

RAIO®

# INTRODUCTION

RAIO®, is the next generation infrared heating panels. With RAIO, you can heat energy efficiently and without fossil fuel.

RAIO infrared heating panel's radically innovative design makes it slarter than convection heating and more energy efficient than traditional infrared panels.

While traditional convection heating only effects the temperature of the air, RAIO can heat objects in the room with its pleasant infrared radiation. Due to the wide emission of radiant heat, the room will be heated homogeneously.

On the infrared heating market, RAIO is the only heating panel that uses a combination with the innovative graphene technology for unprecedented efficient - and therefore highly reliable, environmentally friendly - comfort and exceptionally high efficiency.

RAIO can be used as a main or auxiliary heater and increases comfort as a practical bathroom heater. In addition, RAIO saves space when mounted on the ceiling. Simply attach RAIO to a ceiling of wall to comfortably heat the entire room.

RAIO heats your room faster and more evenly, while significantly reducing your energy consumption.



HANDMADE IN BELGIUM  
PROVIDED WITH THE  
APPROPRIATE SAFETY  
INSPECTIONS AND CERTIFICATES.





# CONTENT

WHY RAI0?	7
INSTALLATION ADVICE AND POINTS OF INTEREST	11
TRANSMISSIONCALCULATION	14
POSITIONING IN THE ROOM	15
RAIO HEATING PANELS	18
RAIO 1 surface mounted heating panels	20
RAIO 1 BI(S) build-in heating panels	22
RAIO 2 surface mounted heating panels	24
RAIO 2 BI(S) build-in heating panels	26
OPERATION	28
T1 thermostat kit	30
T3 thermostat kit smart home	32
T3 ACCESOIRES	35
T3 temperature sensor	36
T3 motion detector	36
T3 smoke detector	36
T3 smartplug	37
T3 radiator knob M28	37
T3 radiator knob M30	37
T3 dimmer relay	39
T3 roller shutter relay	39
T3 window/door contact	39
TECHNICAL DRAWING	40
WIRING DIAGRAMS	42
INSTALLATION ASSISTANCE	46





# WHY RAIO?

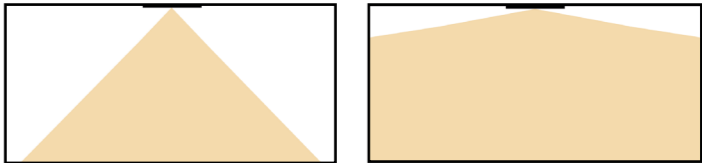
## ADVANTAGES OF RAIO COMPARED TO IR PANELS

The RAIO infrared heating panel uses the innovative graphene technology. A small input of electricity is converted into heat radiation very efficiently. Once RAIO has heated the room, the energy consumption drops dramatically to keep the room at temperature. This combined with its unique design makes RAIO up to 70 percent more efficient than commercially available convection heating systems and up to 30 percent more energy efficient than most infrared panels. With this technology, Spectra is unique in Europe and can be referred to as a next-generation heating panel. To clarify also RAIO radiates in infrared right like many other ways of heating, floor heating, radiators, a wood stove, etc.

All of these systems emit infrared. These advantages only substantiate the qualities of RAIO compared to traditional IR panels.

## HEAT RADIATION DISTRIBUTION

RAIO has a homogeneous distribution of heat radiation (radiation angle 160-170° from the center of RAIO). This ensures that the room is heated more evenly. An attachment against the ceiling provides a higher radiation to the walls, these are going to store the heat and reflect it back into the room. Traditional infrared panels have a small dispersion angle of the heat, causing a very localized bundled, sometimes too concentrated heat in one place, resulting in annoying effects such as headaches, for example. Due to this phenomenon, more panels or higher wattages need to be installed as more local hotspots are created. Because RAIO distributes the radiation better, the room will reach the desired temperature faster.



Radiation angle traditional IR panels 110 degrees

Radiation angle RAIO heating panels 160 degrees

## UNIQUE FINISH FOR OPTIMAL RESULT

The RAIO infrared heating panel is finished on the front with pure safety glass. This glass is specifically designed for maximum transmission and optimal distribution of the generated heat. Because the glass contains no metal oxide, or contamination in the raw materials, it is completely transparent. In average glass, the metal oxide is detectable by the green or blue sheen on the side. Metal oxide impairs the transmission and distribution of heat rays, like aluminum or steel. Furthermore, RAIO's glass panel is finished with a light texture, this creates small lenses that provide break open of the radiation angle and thus better heat distribution. With traditional infrared panels, a finish is often used with glass containing metal oxide or various forms of metal. A finish made of metal breaks down the radiation generated, so first the metal has to heat up to then give off radiant heat itself. This requires much more energy and will not provide optimal heat distribution.



