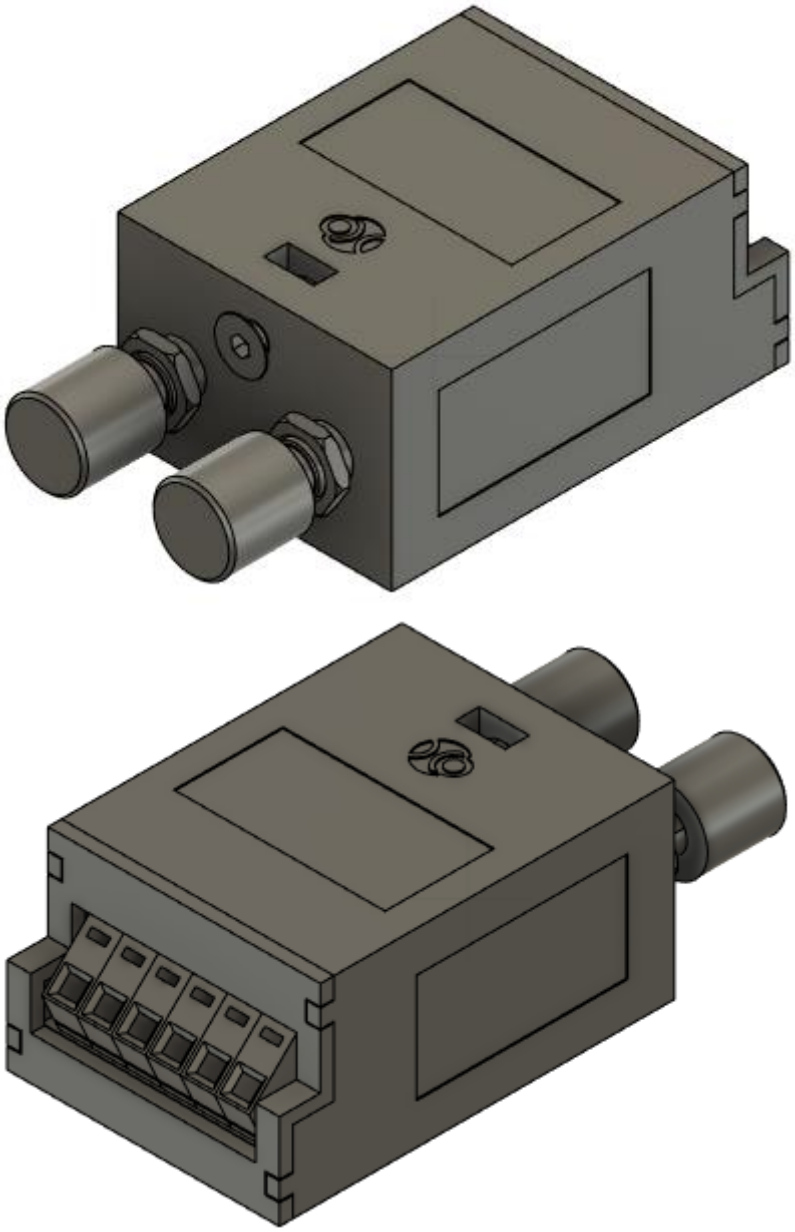
DOUBLE DIMMER

2 channel 12V PWM dimmer



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Description:

The DOUBLE DIMMER device is used to regulate the brightness of indicator LEDs, light bulbs or additional lighting of the UL aircraft interior. The dimmer contains two control channels, which are controlled separately using potentiometers. For each channel, we can either turn off the lighting (the switch is incorporated inside the potentiometer) or regulate the brightness using PWM modulation in the range of 2 to 100%. The lighting regulation is adapted to the human perception of the change in LED brightness. The device is intended for use in systems with 12 V power supply. The dimmer is designed to dim a 2x3A load.

The device has several protective elements against its own overload and subsequent possible damage to property. These elements include monitoring the input voltage, which must not exceed 18 V. Furthermore, current protection monitors the maximum current of 3 A (for 100% brightness) for each channel separately, so a maximum resistive load of 4 Ohm/channel can be connected. Exceeding the voltage or current is signaled with retry attempts to activate the overloaded channel. In the last row, thermal protection with a thermistor is applied. It monitors the temperature inside the box and possibly exceeding the thermal limits of maximum brightness or permissible current coming into the load (see Table electrical protection - thermal protection). If the temperature exceeds 100 °C, it switches off the output completely and waits for the temperature to drop below this critical value.

