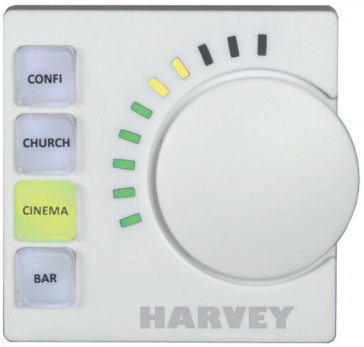
HARVEY®

RC4: IP-based remote control for audio, lighting and media technology



Operating Manual

www.harvey.audio

Version 1.0

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1 Introduction

HARVEY RC4 is a freely programmable end-user wall remote control for Ethernet networks. It is compatible to all members of the HARVEY family of audio and media control matrixes. The remote control is supplied exclusively via Ethernet (PoE).

For user interaction the HARVEY RC4 has one rotary encoder with an integrated push button and four LED backlit push buttons to control audio levels, invoke DMX commands, or recall scene settings. The four push buttons can be labelled. A LED light ring indicates fader positions. All LEDs are of RGB type and can be programmed with an individual colour scheme and brightness. HARVEY RC4 is completely supported by HARVEY Composer allowing a seamless configuration of complex media scenarios where several remotes in parallel control a system of HARVEY audio matrixes.

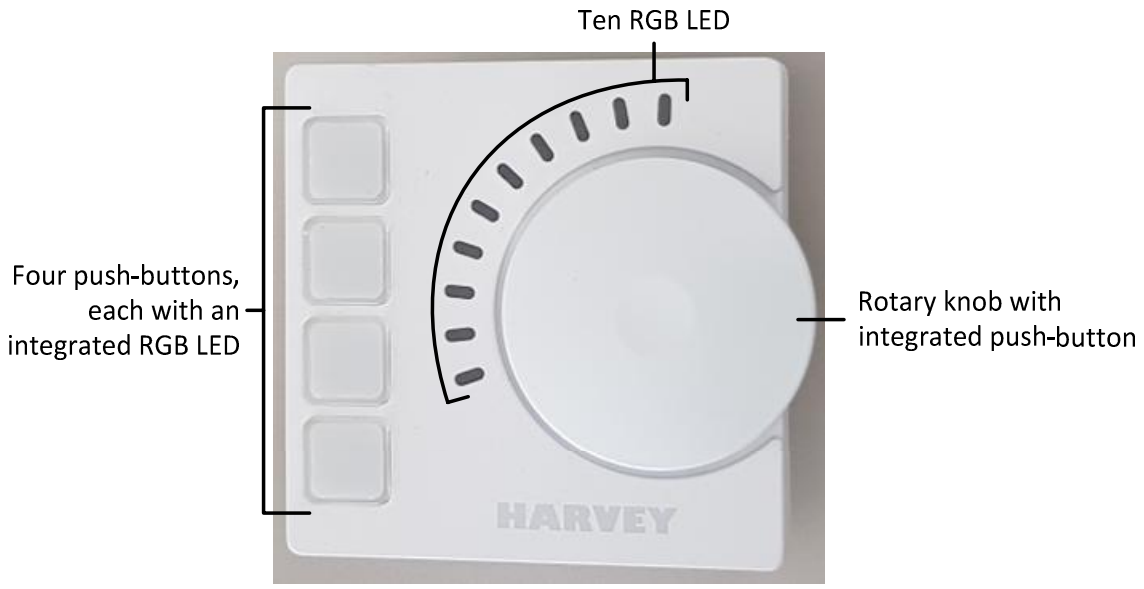
Two HARVEY RC4 models exist:

