⊛ RADEMACHER

EN **DuoFern 1-10V Controller 9482**
Instruction manual for the electrical connection and for commissioning

Item no. 3500 12 62
Type: 9482

...describes how to install, connect and commission the DuoFern 1-10V Controller 9482.

i   **1.1 How to use this manual**

◆ Before you begin, please read this manual through completely and follow all the safety instructions.

◆ Please also read the instruction manuals of the accessories, if available, as well as the instructions of the respective connected appliance.

◆ This manual is part of the product. Please store it in an easily accessible place.

◆ When passing the DuoFern 1-10V Controller on to a third party, this manual must be passed on as well.

◆ Damage resulting from non-compliance with these instructions and safety instructions will void the guarantee. We assume no liability for any consequential damage.

The following hazard symbols are used in this manual:

⚡ **Danger to life resulting from electric shock**

⚠ **Danger area / dangerous situation**

ℹ 2.1 Levels of danger and signal words

⚠ DANGER!

This hazard will lead to serious injury or death if not avoided.

⚠ WARNING!

This hazard may result in serious injury or death if not avoided.

⚠ CAUTION!

This hazard may result in minor or moderate injury if not avoided.

⚠ ATTENTION!

This hazard may lead to property damage.

Depiction	Description
1.	Procedures
2.	
◆	Itemisation
1) or a)	Lists
i	Further useful information
	Please read the respective manual

The use of defective devices can lead to personal injury and damage to property (electric shock / short circuit).

◆ Never use defective or damaged devices.

◆ Check the DuoFern 1-10V Controller for damage.

◆ Consult our customer service department in the event that you discover damage,

i 3.1 Intended use

Only use the DuoFern 1-10V Controller for connecting and controlling:

◆ Active electronic ballasts or power supplies with a 1-10V interface for dimming and controlling lighting.

◆ Power supplies with a 1-10V interface to control other external devices (e.g. pumps / fans or blowers).

Operating conditions

◆ Only use the DuoFern 1-10V Controller in dry rooms.

◆ A 230 V / 50 Hz power supply, together with a site-provided disconnecting device (fuse), must be available at the installation location.

♦ The installation and operation of the radio systems is only permitted for systems and devices where a malfunction in the transmitter or receiver would not cause a danger to persons or property or where this risk is already covered by other safety equipment.

> **i** Radio systems which transmit on the same frequency can cause interference.

i 3.2 Improper use

Improper use can lead to serious injuries or property damage.

♦ Do not use the DuoFern 1-10V Controller to disconnect the connected ballasts.

♦ Never use the radio system (e.g. DuoFern radio system) and its components for the remote control of devices and systems with increased safety-relevant requirements or where there is an accident risk. Applications of this kind require additional safety equipment. Observe the respective statutory regulations for the installation of such systems.

There is a risk of fatal injury caused by short circuiting and electric shocks if the DuoFern 1-10V Controller is used outside or in damp rooms.

♦ Do not install and use the DuoFern 1-10V Controller outside or in damp rooms.

The electrical connection, installation and commissioning of the DuoFern 1-10V Controller must only be carried out by a qualified electrician in accordance with the instructions in this manual.

i **3.4 Glossary - definition**

DuoFern

◆ RADEMACHER radio technology for controlling compatible products.

WR ConfigTool

◆ RADEMACHER software for programming the DuoFern manual central operating unit incl. automatic software update for the DuoFern manual central operating unit.

SmartHome Box

◆ The SmartHome Box is a central controller unit for RADEMACHER radio products.

Electronic ballast

◆ An electronic ballast, for example to control LEDs and fluo-rescent lamps.

◆ The DuoFern 1-10V Controller only works with active electronic ballasts with a 1-10V interface.

