

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).

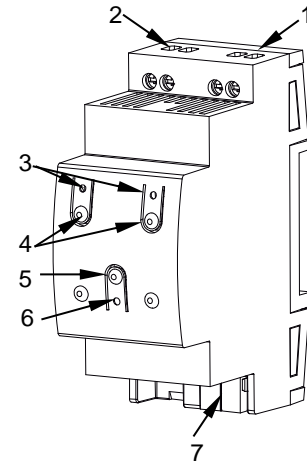


Figure 1: DIMinBOX DX1

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% (No condens.)		
Storage humidity		5 .. 95% (No condens.)		
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		0.5-4mm ² (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

¹For 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		0.5-4mm ² (IEC) / 20-12AWG (UL)

WIRING DIAGRAMS

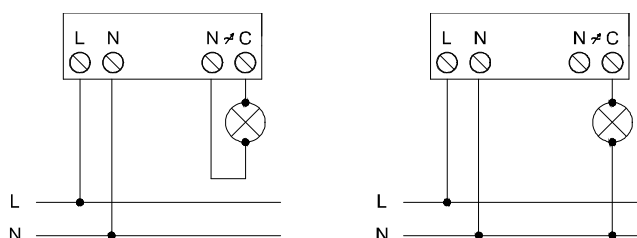



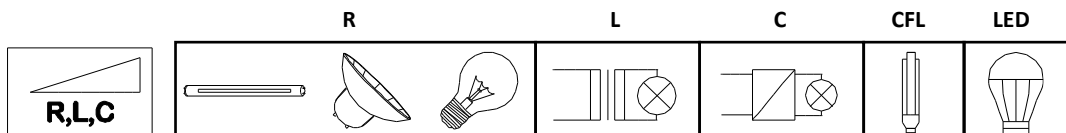
Figure 2: Wiring examples


SAFETY INSTRUCTIONS

- 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 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>.

SUPPORTED LOADS

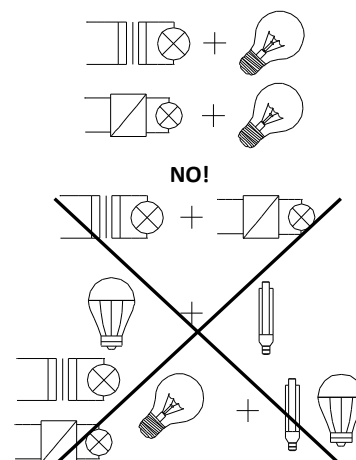
- R = Resistive
- L = Inductive
- C = Capacitive
- CFL = Dimmable Compact Fluorescent Lamps
- LED = Dimmable LED lamps



 Please, make sure that the loads used are dimmable.

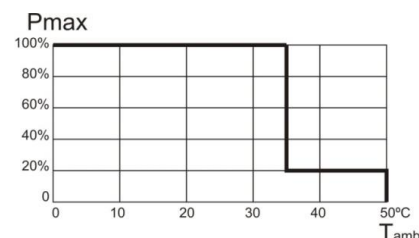
LOAD COMBINATION

- 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.

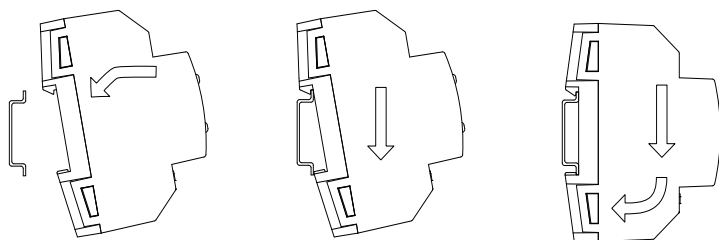


OVERHEATING PROTECTION

- 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:

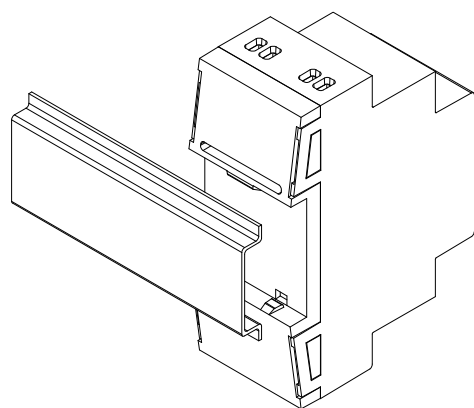
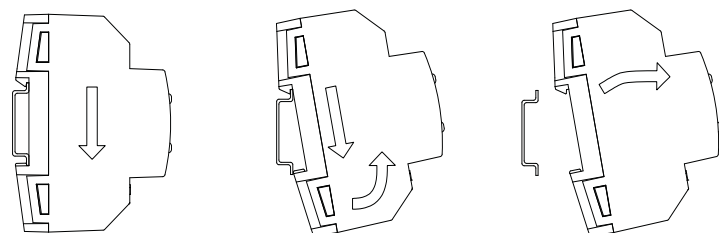


Figure 3: Mounting DIMinBOX DX1 on DIN rail

ERROR NOTIFICATIONS		
ERROR	LEDS DESCRIPTION	VISUAL NOTIFICATION
Short circuit	The two status LEDs blink alternately every 0.25 second. When the output is locked, the programming LED blinks in blue.	
Voltage Surge	The two status LEDs blink simultaneously every 0.25 second. 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.	

FEATURES

- 4 channels 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 140mm (8 DIN units).
- DIN rail mounting (EN 50022), through pressure.
- Conformity with the CE directives (CE-mark on the right side).

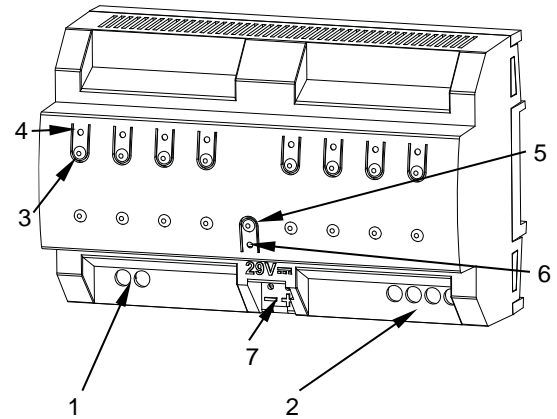


Figure 1: DIMinBOX DX4

1. Power supply input	2. Output channels	3. Manual control push buttons	4. Output Indicator LEDs
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)	13.53	392.37
24VDC ¹	17.5	420		
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). Each output LED indicates its status (fixed = active output; flashing = error in the output)		
Weight		361g		
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		4	
Output type		Solid state switching device	
Short-circuit protection		YES	
Overload protection		YES	
Connection method		Screw terminal block	
Cable cross-section		1.5-4mm ² (IEC) / 26-10AWG (UL)	
LOADS AND ALLOWED POWER (@ 35°C ambient temperature around the device)			
		230VAC	110VAC
RLC	Individual channel	Up to 300W	Up to 200W
	Double channel ²	Up to 600W	Up to 400W
	Quadruple channel ²	Up to 1200W	Up to 800W
CFL and LED ¹	Individual channel	Up to 300W	Up to 200W
	Double channel ²	Up to 600W	Up to 400W
	Quadruple channel ²	Up to 1200W	Up to 800W

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.

² The load must be connected like is shown in the Figure 2, making a parameterization consistent with the connexion.

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		1.5-4mm ² (IEC) / 26-10AWG (UL)	

WIRING DIAGRAMS

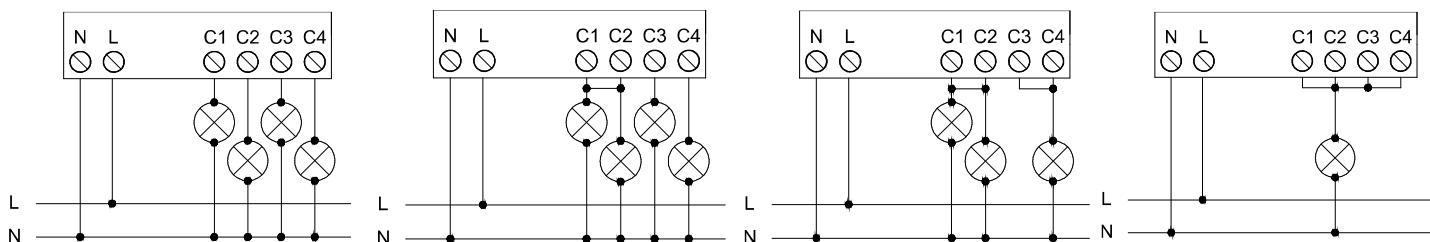


Figure 2: Wiring example (from left to right):