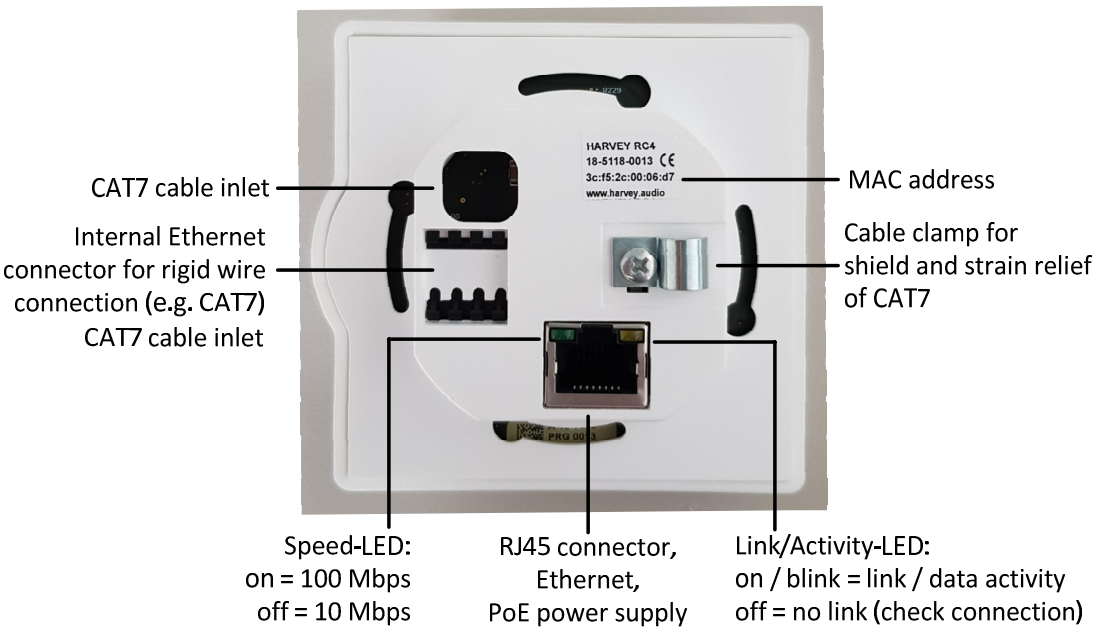
1. HARVEY RC4-EU: RC4 in a plastic housing compatible for mounting into standard round European flush-mounted boxes with a diameter of 60 mm.
2. HARVEY RC4-US: RC4 with a metal faceplate compatible for mounting into standard 2-gang North-American flush-mounted boxes.

This manual shows how to wire, assemble and label both the **HARVEY RC4-EU** and the **HARVEY RC4-US** model.

For programming and integration into your audio or control projects please refer to the HARVEY Composer manual.