Included in delivery

a) 1 x DuoFern 1-10V Controller 9482 incl. antenna

b) 1 x instruction manual (not illustrated)
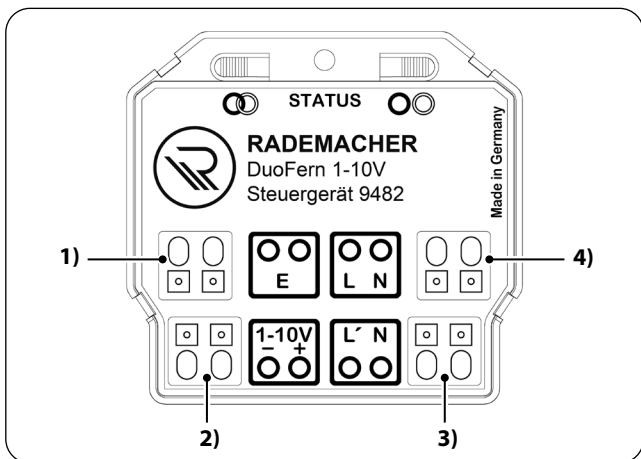
Pos.	Symbol	Description
1)	○○ E	**External input 230 V / 50 Hz** *Connection of an external button for manual control on site.*
2)	1-10V − + ○○	**1 - 10V interface** *Connection of the 1-10V interface of an active electronic ballast.*
3)	L′ N ○○	**Power supply for electronic ballasts** *Output for the 230 V electronic ballast power supply.*
4)	○○ L N	**230 V / 50 Hz** *Supply voltage.*
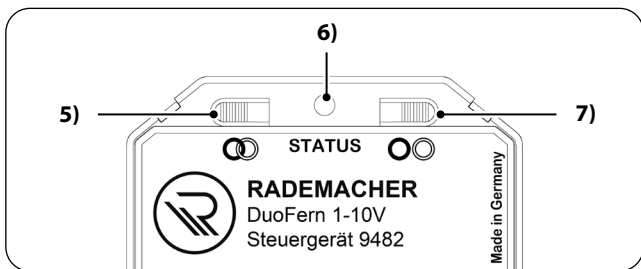
Pos.	Symbol	Description	
5)	⚭	**Connect button** *Logging on to the DuoFern radio network or a DuoFern transmitter.*	
6)	**STATUS**	**Indicator light - status display**	
	green	*flashing*	*Connection is active*
		constantly lit up	*Connection or disconnection was successful*
		brief flashing	*Control command received*
	red	*flashing*	*Disconnection is active*
		permanently lit up	*Connection or disconnection was not successful*
7)	⚭	**Disconnect button**	
		◆ *Logging off from the DuoFern radio network or a DuoFern transmitter.*	
		◆ *Reset to the default factory settings*	

Lighting control

With the DuoFern 1-10V Controller, you can connect electronic ballasts with a 1-10V interface and use them, for example, for dimming and controlling LEDs, LED strips or fluorescent lamps.

An integrated relay switches the ballast on or off (approx. 5 seconds) after reaching 0%.

Control of external devices with a 1-10V interface

External devices with a 1-10V (DC) interface (e.g. pumps, fans or blowers, etc.) can also be connected and controlled.

Use in the DuoFern network

The DuoFern 1-10V Controller can be integrated into a DuoFern network, for example, to use the range of functions of DuoFern sensors and DuoFern transmitters, such as the SmartHome Box.
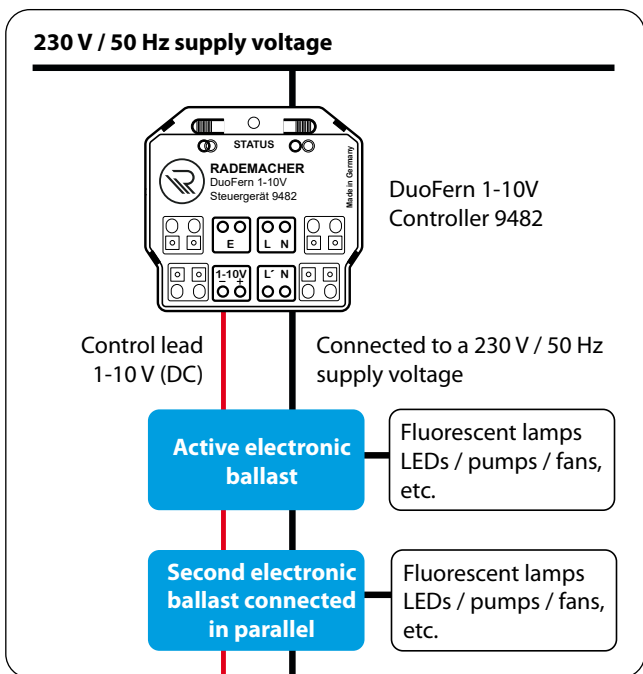
Manual operation on site

An additional external button can be connected to enable manual operation on site.