### LOW WATTAGE

RAIO has a relatively low wattage, combined with the graphene technology, it allows the heat requirements to be met with low wattage to bring and keep the room at a comfortable temperature : RAIO 1 / 900 watts / 18-20m<sup>2</sup> - RAIO 2 / 450 watts/ 8-10 m<sup>2</sup>. Graphene is a super conductor. A small input of energy creates very high heat output. In comparison with RAIO, traditional infrared panels quickly require 1400 to 1800 watts to create the same effect.

This is because they often work with a heating element, spiral, film or the like.

### SURFACE TEMPERATURE

The front surface temperature of RAIO is 130 °C. Within 10 minutes RAIO will have reached a surface temperature of about 80 °C and within 25 minutes RAIO will be active at its full power. Because of this fast warm-up time and because of the wide emission of heat radiation combined with the high temperature, RAIO will bring the room to the desired temperature very quickly. Most IR panels only reach surface temperatures between 60 °C to 90 °C. This coupled with a limited radiation angle of the heat rays results in a longer warm-up time to bring the room to the desired temperature. This results in higher energy consumption as these panels have to be active more and longer to bring or maintain the room temperature.

### INSTALLATION ADVANTAGE

RAIO can be installed by one electrical technician within 15 minutes without tools. RAIO is equipped with a patented click system for fast, solid and safe installation. Traditional IR panels should always be installed by two people. One person to support the panel and one person to make the connection. RAIO is equipped

with a failure safety device and a professional plug connection on the panel. This plug is mounted directly on the power cable. This ensures that one can work with a thinner cable within the system and there are no excess cables at the back of the panel. IR panels are rarely equipped with dropout protection and usually have a cable with a plug attached to the panel. This requires a power outlet to be installed. These cables often remain visible at the back of the panel.



### SMART DESIGN

RAIO has a smart design. The entire housing and mounting frame is made of powder-coated aluminum. The front side is made of tempered safety glass and all view sides have the same white colour. The surface-mounted model including mounting frame is only 50.6 mm thick. The receiver of the wireless control should be placed behind the panel. However, this often does not fit within the mounting brackets of other infrared panels and is placed on the ceiling or the like. This results in cumbersome work and a sloppy finish. The receiver of the wireless thermostat fits within the mounting frame of RAIO. Along with all connections and fasteners, this falls within the mounting frame so that all parts are concealed.

This provides an aesthetically better finish and easy installation. Standard infrared panels often have a casing in a metal color, with robust connection points and long cables on the back of the panels. The panels themselves are often not too thick, but often coarse brackets and suspension systems are involved so that the whole quickly gets a total thickness of 6 to 8 cm. These suspension brackets and cabling then also remain in plain sight and collect unnecessary dust. Multiple panels also have the annoying problem of discoloration over the years.

### SAFETY

RAIO infrared heating panels do not get warmer than 40 °C on the back and edges. This directs the heat where it is needed and makes it completely fireproof. Standard infrared panels often get too hot at the back. This causes inconveniences, including fire hazard, discoloration of the ceiling or wall, as well as melting of the cabling at the back of the panel. Furthermore, because of the high temperature at the back of



standard infrared panels, it is not possible to place a thermostat receiver or LED lighting on the back of the panel, or to place the panels in a suspended ceiling. In addition, RAIO is equipped with a fall protection device. Other infrared panels can be pushed out of the brackets by bumping or impacting in some cases, which can cause the panel to fall.

## BUILD-IN MODEL

The RAIO recessed model provides an even smoother finish. Here, the front of the RAIO panel will be flush with the finished ceiling or wall with a 4 mm working joint around the panel, allowing it to be uncoupled at all times. The heating panel will sink down into its fall protection. RAIO recessed heating panels are applicable in plasterboard, wood finishing or stretch ceilings and walls. The mounting frame should be placed with building up the substructure of the ceiling or wall. All stops are provided on this mounting frame to create the correct recess in the ceiling or wall. There can be closely connected with the plasterboard finish or via an additional aluminum lip the profiles of the stretch ceiling can be attached to this mounting frame. The whole is finished very neatly so that RAIO is almost invisible. This offers great aesthetic added value. With IR panels, this possibility of installation does not exist, the infrared panels are always outside the finished surface and in most cases a larger recess or tray must be made in the ceiling for the panels to be mounted or dismantled.

## JUST RAIO!

RAIO is constructed of toughened safety glass and is CE marked with IP54, EMC tested. It is manufactured in Belgium and carries the HIB label handmade in Belgium. RAIO is the only heating panel on the market produced in Belgium. A radically innovative design, the professional heating solution of the future. RAIO is a patented product of Spectra, an innovative Belgian company that aims to make heating radically more efficient - and thus more economical, environmentally friendly and smart.