2 Overview HARVEY RC4-EU

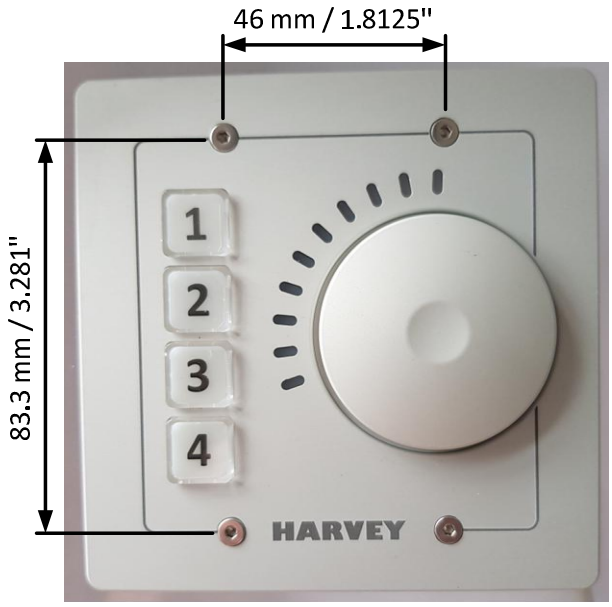


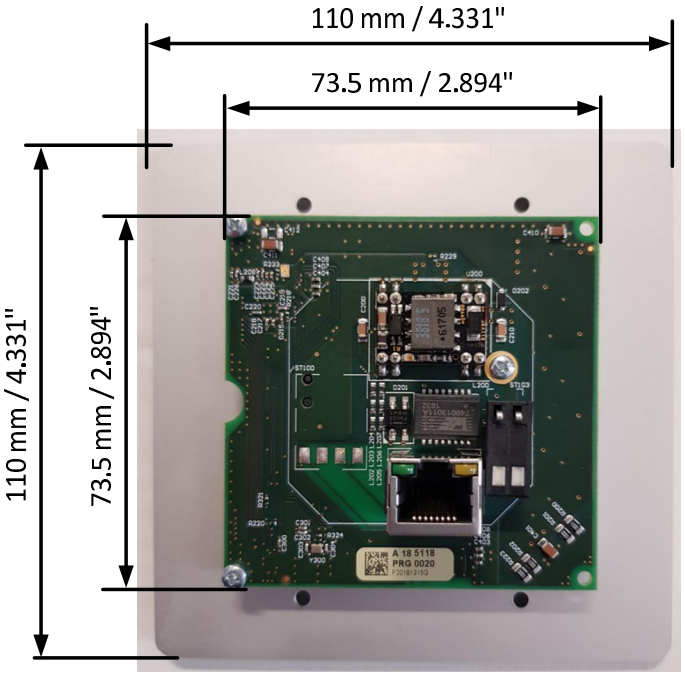


RC4-EU Specifications

Push buttons	4x with integrated RGB LED; brightness and colour freely definable in HARVEY Composer; foil labels can be inserted for push button labelling; functions programmable in HARVEY Composer: preset call, logic control
Rotary Knob	Endless rotary encoder with integrated push button; functions programmable in HARVEY Composer: audio level, mute control, DMX control
LED Ring	10x RGB LED; display fader position, mute status for level control and device status
Data Link	10/100 Mbps Ethernet (100BaseT); standard IP protocol
Ethernet Cable Interface	Two connector options on rear side: a. RJ45 with activity/link/speed LED for standard network cable (e.g. CAT5) b. 4-pole terminal block with compression contacts for heavy and stiff S/FTP cable (e.g. most CAT7); external cable clamp for shield and strain relief
Power Supply	PoE IEEE802.3af Class 3 (12,95 W) Actual power consumption: - nom. <5 W with all LEDs switched on at normal brightness - max. 10 W with all LEDs switched on at maximum brightness RJ45 interface: PoE power provision from IEEE802.3af Ethernet switches (endspan PoE) or alternatively PoE injectors (midspan PoE). 4-pole terminal block: Only endspan PoE capable.
Mounting and Housing	Two-piece plastic housing designed but not limited to be mounted into one-gang EU flush-mounted boxes (60 mm diameter), onto metal front panels (e.g. 19” racks) or into plated furniture (e.g. conference room); depth of housing’s rear side just 10 mm (without cables). **It is recommended a use a flush-mounted box with a depth of 60 mm to give the CAT cable enough space in the wall.** Quick two step mounting: 1) Attach cable from wall and mount wall panel with 2 screws 2) Snap and mount front part to wall panel with 1 screw
Dimensions	80 mm x 84 mm x 35 mm, weight 100 g / 0.2 lbs.
Colour	White (RAL9003); other colours available on request

3 Overview HARVEY RC4-US





RC4-US Specifications

Push buttons	4x with integrated RGB LED; brightness and colour freely definable in HARVEY Composer; foil labels can be inserted for push button labelling; functions programmable in HARVEY Composer: preset call, logic control
Rotary Knob	Endless rotary encoder with integrated push button; functions programmable in HARVEY Composer: audio level, mute control, DMX control
LED Ring	10x RGB LED; display fader position, mute status for level control and device status
Data Link	10/100 Mbps Ethernet (100BaseT); standard IP protocol
Ethernet Cable Interface	RJ45 with activity/link/speed LED for standard network cable (e.g. CAT5)
Power Supply	PoE IEEE802.3af Class 3 (12,95 W) Actual power consumption: - nom. <5 W with all LEDs switched on at normal brightness - max. 10 W with all LEDs switched on at maximum brightness RJ45 interface: PoE power provision from IEEE802.3af Ethernet switches (endspan PoE) or alternatively PoE injectors (midspan PoE).
Mounting and Housing	Aluminium front panel designed but not limited to be mounted onto two-gang US flush-mounted boxes. Distance of mounting holes: 1.8125” / 46 mm X 3.281” / 83.3 mm **It is recommended a use a flush-mounted box with a depth of 60 mm to give the CAT cable enough space in the wall.**
Dimensions	Shape of aluminium front panel and electronics: 110 mm x 110 mm x 28 mm, weight 100 g / 0.2 lbs.
Colour	Aluminium anodized; other colours available on request

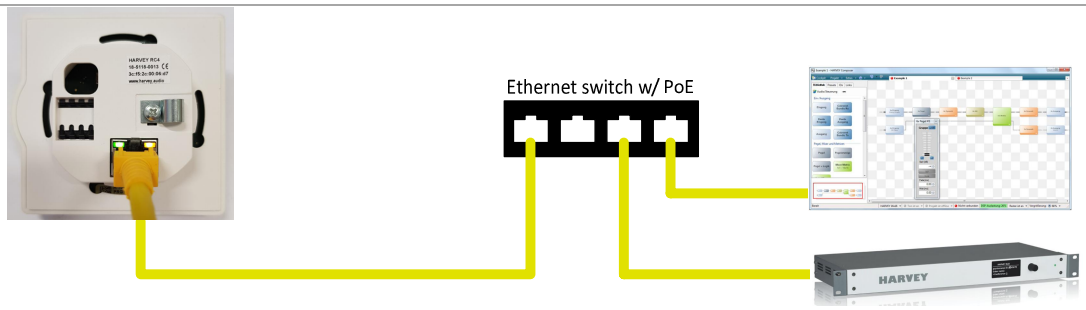
4 Quick Installation

For full HARVEY RC4 configuration and operation following items are required:

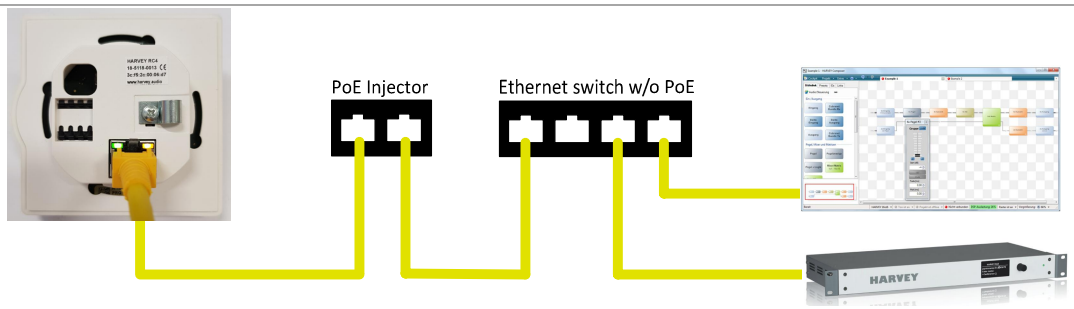
1. Minimum one HARVEY RC4,
2. HARVEY Composer (v2.1.4.0 onwards) installed on a Windows computer,
3. Either
   a. an Ethernet switch capable of delivering Power over Ethernet (PoE) according to IEEE802.3af Class 3 (12.95 W) or
   b. a regular (non-PoE) Ethernet switch in combination with an Ethernet PoE-Injector which is capable of delivering PoE according to IEEE802.3af Class 3 (12.95 W),
4. a HARVEY audio matrix (any HARVEY NxM model).

Wiring

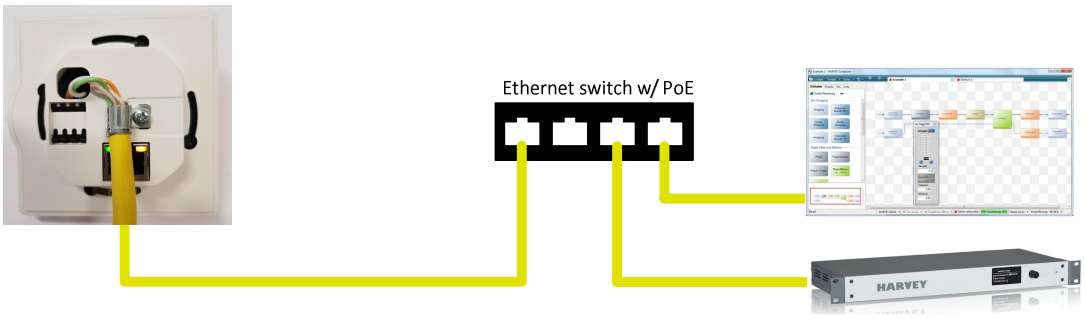
The following three diagrams show all wiring options for HARVEY RC4.



Option 1 – Flexible network cable with power provision from a switch with PoE capability attached to the RJ45 connector of the RC4.



Option 2 – Flexible network cable with standard Ethernet switch without PoE capability and power provision from a PoE Injector attached to the RJ45 connector of the RC4.



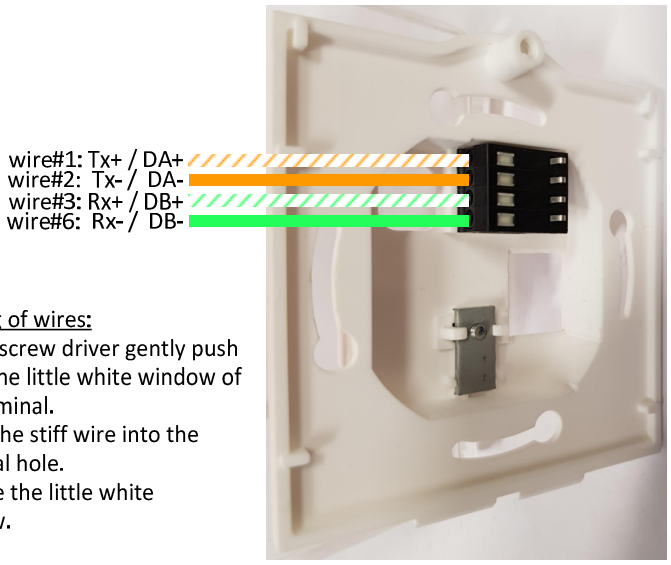
Option 3 – Stiff network cable with power provision from switch with PoE capability attached to the terminal block of the RC4.**This option does not apply to the RC4-US model.**

A switch-based power provision (i.e. endspan PoE) is possible both for RJ45 wiring option 1 and for the terminal block wiring option 3.

An injector-based power provision (i.e. midspan PoE) is possible for the RJ45 wiring option 2 only.

Stiff Network Cable (e.g. CAT7)

For stiff network cables the RC4 offers wiring option 3 – a connection to the internal 4-pole terminal block which accepts stiff wires only. **This option does not apply to the RC4-US model.** Following cable assignment is valid for the terminal block:



Mounting of wires:

1. With a screw driver gently push down the little white window of the terminal.
2. Insert the stiff wire into the terminal hole.
3. Release the little white window.