The installation of the device is carried out through the dashboard, in which it is necessary to measure and drill holes for the locking screw and both potentiometers. We connect the load and source to the dimmer according to the circuit diagram, insert the M4 nut into the corresponding hole and insert it from the inside of the dashboard into the prepared holes. We screw the dimmer prepared in this way with an M4 countersunk screw. Next, attach the label, put on the washer, M7 nuts and tighten on both potentiometers. This will attach the label and further fix the dimmer. Finally, we put the control knobs on the potentiometers, which we fasten by tightening the locking screws. This completes the assembly.

Electrical parameters:

Parameter	min	type	max	Unit	note
Supply voltage	8	12	18	VDC	*Polarity reversal protection*
Current consumption		8	12	mA	No load
Current consumption idle			5	mA	All outputs off
Max channel load			3	A	Resistive load (bulb, LED strip). Max current measured on 100% PWM
PWM frequency		122		Hz	
Duty-Cycle	2		100	%	PWM modulation, from FW v1.5
Overvoltage protection		18		V	Restart after 2 sec
Overcurrent protection	3	3,25	3,5	A	Restart after 2 sec. Max current measured on 100% PWM
Temperature protection	*60		100	°C	*Restrict output power: T < 60°C => PWM=100%; I=3A/CH T = 60°C..70°C => PWM=90%; I=3A/CH T = 70°C..80°C => PWM=80%; I=3A/CH T = 80°C..90°C => PWM=40%; I=3A/CH T = 90°C..100°C => PWM=20%; I=2,5A/CH T>100°C => PWM=0%; I=0A/CH VYPNUTO Note: If the output current is greater than that allowed at the given temperature, the overloaded channel will be cyclically restarted.
Recommended FUSE			8	A	max
Control	2 x potentiometer with switch				OFF, 1..100%

Mechanical dimension:

Parameter	Value	Unit	note
Width	40	mm	*see fig. 5 unit dimension
Deep	78,1	mm	
High	28	mm	
Max. dashboard thickness	3	mm	
Weight	60	g	

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Operation conditions:

Parameter	Value	Unit	Note
Working temperature	-40÷65	°C	
Humidity	20 ÷ 80 %	RH	
Atmospheric pressure	900 ÷ 1100	hPa	
IP	IP20	-	
Mounting type	to panel	-	
Working position	any	-	

Wiring diagram:

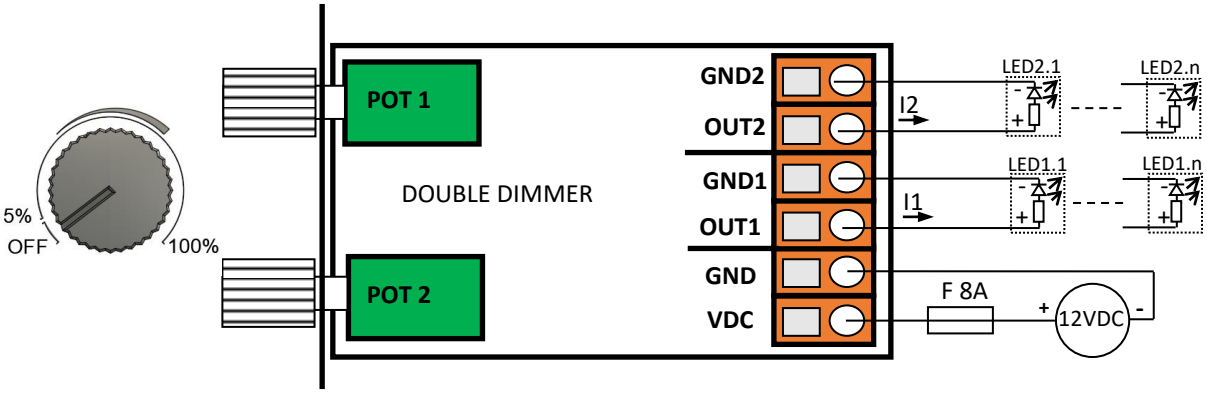

Fig. 2a Wiring diagram

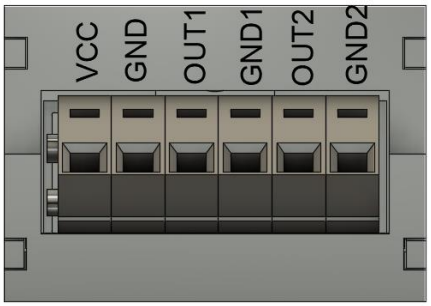

Fig. 2b Output terminals signal

Mounting holes:

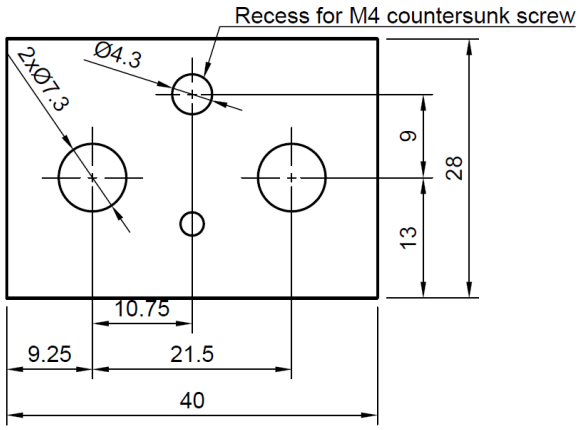

Fig. 3 Mounting holes drawing (mm)

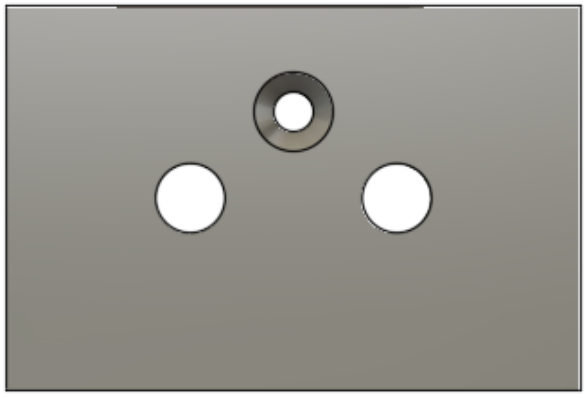

Fig. 4 3D assembly hole on dashboard

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Dimmer dimension:

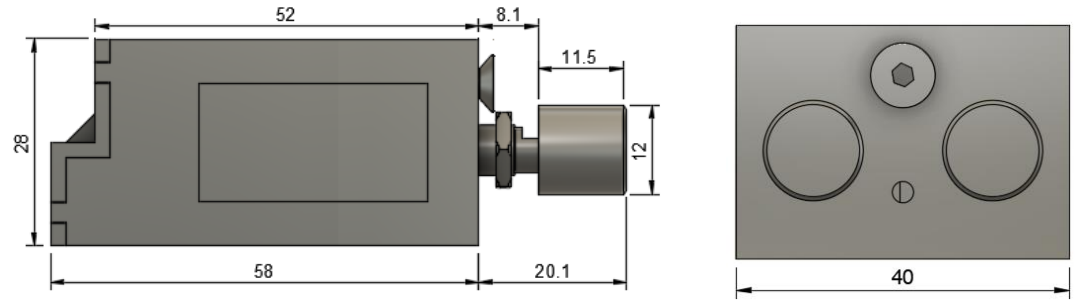

Fig. Dimmer dimension (mm)

