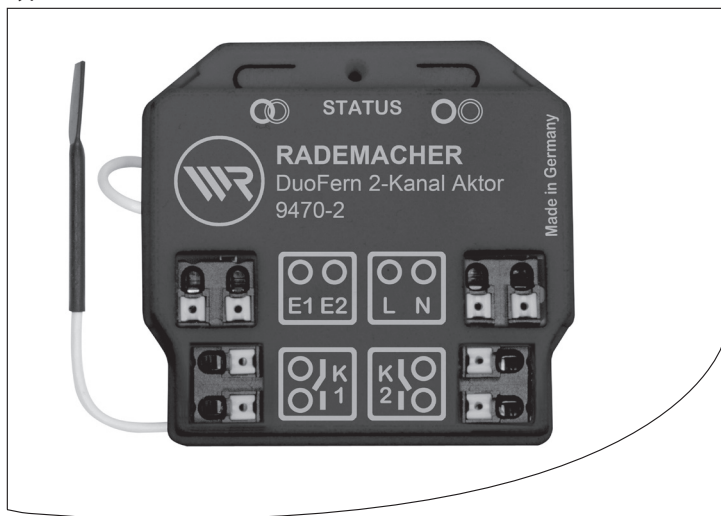# DuoFern Universal Actuator 9470-2 (2-channel)
Instruction manual for the electrical connection and for commissioning

Item no. 3514 02 62
Type: 9470-2

With your purchase of a **DuoFern Universal actuator 9470-2**, you have chosen a quality product manufactured by RADEMACHER. Thank you for the trust you have placed in us.

RADEMACHER products have been developed with the greatest possible convenience in mind. Having applied uncompromising quality standards and thorough testing, we are proud to be able to present this innovative product to you.

It's brought to you by all the highly-qualified personnel here at RADEMACHER.

...describe how to install, connect and commission the DuoFern Universal actuator 9470-2.

i **1.1 Application of 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 a component of the product. Please store it in an easily accessible place.

◆ When passing the DuoFern Universal actuator 9470-2 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 instruction manual:

Danger of fatal 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

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.

HomePilot®

◆ The HomePilot® is a central controller unit for RADEMACHER radio products.

ELV

◆ Extra-low Voltage.

SELV

◆ Safety Extra-low Voltage

a)

Included in delivery

a) 1 x DuoFern Universal Actuator 9470-2 incl. antenna
b) 1 x Instruction manual (not illustrated)
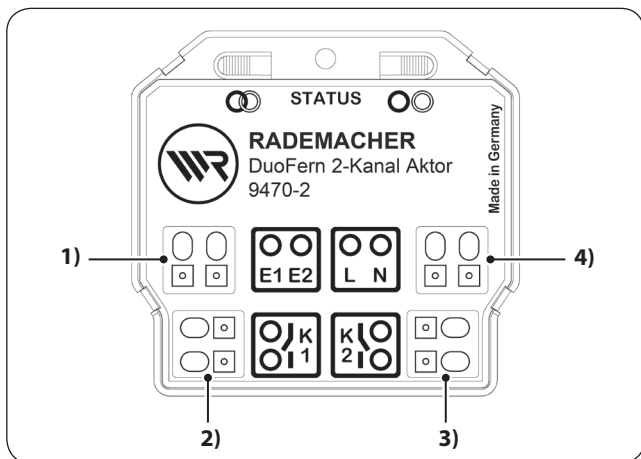
Pos.	Symbol	Description
1)	$\boxed{\begin{smallmatrix} O & O \\ E1 & E2 \end{smallmatrix}}$	**Control inputs 230 V / 50 Hz ∿ / (On / Off)** *Connection of an external switch / push-button for manual control on site.*
2)	$\boxed{\begin{smallmatrix} O & K \\ O & 1 \end{smallmatrix}}$	**Relay contact [K1]** *Connection of an electric appliance.*
3)	$\boxed{\begin{smallmatrix} K & O \\ 2 & O \end{smallmatrix}}$	**Relay contact [K2]** *Connection of a electric appliance.*
4)	$\boxed{\begin{smallmatrix} O & O \\ L & N \end{smallmatrix}}$	**Voltage supply [L / N] 230 V / 50 Hz ∿** *Connection of the supply voltage.*

Pos.	Symbol	Description	
5)	⊙⊙	**Connect button**	
		Registering on the DuoFern radio network or on 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 the DuoFern radio network or off a DuoFern transmitter.*	
		◆ *Reset to the default factory settings*	

Controlling electrical appliances

With the DuoFern Universal actuator 9470-2, you can connect and control up to two electrical appliances (e.g. lighting, etc.) with up to a maximum 1500 W per appliance.