Status LED

As soon as the RC4 is powered and connected to the network it indicates its status by the bottom LED of the light ring.

Yellow: RC4 is in self initialization mode[1].

Blue: RC4 has network link and waits for pairing with a HARVEY device.

It leaves the before mentioned two states as soon it is actively paired with a HARVEY project which has been programmed with HARVEY Composer. Please refer to the **HARVEY Composer** operating manual for integrating HARVEY RC4 into your HARVEY projects.

[1] Among other things during initialization the RC4 waits for a physical network link. A physical link to the Ethernet network and data activity are indicated at the RJ45 interface on the rear side of the RC4, for both the RJ45 and terminal block wiring option.

5 Instructions for Mounting, Labelling and Wiring

PROCEDURE 1: Follow these instructions forwards for disassembly in case you want to mount a RC4 to a wall panel or you want to label the four push buttons. Assembly is done in the reverse order.

For disassembly of the RC4-EU housing first you have to demount the rotary knob.

For this you need a hexagonal screwdriver (1.3 mm), which is delivered together with the RC4.

Insert the screwdriver into the side hole of the rotary knob. Find the screw and unscrew it just one to two turns to avoid losing the little grub screw.

Pull the button off the endless encoder shaft. It needs some force – be patient, wobble the knob a little bit, then it can be removed.

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…continuation of PROCEDURE 1 (disassembly of upper and lower housing shells):

	Use a cross-headed screwdriver to remove the screw next to the encoder shaft which joins the upper and lower housing shell.
	Divide the upper and lower shell of the RC4 housing.

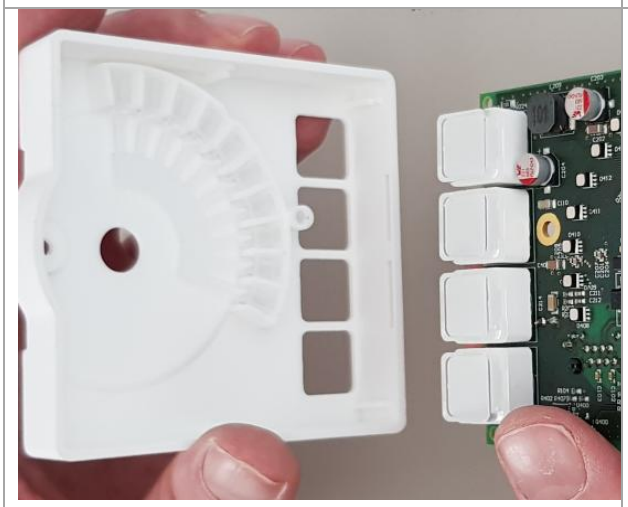
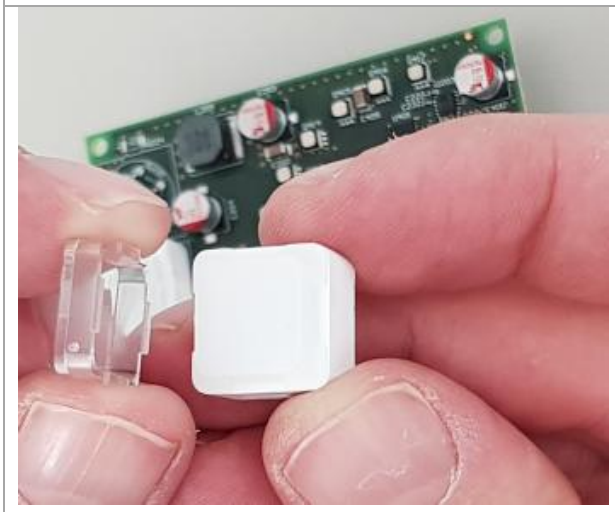
Finish of PROCEDURE 1 (disassembly of upper and lower housing shells).

For labelling the four push buttons proceed with PROCEDURE 2 on the next page.

For mounting the RC4 onto an EU flush-mounted box (UP60) and a flexible network cable with a RJ45 connector follow PROCEDURE 3.

For attaching the RC4 to a stiff network cable coming from the wall follow PROCEDURE 4 first and then proceed with the second half of PROCEDURE 3 for flush-mounted box mounting.

PROCEDURE 2: Proceed with the following steps for labelling the four push buttons of the RC4.

	Remove the screw joining the printed circuit board and the front shell of the housing.
	Remove the front shell from the printed circuit board.
	Remove the light guide bodies by gently pulling them from the push buttons. Remove the transparent caps from the light guide bodies.