An electronic ballast or power supply with a compatible 1-10V interface is controlled via a fail-safe DC voltage signal ranging from 1 V to 10 V.

Ballasts / power supplies and the DuoFern 1-10V Controller are interconnected via a polarised, two-core control cable.

The connection principle

230 V / 50 Hz supply voltage

STATUS

RADEMACHER
DuoFern 1-10V
Steuergerät 9482

Made in Germany

E

1-10V   L´ N

L N

DuoFern 1-10V
Controller 9482

Control lead
1-10 V (DC)

Connected to a 230 V / 50 Hz
supply voltage

Active electronic ballast

Fluorescent lamps
LEDs / pumps / fans,
etc.

Second electronic ballast connected in parallel

Fluorescent lamps
LEDs / pumps / fans,
etc.

Characteristics of the 1-10V interface

◆ The voltage on the control lead is isolated from the mains lead.

◆ The voltage on the control lead is a safety extra-low voltage (SELV).

◆ The control voltage is generated by the electronic ballast. The DuoFern 1-10V Controller serves as an adjustable resistor (sink).

◆ Several electronic ballasts can be connected in parallel to the DuoFern 1-10V Controller.

			DuoFern SmartHome Box						
			DuoFern Environmental Sensor						
			DuoFern Manual Control						
			* WR ConfigTool with DuoFern Manual Control						
			RolloTron Comfort DuoFern / Troll Comfort DuoFern						
			DuoFern Manual Transmitter Standard						
			DuoFern Wall Controller						
Function	**Value range**	**Factory setting**	A	B	C	D	E	F	G
1. Manual operation	On/Off/Dim	-	●	●	●		●		●
2. Direct configuration of a % value	0 % - 100 %	-							●
3. Manual mode on / off	on / off	off			●	●	●		●
4. Automatic timer on / off	on / off	on			●	●	●		●
5. Random function	-	-			●		●		●
6. Dawn function	-	-			●		●	●	●
7. Automatic dawn function on / off	on / off	off			●	●	●		●
8. Automatic dusk function	-	-			●		●	●	●
9. Automatic dusk function on / off	on / off	off			●	●	●		●
10. Sun function	-	-			●			●	
11. Automatic sun function on / off	on / off	off			●	●	●		●

*   *The "WR ConfigTool" software can be downloaded from our website at* ***www.rademacher.de.***

DuoFern SmartHome Box										
DuoFern Environmental Sensor										
DuoFern Manual Control										
* WR ConfigTool with DuoFern Manual Control										
RolloTron Comfort DuoFern / Troll Comfort DuoFern										
DuoFern Manual Transmitter Standard										
DuoFern Wall Controller										
Function	**Value range**	**Factory setting**	A	B	C	D	E	F	G
12. Dimming speed	1 s – 150 s	5 s				●	●		●
13. Intermediate value function	on / off	off				●	●		●
14. Intermediate value	1 % – 99 %	80 %				●	●		●
15. Unit / light mode	Unit / light mode	Light mode		●		●	●		●
16. Connectivity test	-	-						●	●
17. Connect with radio code	-	-				●	●		●
18. Reset via radio (3-stage)	-	-				●			●
19. Single-button operation	-	-							
20. Jog mode	-	-		●			●		●
21. Stairwell function	on / off	off				●			●
22. Stairway time (pulse duration) ***	100 ms - 3276 s	3 minutes				●			●

*   The "WR ConfigTool" software can be downloaded from our website at
       www.rademacher.de.

*** Advanced switch-off warning for > 60 seconds and with uneven values.

Setting the dimming speed

This sets the time which the 1-10V output requires to get from 0 % to 100 %. The possible adjustment range is 2 to 255 seconds.

> **i** If the "Save intermediate value for a manual stop" function is activated, the dimming speed should not be set too fast for convenient use.

◆ This parameter can be set with the SmartHome Box or the manual control.

Intermediate value function (on / off)

If the intermediate value function is activated, the configured intermediate value is set first with an UP command. If you press "UP" again, the value is set to 100 %. The DOWN command works in a corresponding manner.