Use in the DuoFern network

The DuoFern Universal actuator 9470-2 can be integrated into a DuoFern network to use the range of functions of e.g. DuoFern sensors and other DuoFern transmitters such as the HomePilot®.

Manual operation on site

An additional external switch/push-button can be connected to enable manual operation on site.

Installation and electrical connection

The DuoFern universal actuator 9470-2 is designed for flush mounting. The electrical connection is carried out by means of clamping the connecting cable in the existing spring clip.

										DuoFern HomePilot®
									DuoFern Environmental Sensor	
								DuoFern Manual Central Operating Unit		
							* WR ConfigTool with DuoFern central operating unit			
						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. Unit / light mode	Unit / light mode	Light mode							●
3. Manual mode on / off	on / off	off				●	●		●
4. Automatic timer on / off	on / off	on				●	●		●
5. Random function	-	-			●		●		●
6. Automatic 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 solar function on / off	on / off	off				●	●		●

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

DuoFern HomePilot®									
DuoFern Environmental Sensor									
DuoFern Manual Central Operating Unit									
* WR ConfigTool with DuoFern central operating unit									
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. Connectivity test	-	-						●	●
13. Connect with radio code	-	-				●	●		●
14. Reset via radio (3-stage)	-	-				●			●
15. Single-button operation	-	-							
16. Stairwell function	on / off	off				●			●
17. Stairway time (impulse duration) ***	100 ms - 3276 s	3 minutes				●			●

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

*** *Switch-off advance warning for > 60 seconds and with uneven values.*

Light/Device mode

By switching between the light and the device mode,
the behaviour of the DuoFern Universal actuator 9470-2
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
Automatic dawn function	On	Off
Automatic dusk function	Off	On

Random function (presence simulation)

The DuoFern Universal actuator 9470-2 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 LED on the DuoFern Universal actuator 9470-2 flashes green every second.

i
- ◆ The random function works independently for each channel.
- ◆ Automatic movement commands of the automatic solar function are **not** delayed.
- ◆ Automatic switching times and dusk commands are delayed.

Stairway function (on / off)

When the stairway function is active, the DuoFern Universal actuator 9470-2 will switch off the controlled device again after the set "stairway time". Optionally, a switch-off advance warning for > 60 seconds and with uneven values can be set.

Mains supply [L / N]	
Mains supply voltage:	230 V / 50 Hz $\sim$
Consumption:	Standby: < 0.5 W
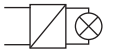
Control inputs [E1 / E2] for each external, manual switch / push button on site	
Input voltage:	230 V (Ri = 200 kΩ)

Relay outputs - load contacts [K1 / K2]		
Switching voltage:	230 V / 50 Hz $\sim$	
Maximum switching capacity per channel:	ohmic load, e.g. bulbs	
		6.5 A / 1500 W
	inductive loads such as: fluorescent lamps, drives, iron core transformers, e.g. for extra-low voltage bulbs such as halogen bulbs	
		5 A / 1150 W

Relay outputs - load contacts [K1 / K2]	
Maximum switching capacity per channel:	capacitive loads such as: electronic transformers, AC/DC transformer, e.g. for extra-low voltage lamps such as halogen lamps, LEDs, etc.
	5 A / 1150 W

⚠ **Improper use can lead to serious injuries or property damage.**

◆ Due to the small contact distance (μ), not suitable for disconnecting.

◆ The DuoFern Universal actuator 9470-2 is not suitable to be used for an electrically safe disconnection.

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	
Permissible ambient temperature range:	-20 °C to + 55 °C
Dimensions (W x H x D):	48.7 x 45.7 x 19.8 mm
Connecting terminals:	Spring resistance connecting terminals (0.1 mm^2 - 1.5 mm^2)

The use of defective equipment can lead to personal injury and damage to property (electric shocks / short circuiting).

◆ Never use defective or damaged equipment.

◆ Check that the DuoFern Universal actuator 9470-2 is intact.

◆ Consult our customer service department in the event that you discover damage, see page 32.

7.1 Intended Use

Only use the DuoFern Universal actuator 9470-2 for connecting and controlling electrical appliances (e.g. lighting etc.) within the permissible load limits, see Technical Specifications.

The DuoFern Universal actuator 9470-2 is suitable to switch the mains voltage, basic insulated extra-low voltage (ELV) as well as safety insulated extra-low voltage (SELV).