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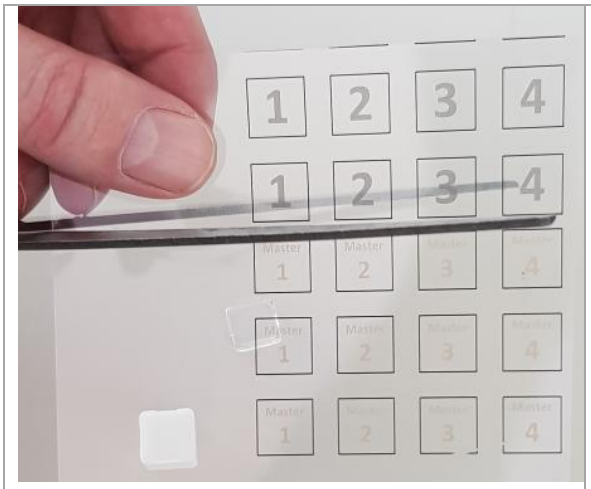
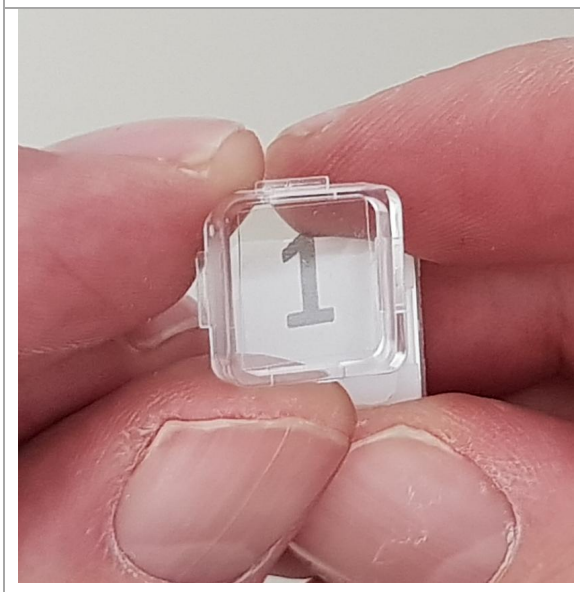
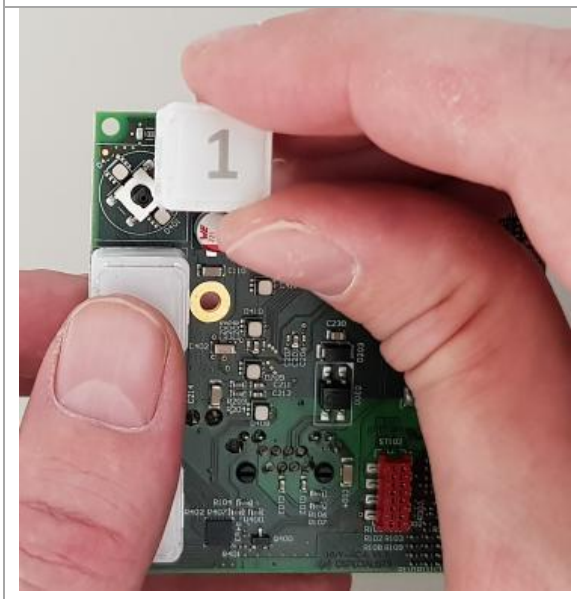
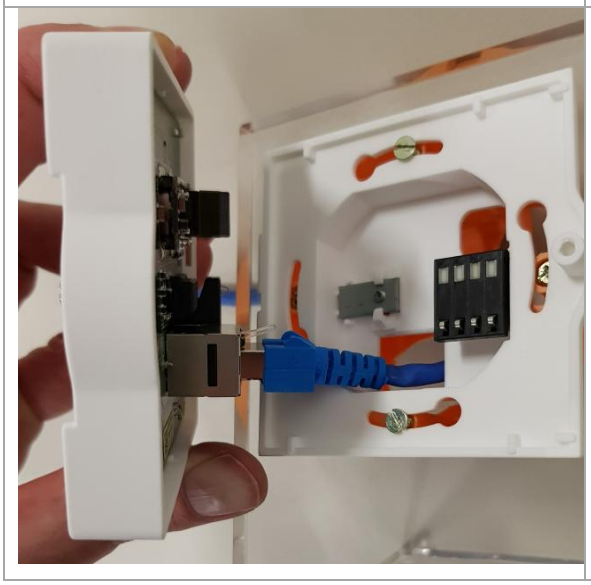
…continuation of PROCEDURE 2 (labelling push buttons):

	Good results can be achieved by printing the labels on transparent foil sheets and cutting them with a knife or scissors.
	Put the label into the transparent cap and the cap onto the light guide body.
	Gently put the light guide bodies back onto the push buttons.

Finish of PROCEDURE 2 (labelling push buttons).

PROCEDURE 3: Mounting onto an EU flush-mounted box and connecting a flexible network cable coming from the all to the RJ45 connector.