> **i** This function can be set with the SmartHome Box.

Setting the intermediate value for a manual stop (on / off)

This parameter can be used to set whether the current value configured by a stop command during dimming should be saved as a new intermediate value or not.

> **i** This function can be set with the SmartHome Box.

Setting the intermediate value (1- 99%)

There are two ways to set the intermediate value.

◆ If the "Save intermediate value for a manual stop" function is activated (factory setting), the current value configured by a stop command during dimming is saved as a new intermediate value.

◆ In the configuration view of the DuoFern 1-10V Controller through the SmartHome Box.

Random function (presence simulation)

The DuoFern 1-10V Controller can process random function switching commands. If a switching command is received which is to be delayed by the random function, then processing of the switching command is delayed by up to 30 minutes.

During the delay time, the indicator light on the DuoFern 1-10V Controller flashes green every second.

> ◆ Automatic movement commands of the automatic sun function are **not** delayed.
> ◆ Automatic switching times and dusk commands are delayed.

Stairway function (on / off)

When the stairway function is active, the DuoFern 1-10V Controller will switch off the controlled device again after the configured "stairway time". A switch-off advance warning can optionally be switched on.

Light/device mode

By switching between the light and device mode, the behaviour of the DuoFern 1-10V Controller can be changed:

The range of functions changes as follows:

Switching commands of an external DuoFern transmitter	Device mode	Light mode
UP	On	Off
STOP	Off	Off
DOWN	Off	On
Dawn function	On	Off
Automatic dusk function	Off	On
Sun function	- - -	Off

Mains connection [L / N]	
Mains supply voltage:	230 V / 50 Hz
Consumption:	Standby: < 0.5 W

External input [E] for a manual button on site	
Input voltage:	230 V (Ri = 200 kΩ)
Potential-free input	

1 - 10V interface [– / +]	
Control voltage:	DC 1 - 10 V
Loading capacity:	Max. 60 mA in total
	Overload protection: active from > 70 mA (red LED active)
Maximum number of electronic ballasts:	Depending on the load of the individual ballasts.
Connection type:	Several ballasts can be connected in parallel.

230 V / 50 Hz Output / load contact [L']	
Supply voltage:	230 V / 50 Hz
Maximum switching capacity:	Ohmic load, e.g. bulbs
	6.5 A / 1500 W
	Fluorescent lamps
	5 A / 1150 W
	Extra-low voltage bulbs, e.g. halogen bulbs / LEDs. etc. through electronic or iron core transformers
	5 A / 1150 W

Improper use can lead to serious injuries or property damage.

◆ Small contact distance (μ), not suitable for disconnecting the device.

◆ Do not use the DuoFern 1-10V Controller to disconnect the connected ballasts.

DuoFern radio technology	
Transmission frequency:	434.5 MHz
Transmission power:	Max. 10 mW
Range:	Indoors: approx. 30 m *
	Outdoors: approx. 100 m
	Depending on the building structure
Max. number of DuoFern devices:	20

General information	
Fuse rating:	External 16 A (with medium time lag or with time lag)
Permissible ambient temperature range:	0 °C to + 40 °C
Dimensions (W x H x D):	48.7 x 45.7 x 19.8 mm
Connecting terminals:	Spring resistance connecting terminals (0.1 mm² - 1.5 mm²)

Data storage after a power failure

All data is retained in the event of a power failure. Only the configured brightness value is lost.

The connected appliance is always switched off when the DuoFern 1-10V Controller is switched on again.

Prior to the electrical connection, check that the voltage / frequency on the type plate corresponds to that of the local mains supply.

⚠ DANGER!

There is a risk of fatal electric shock when touching electrical components.

◆ All connection and installation work must only be carried out in a de-energised state.

◆ Disconnect all phases of the mains power lead and secure it to prevent any reconnection.

◆ Check that the system is de-energised.

⚠ WARNING!

There is a risk of fatal injury caused by short circuiting when the DuoFern 1-10V Controller is overloaded.

◆ The maximum load of the 1-10V interface is 60 mA.

◆ Please refer to the respective operating manual for the ballast load.