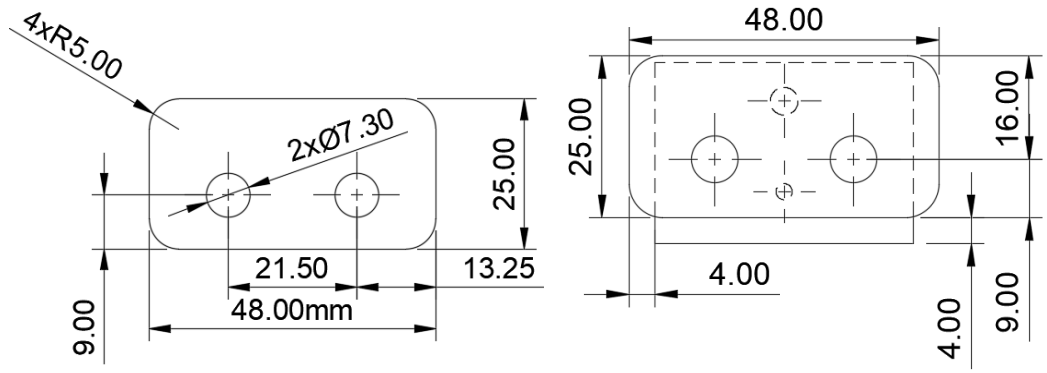

Fig. 6 Label drawing (left) and relative placement of label and box (right) (mm)

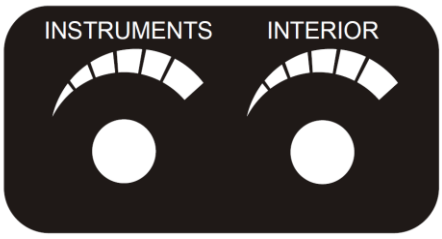

Fig. 7 Label example

Mounting schema:

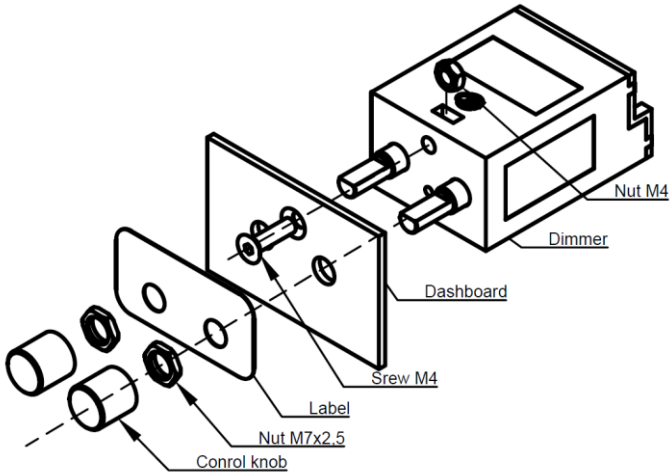

Fig. 8 Mounting schema

Important notes and warnings

Thank you for purchasing **DOUBLE DIMMER**. For a comfortable and safe use of this product, please pay attention to THE ENTIRE MANUAL, especially the notes and warnings below.

- Although the **DOUBLE DIMMER** has been thoroughly tested to ensure maximum safety in all conceivable situations, THE RIGHT FUNCTIONALITY DEPENDS ON THE RIGHT INSTALLATION AND SETTINGS.
- Therefore, it is **NECESSARY to READ CAREFULLY and UNDERSTAND THIS MANUAL COMPLETELY**.
- Keep this manual printed in an airplane for cases of emergency or change of ownership.
- THIS PRODUCT IS NOT APPROVED FOR INSTALLATION IN CERTIFIED AIRPLANES.
- The pilot MUST UNDERSTAND the control of this product before the first flight. DO NOT use the product unless you are sure how it works!
- Do not allow unauthorized persons to handle the installed product.
- After installing the product, before the first flight, turn on ALL possible sources of electromagnetic interference on board the aircraft and ensure that the instrument is functioning properly.
- Use of the device in conflict with this manual, with bad wiring, outside the allowed operating conditions, etc., may cause the device to malfunction or damage and endanger flight safety.
- If the product repeatedly indicates an error, do not use it and turn off the power!
- AVOID contact with liquids and chemicals
- Before installation, check the mechanical integrity of the device and its accessories
- DO NOT disassemble the device!
- After installation, carefully check the functionality of the device and its installation
- The responsibility for the installation is entire with the installer.
- Responsibility for performing control actions based on information indicated by the product is full of the operator (pilot). The operator must be able to evaluate an incorrect indication even if the product does not indicate an error.
- Ensure regular maintenance of the aircraft's main battery
- If you do not agree to the notes and warnings above, do not use this product.

Company LAMBERT AERODEVICES s.r.o reserves the right to change or improve the product or manual without prior or subsequent notice.

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Document history:

Date	Rev.	Change description	Author
15.08.2022	1	The first version of the document, LA	Nepor
20.06.2023	2	Change of min. PWM	Nepor

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