	The RC4 is designed for mounting into a standard 60 mm European flush-mounted box (UP60). A box's depth of 60 mm is recommended.
	Take the lower shell, insert the network cable through the RJ45 opening and mount that configuration onto the flush-mounted box.
	Plug the RJ45 connector into the RJ45 on the upper shell's side.

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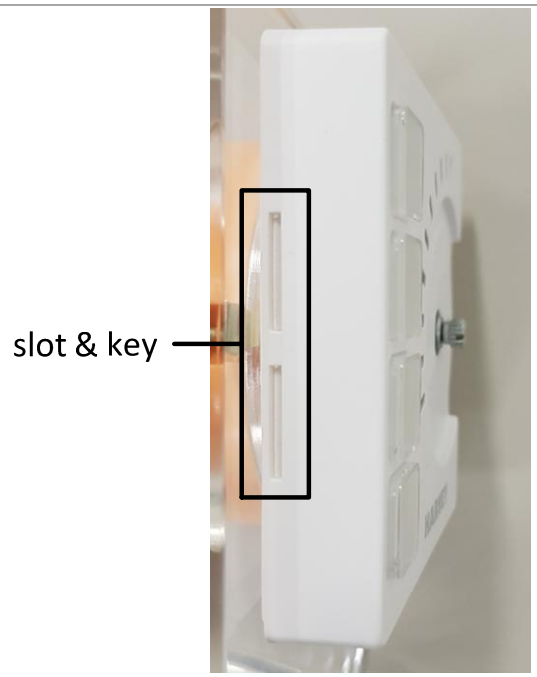
…continuation of PROCEDURE 3 (wall mounting with flexible network cable with RJ45):

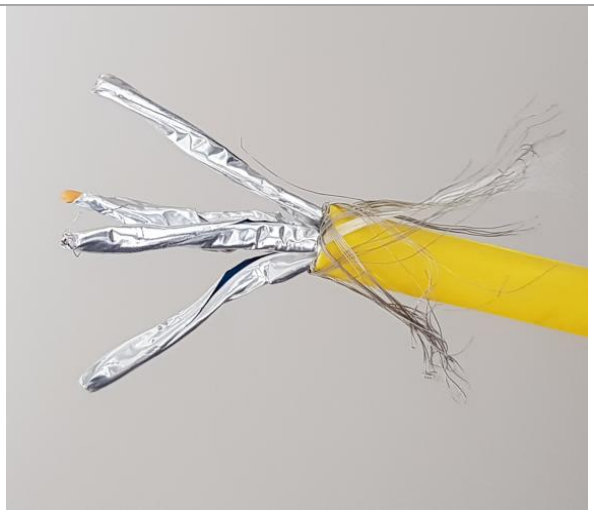


Put the left side of the upper shell's slots over the two keys of the lower shell.

Proceed with the instructions of Procedure 1 in reverse order to re-assemble the housing.

Finish of PROCEDURE 3 (wall mounting with RJ45).

PROCEDURE 4: Connecting a stiff network cable without RJ45 coming from the wall to the terminal block connector.

	Strip off appr. 50 mm of the stiff network cable's mantle.
	This is the result of de-mantling the cable.
	Gently divide the four wire pairs with their shield foil.