# INSTALLATION ADVICE AND POINTS OF INTEREST

To correctly advise on the power to be installed in a room or building, there are several factors of great importance.

1. **The year of construction of the house and its insulation**
2. **Length x width x height of each room**
3. **Height x width of windows with the type of window for each room**
4. **Height x width of entrance doors, entrance gates and sliding windows per space**
5. **The utility of a space can also play a determining role in the correct recommendation**

All of the above should be taken into account in a transmission calculation or heat loss calculation. A correct advice should ALWAYS start with this calculation. Below, the points are further explained and their importance explained in detail.

### 1. Isolation value of the room or building envelope

The insulation value plays a big role in the heat loss calculation. A poorly insulated building or room will lose heat faster through the walls, ceiling or floors, which during cold periods also need more energy to be warmed up by heat radiation. In the heat loss calculation we distinguish four major points which occur most frequently:

- Not isolated (houses built before 1990) ~ 85 W/m<sup>2</sup>
- Moderately isolated (houses built between 1990-2000) ~ 65 W/m<sup>2</sup>
- Well insulated (houses built between 2000 - now) ~ 45 W/m<sup>2</sup>
- Very well insulated (passive) ~ 25 W/m<sup>2</sup>

**Non isolated** buildings are less favorable to heat with RAIO. These require a lot of energy and this will result in excessive energy consumption. Often these types of buildings are additionally not draft-tight so there is a lot of influence of cold. The disadvantage with these buildings is rapid cooling or loss of heat from the mass. Heating this type of building is possible, but sufficient panels must be installed. RAIO can also be used here as local additional heating above a desk, sitting area... etc places where one experiences a lot of cold. Here RAIO can provide the necessary comfort during times of need.

**Moderately insulated** buildings can be better heated with RAIO, but the same principles apply as for non-insulated buildings. In these buildings, the situation is already more favorable and RAIO can be used after proper calculation. In this type of building there is often a heating system in place and in certain cold places, or where insufficient heat is created by the existing heating system, such as bedrooms, bathrooms, office spaces, RAIO can certainly provide the necessary comfort or replace the current heating system.

**Well insulated** homes can be very favorably equipped with RAIO as the main heating system.

**Very well insulated** homes are passive homes that have extremely high levels of insulation. These are draft tight and the perfect situation to heat with RAIO as the main heating system.





## 2. Length x width x height of each room

For a correct calculation we need the length x width x height to determine the volume of each room. Spaces with a ceiling height of up to 3 meters can be heated without any problems. A ceiling higher than 3 meters should be considered more closely according to other factors such as the insulation value. If RAIO is installed above 3 meters, the building must be adequately insulated. It is also possible to work with pendants. RAIO can be hung at the correct height and thereby heat more precisely.

## 3. Height x width of windows with type of window per room

Windows are a loss factor as they work with radiant heat. The radiant heat charges the objects in the room with energy and heat (walls, floors, etc) which in turn release the heat back into the room. This is not the case with glass. The heat rays pass through the glass and the window will not reflect them back into the room. With respect to the loss of heat into the room, the type of window plays a major role.

## 4. Height x width of access doors, entrance gates, sliding windows per room

These are important elements in the calculation, a roller door or a sliding door have larger surface areas and cause more loss of heat. Exactly the same applies to an exterior door. These items should be entered correctly in the calculation and are of great importance.

## 5. The utility of a space can also play a determining role in the correct advice.

The utility of the room is an important factor in recommending correctly to obtain the optimal cozy feeling. A bathroom or wellness area has a higher heat requirement than a bedroom. Installing additional power in this type of room will create more comfort.





# TRANSMISSION CALCULATION RAI0

## Heat transmission calculation

Note the details of the room; year of construction + insulation, area sizes of room, windows and doors and the utility of the room. The insulation value plays a major role in the heat transmission calculation.

- year of construction < 1990 / no insulation = 85 W/m<sup>2</sup>
- year of construction between 1990 - 2000 / moderate insulation = 65 W/m<sup>2</sup>
- year of construction between 2000 - heden / good insulation = 45 W/m<sup>2</sup>
- passive / very well insulated = 25 W/m<sup>2</sup>

1. Start by applying the power to be installed according to the year of construction and the insulation of the room. This value will be used later in the calculation. The utility of the room is important here. If it is a bathroom, take a higher Wattage per m<sup>2</sup> to be installed.  
**eg: year of construction 1998 with good insulation = 45 W/m<sup>2</sup> but a bathroom = 65 W/m<sup>2</sup>**
2. Calculate the surface area of the room (length x width)  
**eg: 3 m x 4 m = 12 m<sup>2</sup>**
3. Calculate the surface area of the windows (width x height)  
**eg: window 1,2 m x 1,4 m = 1,68 m<sup>2</sup>**
4. Then multiply the area of the windows by the loss coefficient 1,8.  
**eg: 1,68 m<sup>2</sup> x 1,8 = 3,024 m<sup>2</sup>**