Operating conditions

◆ Only use the DuoFern Universal actuator 9470-2 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 those systems and devices where a malfunction in the transmitter or receiver would not cause a danger to personnel 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 7.2 Incorrect Use

Using the DuoFern Universal actuator 9470-2 for any other purpose than previously mentioned is not permissible.

> ⚠️ **Improper use can lead to serious injuries or property damage.**

◆ The DuoFern Universal actuator 9470-2 is not suitable to be used for an electrically safe disconnection.

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

> ⚠️ **There is a risk to life caused through short circuiting and electric shocks if the DuoFern Universal actuator 9470-2 is used outside or in damp rooms.**

◆ Do not install and use the DuoFern Universal actuator 9470-2 outdoors or in damp rooms.

The electrical connection, installation and commissioning of the DuoFern Universal actuator 9470-2 must only be carried out by a qualified electrician in accordance with the instructions in this manual.

i 8. Connecting the DuoFern Universal actuator 9470-2

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

i 8.1 Safety Instructions for the Electrical Connection

⚠ DANGER!

There is a risk of fatal electric shocks 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 supply cable and secure it to prevent any reconnection.

◆ Check that the system is de-energised.

⚠ **WARNING!**

Short-circuiting, caused when the DuoFern Motion Universal actuator 9470-2 is overloaded, poses a danger to life.

◆ The maximum switching capacity must not be exceeded, for this, please observe the details in the Technical Specifications, see page 18.

⚠ **ATTENTION!**

A defect antenna can lead to malfunctions or failure of the DuoFern Universal actuator 9470-2.

◆ The antenna wire must not be shortened or damaged.

ℹ **8.2 Important Information regarding the Electrical Installation**

Connection instructions for the operation with an external switch / push button on site

◆ When using the control inputs **[E1 / E2]**, you must connect the external switches / push buttons and the DuoFern Universal actuator 9470-2 to the same phase **[L]**.

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

Length of insulation stripped:
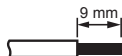
9 mm   All leads must be stripped to 9 mm.

> Read the specifications relating to the electrical connection detailed in the instruction manual of the electrical appliance used.
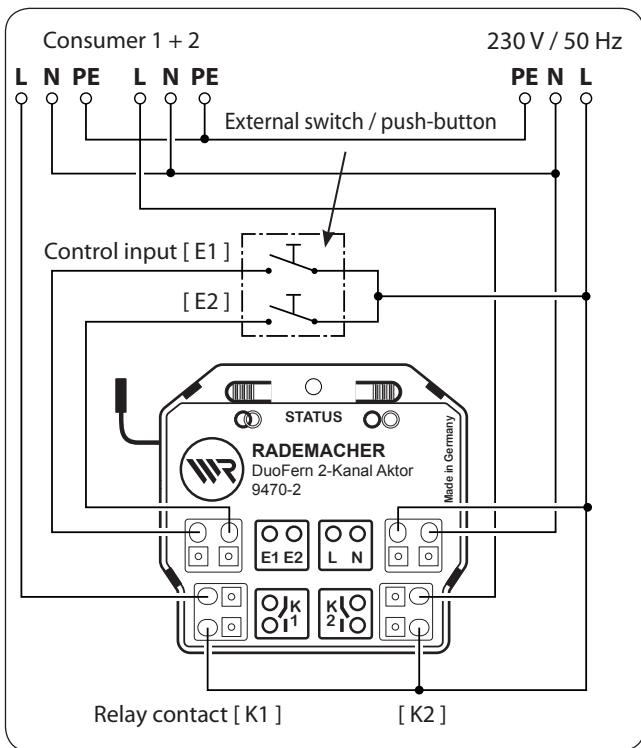
Further assembly instructions

◆ In order to ensure optimal operation, the DuoFern Universal actuator 9470-2 should not be installed on a metallic base or near metal objects.

◆ The DuoFern Universal actuator 9470-2 is intended for flush mounting. We recommend installation in a deep 58 mm flush-mounted box or in an electronic socket.
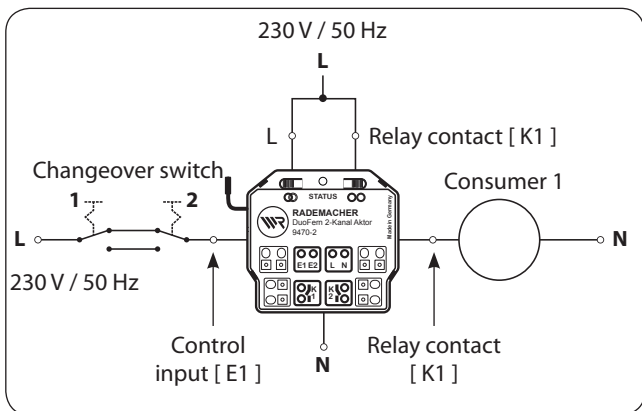
i   8.3 Connecting and installing the
DuoFern Universal actuator 9470-2

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

2. Securely lay the connecting cables right into the flush-mounted box of the DuoFern Universal actuator 9470-2.

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

4. Insert the DuoFern Universal actuator 9470-2 into the flush-mounted box and lay the connecting cables as well as the antenna into the box.