230 V / 50 Hz output / load contact [L′]:

◆ The maximum switching capacity must not be exceeded. Please observe the details in the technical specifications, see page 22.

⚠ ATTENTION!

Connecting the 1-10V control lead with the incorrect polarity can destroy the device.

◆ Pay attention to the correct polarity when connecting the 1-10V control lead.

⚠ ATTENTION!

A defective antenna can cause malfunctions or the failure of the DuoFern 1-10V Controller.

◆ The antenna lead must not be shortened and damaged.

Connection instructions for operating with an external button on site

◆ The voltage applied to the external input **[E]** is internally decoupled and may also come from a phase other than **[L]** if required.

◆ The maximum length of lead to connect an external button must not exceed 10 m.

Minimum length of insulation stripped:

9 mm All leads must be stripped to 9 mm.

Further installation instructions

◆ In order to ensure optimal operation, the DuoFern 1-10V Controller should not be installed on a metallic base or near metal objects.

◆ The DuoFern 1-10V Controller is intended for flush mounting. We recommend installation in a deep 58 mm flush-mounted box or in an electronic socket.

1. Ensure the mains are current-free and check whether the inlet leads are current-free.

2. Securely lay the connecting cables in the flush-mounted box of the DuoFern 1-10V Controller.

3. Remove the insulation on all leads as specified above and connect them according to the following connection diagram.

4. Insert the DuoFern 1-10V Controller into the flush-mounted box and lay the connecting cables as well as the antenna in the box.

5. Finally, install the cover of the flush-mounted box and switch on the electricity again.

230 V / 50 Hz   230 V / 50 Hz

L
N

STATUS

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DuoFern 1-10V
Steuergerät 9482

Made in Germany

E   L N

External button

1-10V   L' N

1-10 V control lead

Connected to 230 V / 50 Hz

Active electronic ballast or LED power supply

− + **1-10 V**

L N **230 V**

Fluorescent lamp / LED / pump / fan, etc.
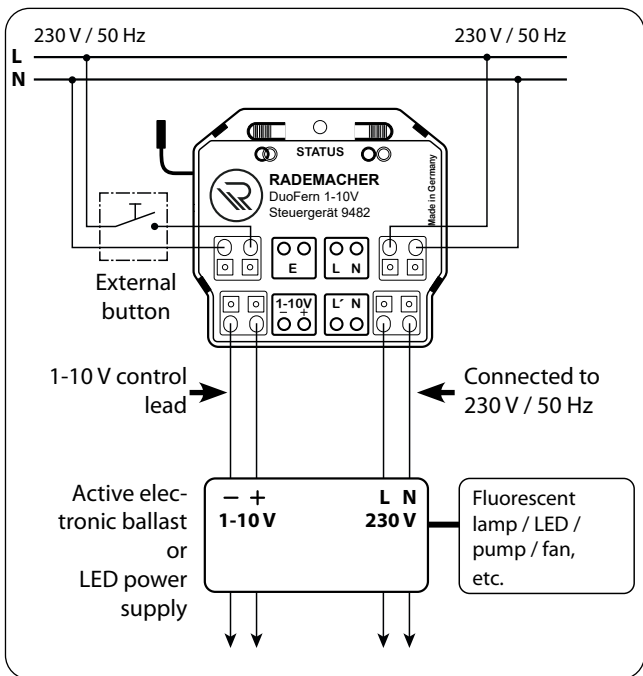
You must assign every required DuoFern transmitter to the DuoFern 1-10V Controller in order that the DuoFern 1-10V Controller can be operated with a DuoFern transmitter. You can log on a maximum of 20 DuoFern transmitters (e.g. DuoFern manual transmitter standard).

1. Switch the desired DuoFern transmitter to log-on/log-off mode (please refer to the respective instruction manual).

2. Press the "Connect (log-on) button" [⬤◯] or the "Disconnect (log-off) button" [◯◯] of the DuoFern 1-10V Controller.

3. The DuoFern 1-10V Controller then transmits either a log-on or log-off signal.

Log-on / log-off mode remains active for 120 seconds.

4. If the log-on/log-off process is successful, the STATUS LED will light up green constantly.

5. Log on / log off from the next DuoFern transmitter. To do so, repeat steps 1 to 3 or else terminate the log-on / log-off process.