5. Calculate the surface area of the door or sliding window to the outside.  
**eg: sliding door 2 m x 1 m = 2 m<sup>2</sup>**
6. Then multiply the surface area of the exterior door/sash window by the loss coefficient 2,5  
**eg: 2 m<sup>2</sup> x 2,5 = 5 m<sup>2</sup>**
7. Make the sum of these above area measures.  
**eg: 12 m<sup>2</sup> (room) + 3,024 m<sup>2</sup> (window) + 5 m<sup>2</sup> (door) = 20,024 m<sup>2</sup>**
8. Now multiply the total area by the room's installable power per m<sup>2</sup>. The result is the total power to be installed for this room.  
**eg: 20,024 m<sup>2</sup> x 65 W/m<sup>2</sup> = 1301,56 W**
9. To know how many RAI0 panels should be installed in the room, divide the total power to be installed by the number of wattages of the RAI0 panels. (450 W for RAI0 2 and 900 W for RAI0 1)  
**vb: 1301,56 : 900 W = 1,446 RAI0 1 wordt 2x RAI0 1**

### So the calculation looks like this:

1. 65 W/m<sup>2</sup>
2. 3 m x 4 m = 12 m<sup>2</sup>
3. 1,2 m x 1,4 m = 1,68 m<sup>2</sup>
4. 1,6 m<sup>2</sup> x 1,8 = 3,024 m<sup>2</sup>
5. 2 m x 1 m = 2 m<sup>2</sup>
6. 2 m<sup>2</sup> x 2,5 = 5 m<sup>2</sup>
7. 12 m<sup>2</sup> + 3,024 m<sup>2</sup> + 5 m<sup>2</sup> = 20,024 m<sup>2</sup>
8. 20,024 m<sup>2</sup> x 65 W/m<sup>2</sup> = 1301,56 W
9. 1301,56 W : 900 W = 1,446 RAI0 1 wordt 2x RAI0 1

# POSITIONING IN THE ROOM

For proper installation and optimal comfort, it is important to position RAI0 properly in the room. The best place for RAI0 is always against the ceiling and centered in the middle of the room. With multiple panels in one room, these panels should be evenly distributed in the room.

## WHY IS THE CEILING THE BEST POSITIONING?

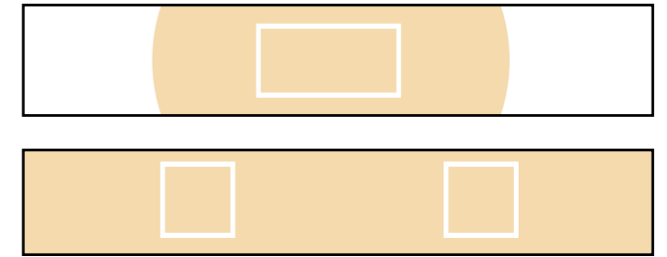
Ceiling mounting gives the best opportunity for the heat to spread throughout the room, reaching the five sides (walls and floor) of the room.

Wall mounting is certainly possible, but in this way the wall against which RAI0 is mounted will not be warmed up. Should this be a cold wall it will (instinctively) no longer radiate cold into the room and it will feel like warmth is coming from that wall. Both mountings are possible but a ceiling mount is preferred for the best effect and efficiency. On top of that, a ceiling mount offers additional space savings.

## SEPERATE SITUATIONS

The range of heat radiation must always be considered. For example, an elongated room may indicate in the calculation that one panel is sufficient for the volume and losses but if the radiation does not reach everywhere in the room, cold spots may occur.

Optimal distribution is very important here. In this case, it is better to install two small panels instead of one large one. Situation further explained using the example below (top view of a room).



The orange circle is a representation of the range of radiation. In the first situation it is clearly visible that it is not distributed throughout the room = WRONG INSTALLATION.

In the second situation we see a correct even distribution in the room, in the middle the heat rays overlap but no annoying effect will occur here = GOOD INSTALLATION.

## POSITIONING IN LARGER SPACES

In larger rooms it is not always necessary or desirable to heat the entire room. Some examples are office buildings, receptions or reception areas, where RAI0 can be used as a local heater at the location where heat is needed. In an office space, it is often the case that several desks are located far apart from each other, which means that the entire volume of the room needs to be heated unnecessarily, which requires a lot of energy and results in high costs.



The solution in this situation is then to place RAIO above the desks making these places offer extra heat to the persons in this zone, the main heating can thus be set much lower this will make great energy savings. This solution also makes it possible to heat in zones, a common situation is that some people like it warmer than others, so they set the heating higher and that while the others on the other side open a window because it is too hot.