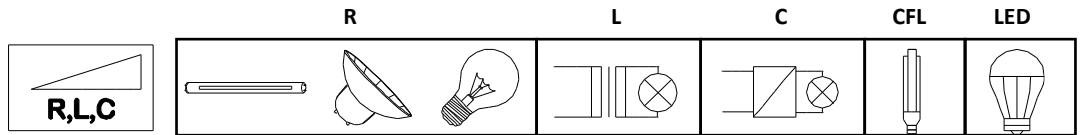
- 4 individual channels,
- 1 double channel + 2 individual ones,
- 2 double channels,
- 1 quadruple channel


SAFETY INSTRUCTIONS

- 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>.

SUPPORTED LOADS

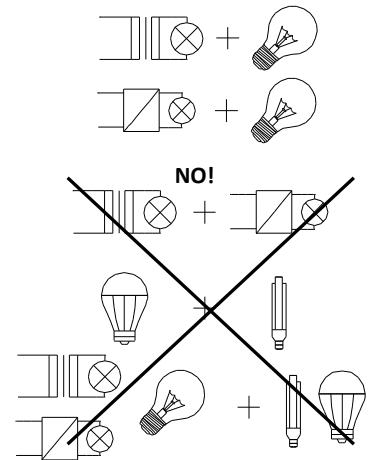
- R = Resistive
- L = Inductive
- C = Capacitive
- CFL = Dimmable Compact Fluorescent Lamps
- LED = Dimmable LED lamps



 Please, make sure that the loads used are dimmable.

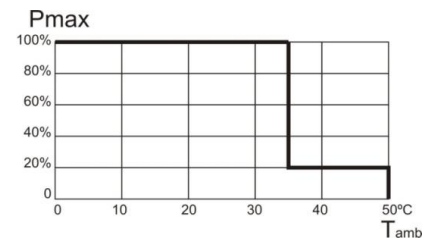
LOAD COMBINATION

- 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 in the same channel is NOT ALLOWED.**
- Do not combine in the same channel 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.

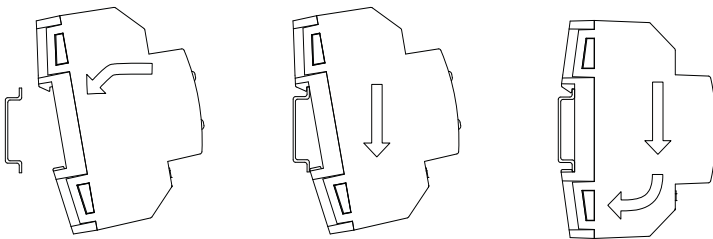


OVERHEATING PROTECTION

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



Attaching DIMinBOX DX4 to DIN rail:



Removing DIMinBOX DX4 from DIN rail:

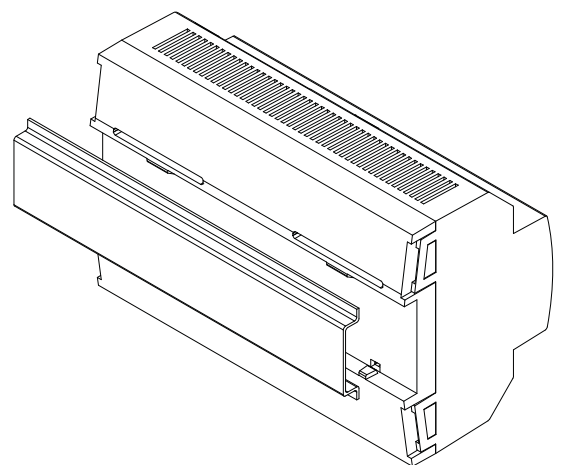
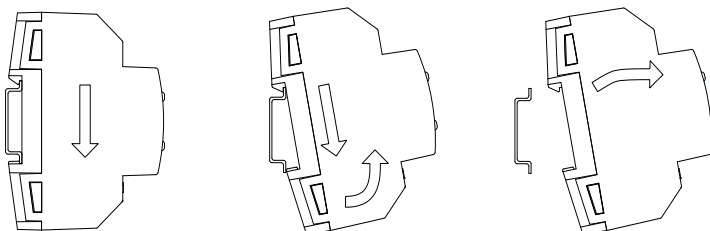


