories, in case of being installed.
- The facility must be equipped with a device that ensures the omnipolar sectioning. Installation of a 10A mini-circuit-breaker is recommended. To prevent accidents, it must remain open in case of manipulation of the device.
- The device has a short-circuit protection fuse that, in case of activation, should only be rearmed or replaced by the Zennio technical service.
- Once the device is installed (in the panel or box), it must not be accessible from outside.
- Keep the device away from water (condensation over the device included) and do not cover it with clothes, paper or any other material while in use.
- The WEEE logo means that this device contains electronic parts and it must be properly disposed of by following the instructions at http://zennio.com/weee-regulation.
- This device contains software subject to specific licences. For details, please refer to http://zennio.com/licenses.

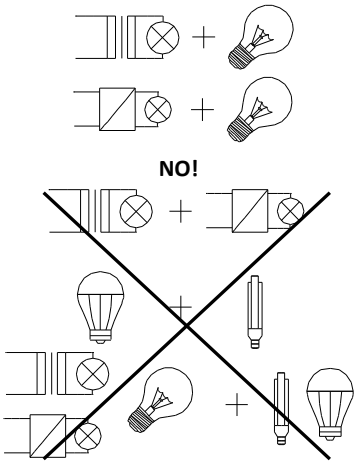
## SUPPORTED LOADS




- R = Resistive
- L = Inductive
- C = Capacitive
- CFL = Dimmable Compact Fluorescent Lamps
- LED = Dimmable LED lamps

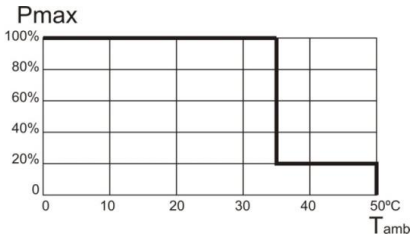
⚠ Please, make sure that the loads used are dimmable.

## LOAD COMBINATION



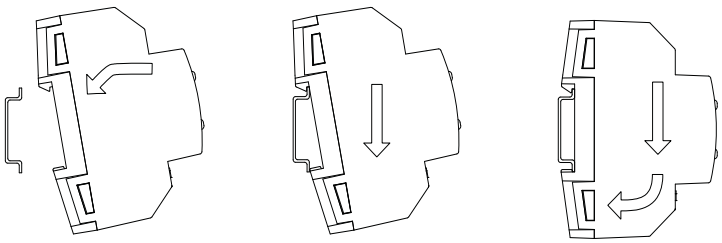

- In case of combining resistive (R) with inductive (L) loads, the resistive loads must not exceed the 50% of the total power.
- In case of combining resistive (R) with capacitive (C) loads, the resistive loads must not exceed the 50% of the total power.
- **Combination of capacitive loads with inductive loads is NOT ALLOWED.**
- Do not combine CFL or LED lamps with R L C loads.
- It is not advisable to combine different models of CFL lamps, LED lamps or transformers in the same channel since correct operation can be affected.

## OVERHEATING PROTECTION

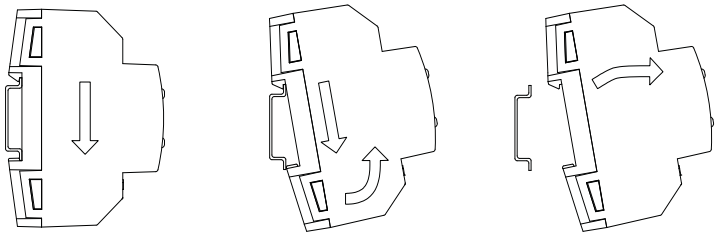



- When the ambient temperature is too high the dimmer actuator will regulate itself, at a maximum of 20%.
- Once the ambient temperature decreases, the dimmer actuator will resume its normal operation. Please, refer to user manual.

Attaching DIMinBOX DX1 to DIN rail:



Removing DIMinBOX DX1 from DIN rail:



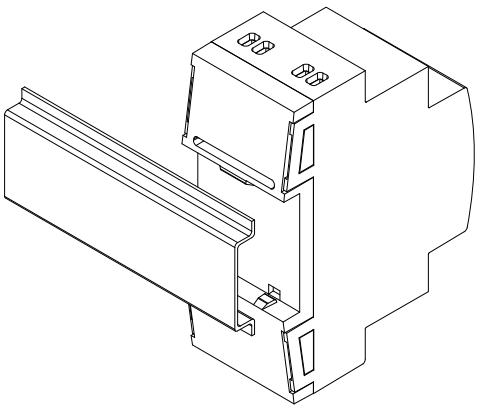
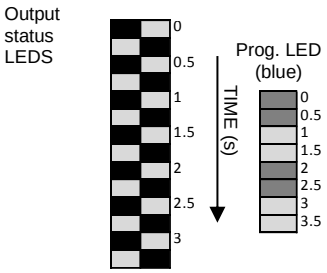
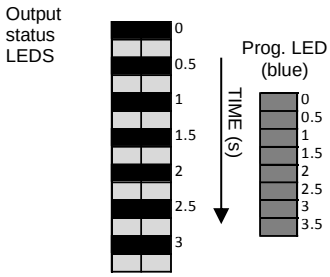
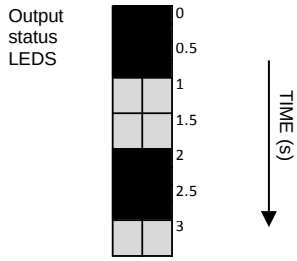
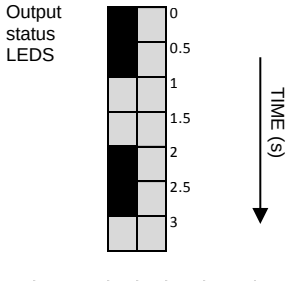
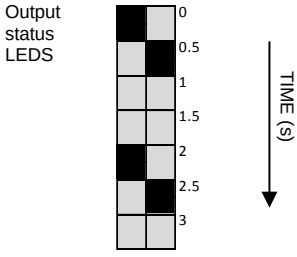
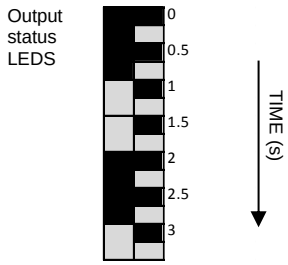


Figure 3: Mounting DIMinBOX DX1 on DIN rail

| ERROR NOTIFICATIONS | | |
|---|---|---|
| **ERROR** | **LEDS DESCRIPTION** | **VISUAL NOTIFICATION** |
| Short circuit | The two status LEDs blink alternately every 0.25 second.<br>When the output is locked, the programming LED blinks in blue. |  |
| Voltage Surge | The two status LEDs blink simultaneously every 0.25 second.<br>When the output is locked, the programming LED lights in blue |  |
| Overheating | The LEDs blink every second. |  |
| Supply Voltage Failure | One LED blinks every second. |  |
| Anomalous Frequency | Alternating blink of each LED during one-second, followed by a one-second switch off. |  |
| Parameterization Error | One LED blinks every second while the other LED blinks every 0.25 second. |  |