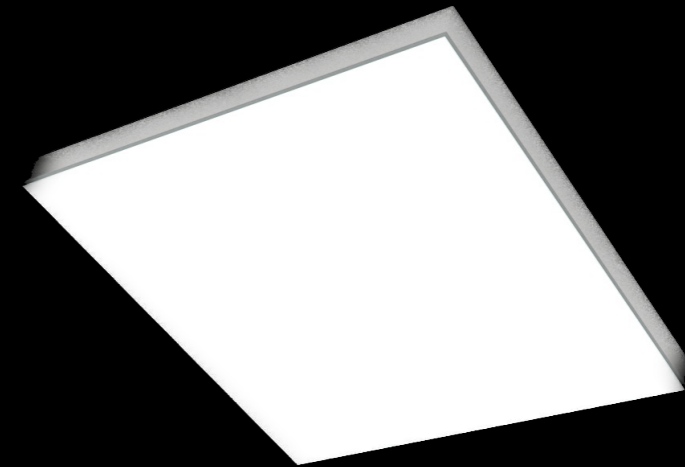
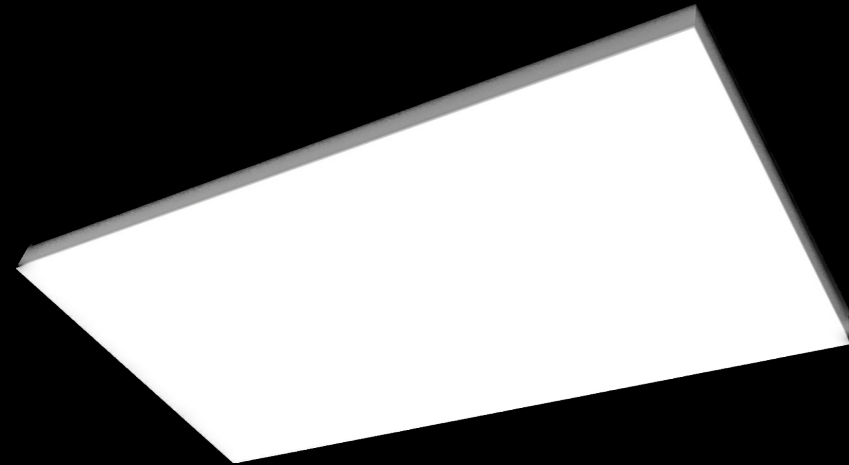
With RAIO it is possible to bring targeted heat where needed tailored to everyone's needs. The same applies to receptions and reception areas. The employees in these locations often experience the opening of the entrance door causing a lot of heat to be lost and a lot of cold to enter in the case of convection heating.

As a result, the heating is often set way too high to still obtain the desired comfort. By placing RAIO above these employees, the desired comfort is still obtained and the general main heating can be set lower which saves a lot of energy.

Within company buildings there are usually meeting rooms present which are often unnecessarily heated by the general main heating system while not in use, this brings a lot of wasted energy.

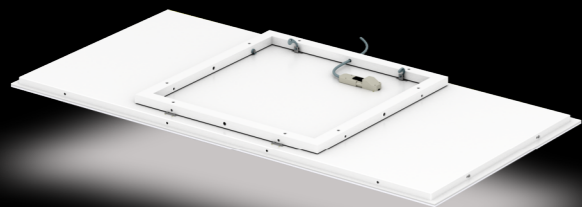
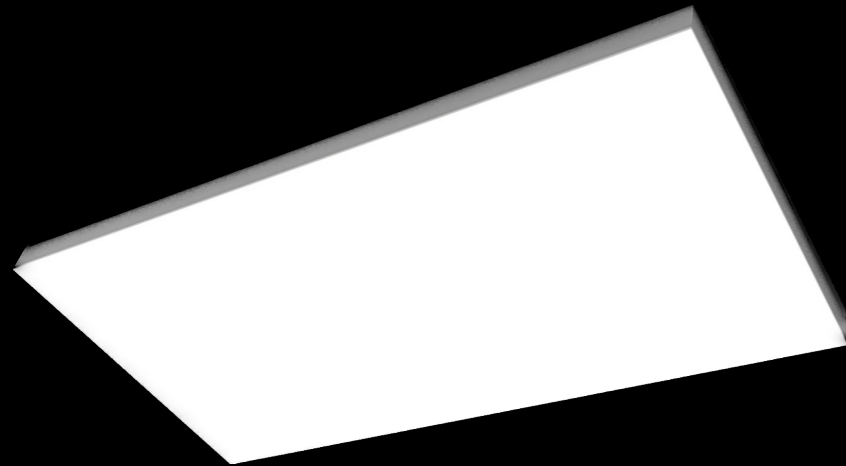
With RAIO, targeted heating can be used here, the heating can be activated when desired or necessary and switched off once the room is not in use. In this way, energy consumption will be handled much more consciously; targeted heating can have great advantages in terms of energy consumption.