Observe the STATUS LED

The status LED lights up red if the log-on / log-off process fails, for example if:

◆ 20 DuoFern transmitters have already been logged on
◆ An unsuitable device (e.g. other DuoFern Actuator) is logged on.
◆ An attempt was made to log off from a DuoFern transmitter that is not logged on.

You can control the DuoFern 1-10V Controller directly using the radio code in order, for example, to be able to connect other DuoFern transmitters to the DuoFern 1-10V Controller after installation. You will find the radio code on the enclosed label and on the rear side of the DuoFern 1-10V Controller.

i   Please note that the use of the radio code is limited to 120 minutes after switching on the power supply

    A detailed description on activating the radio code function can be found in the instruction manual of the DuoFern Manual Control and the SmartHome Box.

Overview of the switching commands and actions

0 % [light bar indicator] 100 %
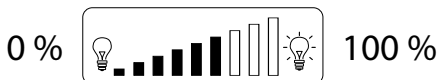
Switching command	Device mode	Light mode
UP #	▄▄▆█▯▯▯ 100 %	▯▯▯▆▄▄. 0 %
STOP	█▌▌▄.. 0%	█▌▌▄.. 0 %
DOWN #	▯▯▯▌▄.. 0 %	▄▄▆█▯▯▯ 100 %
Dawn function	.▄▄▆██ 100 %	█▌▌▄.. 0 %
Automatic dusk function	█▌▌▄.. 0 %	.▄▄▆██ 100 %
Sun programme	█▌▌▄.. 0 %	█▌▌▄.. 0 %
UP with current dimming direction 100 %	.▄▄▆██ 100 %	.▄▄████ STOP*
UP with current dimming direction 0 %	████▄▄ STOP*	█▄_____ 0 %
STOP with current dimming direction 100 %	.▄▄████ STOP*	.▄▄████ STOP*
STOP with current dimming direction 0 %	████▄▄ STOP*	████▄▄ STOP*
DOWN with current dimming direction 100 %	.▄▄████ STOP*	.▄▄███ 100 %
DOWN with current dimming direction 0 %	█▄_____ 0 %	████▄▄ STOP*

Key to the previous table

If the last intermediate state has been reached, then the DuoFern 1-10V Controller stops here. No intermediate state is saved upon connecting the mains power supply.

* *The current brightness of the lamp is saved as the intermediate state.*

More information about the functionality

◆ The dimming time for manual commands can be configured via the running time feature.

◆ Use the light mode if you want to operate the DuoFern 1-10V Controller together with roller shutters.

ⓘ **10.1 Operation with an external button**

Brief press	= switches ON/OFF, does not stop upon reaching the intermediate state
Press and hold	= dims alternately (on to 100 % / off to 0 %), the new dimmed value is saved as the intermediate value.

ⓘ **10.2 Jog mode**

Jog mode is available to conveniently configure the output. The output is increased or reduced by 10% in each case.

The jog mode must be activated on the respective controller (e.g. DuoFern Manual Transmitter) so that the corresponding control commands are transmitted.

A reset must be carried out to reset the DuoFern 1-10V Controller to the default factory settings.

1. ◐◯ Press and hold the disconnect button for approx. 5 seconds until the STATUS LED constantly lights up red.

2. All of the settings are deleted and reset to the default factory settings and the logged-on DuoFern transmitters are automatically logged off.

3. The DuoFern 1-10V Controller is then reset to the default factory settings.

ℹ️ **12. Dismantling**

⚠️ **DANGER!**

There is a risk of fatal electric shock when touching electrical components.

◆ Disconnect all phases of the mains power lead and secure it to prevent any reconnection. Check that the system is de-energised.

1. Log the DuoFern controller off from the DuoFern network.

2. Ensure the mains power is current-free and open the flush-mounted box.

3. Disconnect the DuoFern 1-10V Controller and completely remove it from the flush-mounted box.

CE RADEMACHER Geräte-Elektronik GmbH hereby declares that the DuoFern 1-10V Controller 9482 complies with the Directive**2014/53/EU** (**Radio Equipment Directive**).

The full text of the declaration of conformity is available at the following website:

www.rademacher.de/ce

Warranty terms and conditions

Information on our warranty conditions is enclosed separately with this product.