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

Consumer 1 + 2   230 V / 50 Hz

L N PE   L N PE   PE N L

External switch / push-button

Control input [E1]

[E2]

STATUS

RADEMACHER
DuoFern 2-Kanal Aktor
9470-2

Made in Germany

E1 E2   L N

Relay contact [K1]   [K2]

Installation with changeover switches

We recommend replacing the cross connection with several switches connected in parallel.

The corresponding inputs/outputs must be connected for the second channel as per channel 1.

You can find further circuit examples on our website at:

www.rademacher.de

For the DuoFern Universal actuator 9470-2 to be operated with a DuoFern transmitter, you must register each desired transmitter to the DuoFern Universal actuator 9470-2. You can assign a maximum of 20 DuoFern transmitters (e.g. DuoFern manual transmitter standard).

1. Switch the desired DuoFern transmitter to registering/logging off mode (please refer to the corresponding instruction manual).

2. Press the "connect (register) button" [⊙◯] or the "disconnect (log off) button" [◯◯] of the DuoFern Universal actuator 9470-2.

3. The DuoFern Universal actuator 9470-2 then transmits either a log-on or log-off signal.

Registering / logging off mode remains active for 120 seconds.

4. If registration is successful, the STATUS LED will light up green constantly.

5. Register/log off the next DuoFern transmitter. To do so, repeat steps 1 to 3, or else terminate registration/logging off process.

Observe the STATUS LED

The status LED lights up red if the registration process fails, for example if:

◆ 20 DuoFern transmitters have already been registered

◆ A unsuitable device (e.g. other DuoFern actuator) is registered.

◆ An attempt was made to log-off a DuoFern transmitter that is not logged-on.

You can control the DuoFern Universal actuator 9470-2 directly using the radio code in order, for example, to be able to connect further DuoFern transmitters to the actuator after installation. You will find the radio code on the enclosed label and on the rear side of the DuoFern Universal actuator 9470-2.

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

A more detailed description on activating the radio code function can be found in the DuoFern manual central operating unit's or HomePilot®'s instruction manual.

A reset can be carried out to reset the DuoFern Universal actuator 9470-2 to the original default condition as when supplied.

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 registered DuoFern transmitters are automatically logged off.

3. Subsequently, the DuoFern Universal actuator 9470-2 will be reset to its original supplied state.

ℹ 11. Dismounting

⚠ DANGER!

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

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

1. Log the DuoFern control device off of the DuoFern network.

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

3. Disconnect the DuoFern Universal actuator 9470-2 and carefully remove it from the flush-mounted box.

ℹ️ 12. Simplified EU Declaration of Conformity

(€ RADEMACHER Geräte-Elektronik GmbH hereby declares that the DuoFern Universal actuator 9470-2 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

ℹ️ 13. Warranty Conditions

RADEMACHER Geräte-Elektronik GmbH provides a 24-month warranty for new systems that have been installed in compliance with the installation instructions. All construction faults, material defects and manufacturing defects shall be covered by the warranty.

Your statutory warranty claims shall remain unaffected by this warranty.

The following are not covered by the warranty:

◆ Incorrect fitting or installation

◆ Non-observance of the installation and operating instructions

◆ Improper operation or wear and tear

◆ External influences, such as impacts, knocks or weathering

◆ Repairs and modifications by third parties, unauthorised persons

◆ Use of unsuitable accessories
◆ Damage caused by unacceptable excess voltage
  (e.g. stroke of lightning)
◆ Operational malfunctions caused by radio frequency
  overlapping and other such radio interference

A prerequisite for the warrant is that the new device must have been purchased from one of our approved specialist retailers. Proof of this must be provided by presenting a copy of the bill.

RADEMACHER will remedy any defects that occur within the warranty period free of charge either by repair or by replacement of the affected parts or by supplying a new replacement unit or one to the same value. There is no general extension of the original warranty period by delivery of a replacement or by repair as per the terms of the warranty.

* 30 seconds free of charge, subsequently 14 cents / minute from German fixed line networks and max. 42 cents / minute from German mobile networks.