# RAIO® HEATING PANELS





# RAIO 1



## RAIO 1 ◦ SURFACE MOUNTED

### WEIGHT AND DIMENSIONS

13,3 KG ◦ 119,3 X 59,3 X 5,06 CM (L X W X H)

### COLOUR

White

### MATERIALS

Housing RAIO: aluminum

Mounting frame: powdercoated aluminum

Glass: safetyglass 0,38 cm

### MOUNTABLE

against ceiling (maximum 3,5m high)  
or on the wall (minimum 1,2m high in public places)

### HEATING AREA

18 m<sup>2</sup> to 20 m<sup>2</sup>

(depending on the transmission calculation)

### ELECTRICAL SPECIFICATIONS

900 Watts ◦ 4 Amps ◦ 230 Volts

### SAFETY

RAIO is in compliance with the relevant Union harmonization legislation Low Voltage Directive 2014/35/EU; EMC directive 2014/30/EU; RoHS directive 2011/65/EU. Whereby the following relevant harmonized standards or technical specifications have been applied:

- EN 60335-1:2012+A13:2017+AC:2014
- EN 60335-2-30:2009+A11:2012+AC2010+AC2014
- EN 55014-1:2006+A2:2011
- EN 55014-1:1997+A2:2008; EN 50581:2012

### CLASSIFICATION IP54

- EN 60529: 1991 + A1:2000 + A2:2013
- IEC 60529:1989 + A1:1999 + A2:2013



# RAIO 1 BI

## RAIO 1 BI ◦ BUILD-IN

APPLICATION IN PLASTERBOARD CEILING

### WEIGHT AND DIMENSIONS

13,3 kg ◦ 120,6 X 60,6 X 5,06 cm (L X W X H)

### COLOUR

White

### MATERIALS

Housing RAIO: aluminum

Mounting frame: powdercoated aluminum

Glass: safetyglass 0,38 cm

### MOUNTABLE

against ceiling (maximum 3,5m high)

◦ Equipped with stopper for finishing

◦ Front side similar to finish

### HEATING AREA

18 m<sup>2</sup> to 20 m<sup>2</sup>

(depending on the transmission calculation)

### ELECTRICAL SPECIFICATIONS

900 Watts ◦ 4 Amps ◦ 230 Volts

### SAFETY

RAIO is in compliance with the relevant Union harmonization legislation Low Voltage Directive 2014/35/EU; EMC directive 2014/30/EU; RoHS directive 2011/65/EU. Whereby the following relevant harmonized standards or technical specifications have been applied:

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- EN 55014-1:2006+A2:2011
- EN 55014-1:1997+A2:2008; EN 50581:2012

### CLASSIFICATION IP54

- EN 60529: 1991 + A1:2000 + A2:2013
- IEC 60529:1989 + A1:1999 + A2:2013

## RAIO 1 BIS ◦ BUILD-IN STRECHCEILING

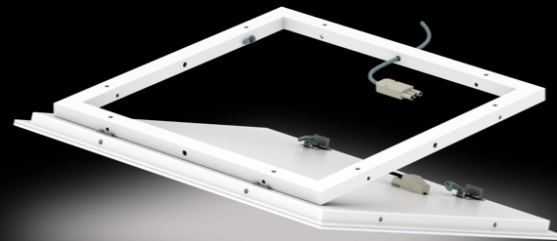
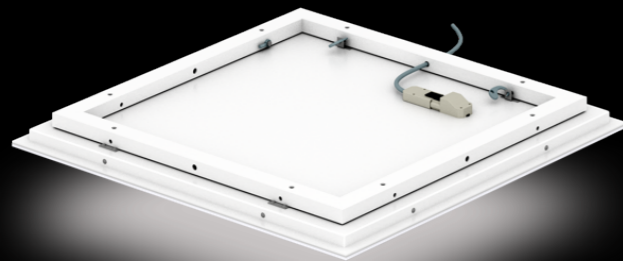
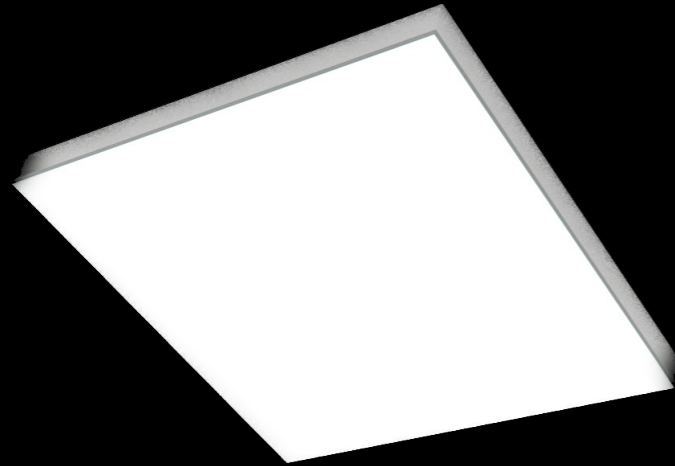
APPLICATION IN STRECH CEILINGS