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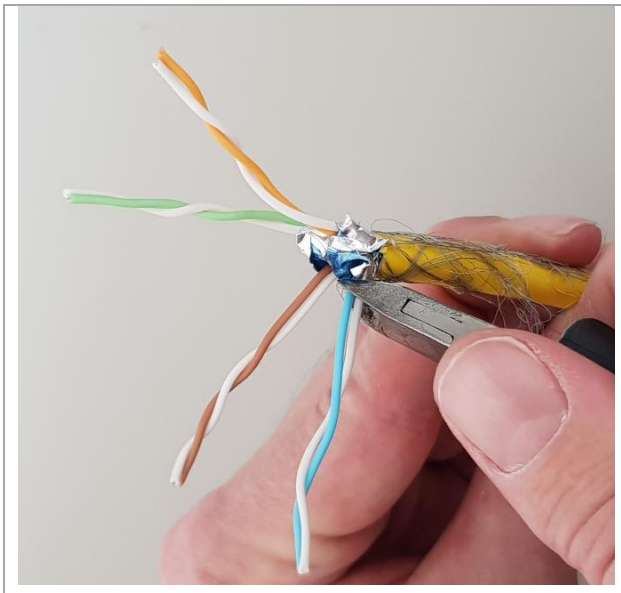
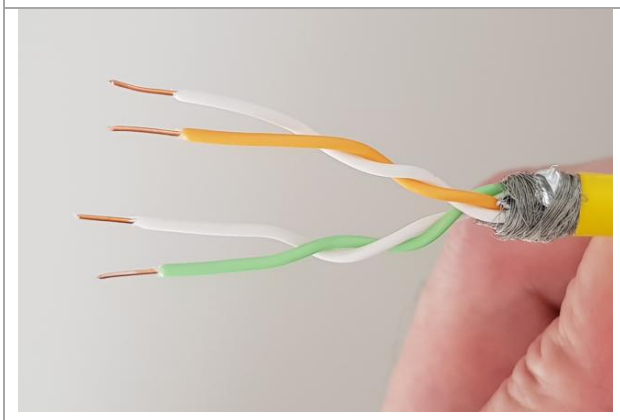
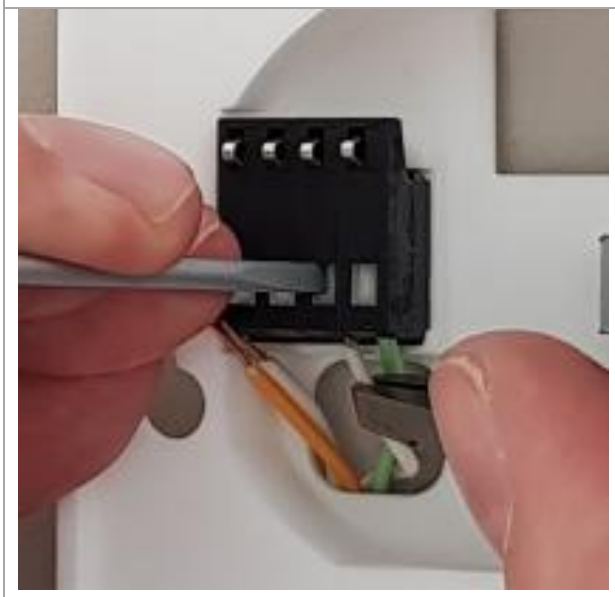
…continuation of PROCEDURE 4 (wall mounting with stiff network cable without RJ45):

	Cut the foils – do not cut the shield-mesh! Turn back the shield-mesh and wind it around the end of the four wire pairs.
	Cut those four wires which are not required for a 100BaseT wiring (i.e. wires 4, 5, 7 and 8 according to the standard T-568A/B numbering rules) – only following wires are required: Wire 1: Tx+ / DA+ Wire 2: Tx- / DA- Wire 3: Rx+ / DB+ Wire 6: Rx- / DB- Wire pairs 1 / 2 and 3 / 6 should be twisted.
	Lead the stiff wires from the rear side of the lower housing shell through the designated whole. Use a long-nosed plier to lead each stiff wire into the correct terminal during gently pushing down the referring white window with a screw driver.

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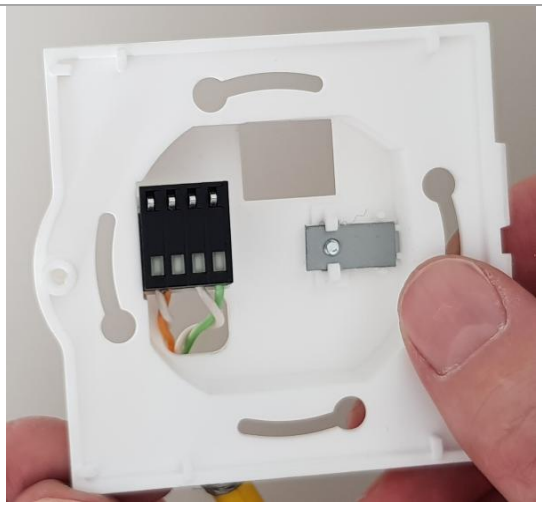
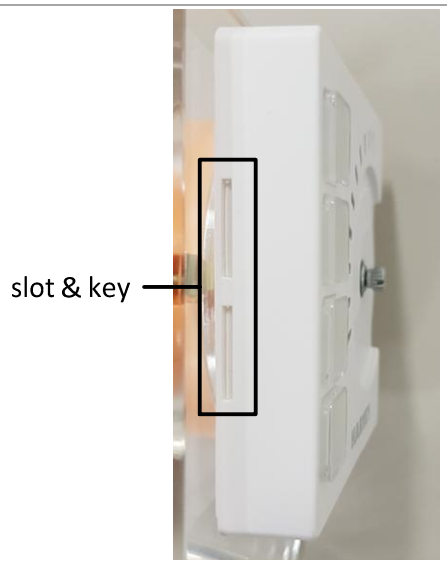
…continuation of PROCEDURE 4 (wall mounting with stiff network cable without RJ45):

	This is the result of the cable installation to the terminal block.
	On the rear side of the lower shell push the shield-mesh of the stiff network cable under the cable clamp and fasten the screw tightly.
	Put the left side of the upper shell's slots over the two keys of the lower shell. Proceed with the instructions of Procedure 1 in reverse order to re-assemble the housing.

Finish of PROCEDURE 4 (connecting stiff network cable to terminal block).

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