Figure 3: Mounting DIMinBOX DX4 on DIN rail

ERROR NOTIFICATIONS		
ERROR	LEDS DESCRIPTION	VISUAL NOTIFICATION
Short circuit	The two LEDs of the channel alternately every 0.25 second. When the output is locked, the programming LED blinks in blue.	
Voltage Surge	The two LEDs of the channel blink simultaneously every 0.25 second. When the output is locked, the programming LED lights in blue	
Overheating	The LEDs of all the channels blink every second.	
Supply Voltage Failure	One LED of each channel blinks every second.	
Anomalous Frequency	All the LEDs of each channel blinks (during 1 second) sequentially	
Parameterization Error	One LED of the channel blinks every second while the other LED blinks every 0.25 second.	

FEATURES

- 2 channels 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.
- 2 Analog/Digital inputs.
- Total data saving on KNX bus failure.
- Integrated KNX BCU.
- Dimensiones 60 x 90 x 79mm (4,5 unidades DIN).
- DIN rail mounting (EN 50022), through pressure.
- Conformity with the CE directives (CE-mark on the right side).

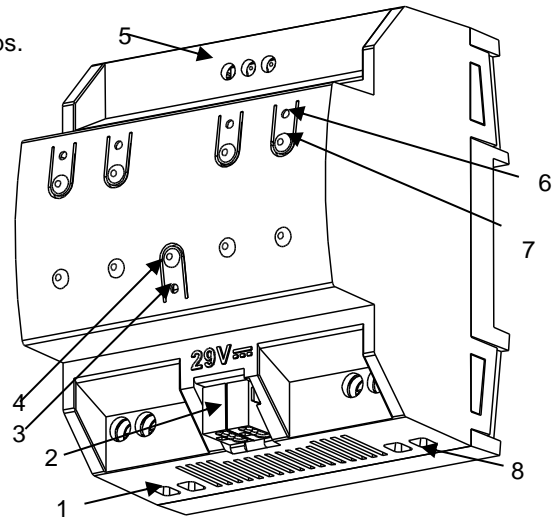


Figure 1: DIMinBOX DX2

1. Power supply input	2. KNX bus connection	3. Programming/Test LED	4. Programming/Test push button
5. Analog/Digital inputs	6. Output indicator LEDs	7. Manual control push buttons	8. Output channels

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)	11	319
24VDC ¹	15	360		
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). Each output LED indicates its status (fixed = active output; flashing = error in the output)		
Weight		210g		
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		2	
Output type		Solid state switching device	
Short-circuit protection		YES	
Overload protection		YES	
Connection method		Screw terminal block	
Cable cross-section		1.5-4mm ² (IEC) / 26-10AWG (UL)	
LOADS AND ALLOWED POWER (@ 35°C ambient temperature around the device)			
		230VAC	110VAC
RLC	Individual channels	Up to 310W	Up to 200W
	Common channel	Up to 600W	Up to 400W
CFL and LED ¹	Individual channels	Up to 310W	Up to 200W
	Common channel	Up to 600W	Up to 400W

¹For 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	F (Fast acting)	
Connection method		Screw terminal block	
Cable cross-section		1.5-4mm ² (IEC) / 26-10AWG (UL)	

WIRING DIAGRAMS

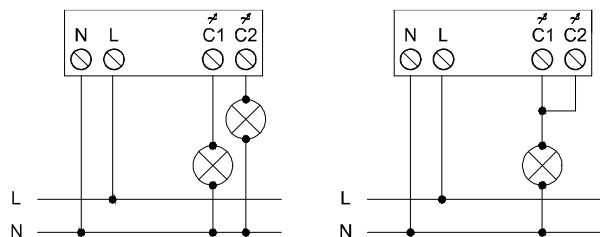


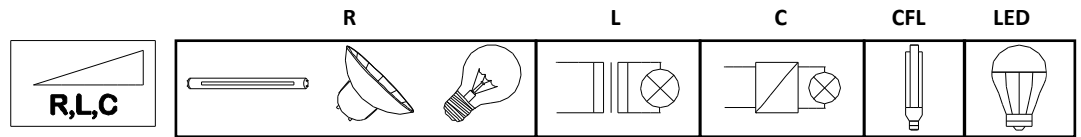
Figure 2: Wiring examples (independent channels and common channel connection)

SAFETY INSTRUCTIONS

- 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>.