ADDITIONAL MOUNTING AID FOR STRECH CEILING APPLICATION IS AVAILABLE SEPARATELY





# RAIO 2



## RAIO 1 ◦ SURFACE MOUNTED

### WEIGHT AND DIMENSIONS

6,5 kg ◦ 59,3 X 59,3 X 5,06 cm (L X W X H)

### COLOUR

White

### MATERIALS

Housing RAIO: aluminum

Mounting frame: powdercoated aluminum

Glass: safetyglass 0,38 cm

### MOUNTABLE

against ceiling (maximum 3,5m high)  
or on the wall (minimum 1,2m high in public places)

### HEATING AREA

8 m<sup>2</sup> to 10 m<sup>2</sup>

(depending on the transmission calculation)

### ELECTRICAL SPECIFICATIONS

450 Watts ◦ 1,95 Amps ◦ 230 Volts

### SAFETY

RAIO is in compliance with the relevant Union harmonization legislation Low Voltage Directive 2014/35/EU; EMC Directive 2014/30/EU; RoHS Directive 2011/65/EU. Whereby the following relevant harmonized standards or technical specifications have been applied:

- EN 60335-1:2012+A13:2017+AC:2014
- EN 60335-2-30:2009+A11:2012+AC2010+AC2014
- EN 55014-1:2006+A2:2011
- EN 55014-1:1997+A2:2008; EN 50581:2012

### CLASSIFICATION IP54

- EN 60529: 1991 + A1:2000 + A2:2013
- IEC 60529:1989 + A1:1999 + A2:2013





# RAIO 2 BI

## RAIO 2 BI ◦ BUILD-IN

APPLICATION IN PLASTERBOARD CEILING

### WEIGHT AND DIMENSIONS

6,5 kg ◦ 60,6 cm X 60,6 cm (outer dimension)

◦ installation depth 5,06 cm

### COLOUR

White

### MATERIALS

Housing RAIO: aluminum

Mounting frame: powdercoated aluminum

Glass: safetyglass 0,38 cm

### MOUNTABLE

against ceiling (maximum 3,5m high)

◦ Equipped with stopper for finishing

◦ Front side similar to finish

### HEATING AREA

8 m<sup>2</sup> to 10 m<sup>2</sup>

(depending on the transmission calculation)

### ELECTRICAL SPECIFICATIONS

450 Watts ◦ 1,95 Amps ◦ 230 Volts

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### CLASSIFICATION IP54

- EN 60529:1991 + A1:2000 + A2:2013
- IEC 60529:1989 + A1:1999 + A2:2013

## RAIO 2 BIS ◦ BUILD-IN STRECH-CEILING

APPLICATION IN STRECH CEILINGS

ADDITIONAL MOUNTING AID FOR STRECH CEILING APPLICATION IS AVAILABLE SEPARATELY



# RAIO® OPERATION





# T1 SET



# T1 THERMOSTAT



The T1 is a programmable wireless room thermostat with an extra-large display. This thermostat includes additional features that ensure your RAIO heating system guarantees optimal control.

## THERMOSTAT FEATURES

- Simple, quick and unambiguous operation and setting for all users through the large LCD screen.
- TPI (Time Proportional & Integral) "self-learning" functionality. More precise control of the heating and therefore increased comfort and improved energy efficiency.
- ErP label V an improved ErP score means better efficiency of the entire system and reduction in overall costs.
- PIN for homeowner, option to use a PIN to ensure that only the owner of the house or building has access to certain settings and menus.

- Easy to install thermostat with no power connection the thermostat runs on 2x AA batteries.
- 868 Mhz wireless installation, excellent range (30 m range).
- Measurements 9,5 cm x 1,18 cm x 2,6 cm (L x W x H).
- Range 5 °C - 32,5 °C.
- 5 year manufacturer's warranty.
- Thermostat can communicate with multiple relays.

## T1 RELAY



The thermostat comes with a receiver, the relay. The T1 relay has a switching capacity of 16 amps. The relay can be installed on the back of RAIO heating panels within the mounting frame.

## RELAY FEATURES

- Maximum 16 amp switching capacity.
- Easy assembly.
- 5 year manufacturer's warranty.

# T3 SET



## SMART HOME

# T3 SMART HOME

The basic Smart Home package is expandable with multiple functions and accessories. The ideal total solution for entire buildings and larger installations.