SUPPORTED LOADS

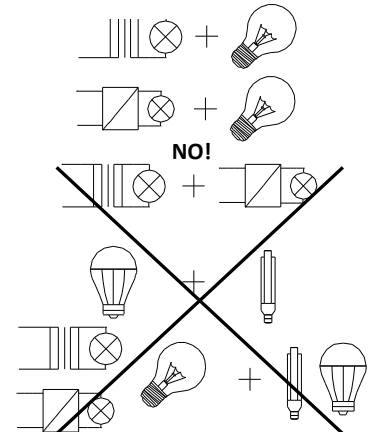
- R = Resistive
- L = Inductive
- C = Capacitive
- CFL = Dimmable Compact Fluorescent Lamps
- LED = Dimmable LED lamps



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

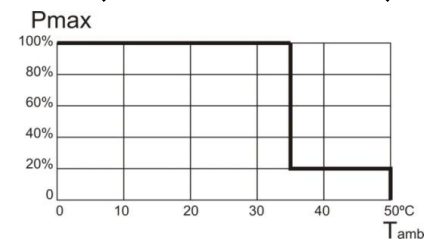
LOAD COMBINATION

- 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.



INPUTS SPECIFICATIONS AND CONNECTIONS

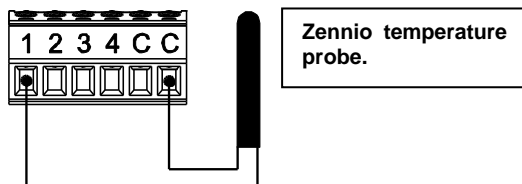
CONCEPT	DESCRIPTION
Number of inputs	2
Inputs per common	2
Operation voltage	+3.3VDC in the common
Operation current	1mA @ 3.3VDC (per input)
Switching type	Dry voltage contacts between input and common
Connection method	Screw terminal block
Cable cross-section	0.5-2.5mm ² (IEC) / 26-12AWG (UL)
Maximum cable length	30m
NTC probe length	1.5m (up to 30m)
NTC accuracy (@ 25°C) ²	±0.5°C
Temperature resolution	0.1°C
Maximum response time	10ms

² For Zennio temperature probes.

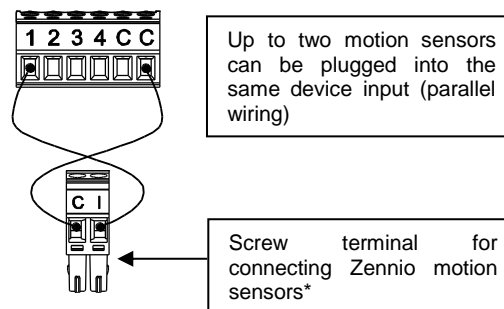
INPUTS CONNECTION

Any combination of the next **accessories** is allowed on the inputs:

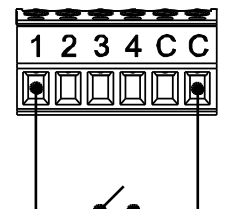
Temperature Probe**



Motion Sensor



Switch/Sensor/ Push button



* In case of using ZN110-DETEC-P sensor, its micro switch number 2 must be in **Type B position**.

** Zennio temperature probe or any NTC with known resistance values at three points in the range [-55, 150°C].

ERROR NOTIFICATIONS

ERROR	LED BEHAVIOR	VISUAL NOTIFICATION
Short circuit	<p>The two status LEDs of the channel with the error blink alternately every 0.25 second.</p> <p>When the output is locked, the programming LED blinks in blue.</p>	
Voltage Surge	<p>The two status LEDs of the channel with the error blink simultaneously each 0.25 seconds.</p> <p>When the output is locked, the programming LED lights in blue.</p>	
Overheating	<p>The LEDs blink every second.</p>	
Supply Voltage Failure	<p>One LED of each channel blinks every second.</p>	
Anomalous Frequency	<p>All the LEDs of each channel blinks (during two seconds) sequentially</p>	
Parameterization Error	<p>One LED of the channel blink every second while the other LED blinks every 0.25 seconds.</p>	