## T3 SMART THERMOSTAT



The T3 Smart wireless thermostat is an exceptionally slim thermostat that is easy to install. Its lithium battery makes the thermostat rechargeable, eliminating the need to change batteries.

Additional possible functions.

The S1 and S2 option makes it possible to add more functions to the T3 Smart thermostat.

- External temperature sensor  
By connecting an external temperature sensor.
- External soil sensor  
This feature makes it possible to control a soil temperature without increasing the ambient temperature.
- External motion detector  
In combination with a motion sensor, the thermostat can go into idle mode as long as the room is not entered.
- CO contact  
With this function you can easily switch between heating and cooling.

## THERMOSTAT FEATURES

- Vacation mode
- Smart Home with (One Touch) rules to be added
- Valve Protection
- Minimum and maximum temperature setting
- PIN Protection function
- 5 year manufacturer's warranty.



## T3 SMART RELAY

The T3 Smart Relay can be placed directly in a flush-mounted box or attached using a holder, this relay can also be attached directly to

RAIO heating panels. By installing the Smart Relay, electrical devices can be controlled through the Smart Home app. The Smart Relay must be used in conjunction with the T3 Gateway.

## FEATURES

- Maximum 16 amp switching capacity.
- Smart Home solution for electrical appliances
- Control via Smart Home application
- 5 year manufacturer's warranty.

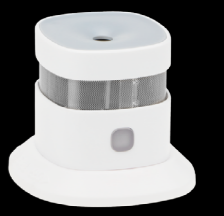
## T3 UNIVERSAL GATEWAY

The T3 Gateway allows you to control your Smart Home system via a tablet or smartphone. The device is connected to the Internet via a router and communicates via the Zigbee network.





# RAIO<sup>®</sup> T3 ACCESSORIES



T3 SMART HOME



# T3 ACCESSORIES

## T3 TEMPERATURE SENSOR

The T3 temperature sensor for the Smart Home system makes it possible to control the temperature in a room without a thermostat. This radio temperature sensor is slim and discreetly present through unobtrusive design and still allows for optimal heating comfort. Can be used in conjunction with a terminal strip or with the T3 thermostatic heating knob.



## T3 SMARTPLUG

The T3 smartplug must be plugged into a grounded outlet. After this, you can control electrical appliances via the app linked to the gateway.



## T3 MOTION DETECTOR

The T3 motion detector remotely detects motion and is linked to the gateway. Through the application, we can remotely track motion in the room and receive SMS/email notifications. Thanks to One-Touch rules and devices such as the T3 smartplug or T3 smart relay, the motion sensor can turn any electrical device ON / OFF, e.g. turn on lights after detecting motion on stairs. This sensor requires the T3 gateway and the Smart Home application.



## T3 WIRELESS THERMOSTAT RADIATOR KNOB M28

The wireless thermostat radiator knob works through the Zigbee network coupled with the T3 gateway. The T3 thermostat button for radiators can be used by pairing it with the gateway via the app and can be controlled in the app via tablet or smartphone. The T3 M28 radiator knob is easy to install on a standard radiator connection M28x1.5. It is possible to connect up to 6 T3 radiator knobs to one thermostat i.c.m. a Smart Home T3 Gateway. The T3 radiator knob M28 is used in combination with the T3 gateway and T3 room thermostat.



## T3 SMOKE ALARM

The T3 smoke detector is a wireless intelligent photoelectric smoke detector for radio Zigbee networks, paired with the T3 gateway. As soon as smoke is detected, a red LED light will flash and give an alarm signal. It is also possible to receive a message via email or text message if the smoke detector is logged into the Smart Home system.



## T3 WIRELESS THERMOSTAT RADIATOR KNOB M30

The wireless thermostat radiator knob works through the Zigbee network coupled with the T3 gateway. The T3 thermostat button for radiators can be used by pairing it with the gateway via the app and can be controlled in the app via tablet or smartphone. The T3 M30 radiator knob is easy to install on a standard radiator connection M30x1.5. It is possible to connect up to 6 T3 radiator knobs to one thermostat i.c.m. a Smart Home T3 Gateway. The T3 radiator knob M30 is used in combination with the T3 gateway and T3 room thermostat.





# T3 ACCESSORIES

## T3 DIMMER RELAY

Wireless T3 dimmer relay can be used to control different light sources via the app linked to the gateway. The T3 dimmer relay is a Zigbee controlled dimmer relay that can be used to control various light sources. This product can only function by pairing with the T3 gateway and the Smart Home app.



## T3 SHUTTER RELAY

The latest T3 Smart Roller Shutter Relay allows each shutter to be controlled individually or as a group. This Smart relay can also be used as a wireless garage gate control. The shutters or gates can be controlled via the App on Smartphone, Tablet or PC. This allows the shutters to be operated remotely even when no one is at home. This relay can only function by interfacing with the T3 gateway and the Smart Home app.

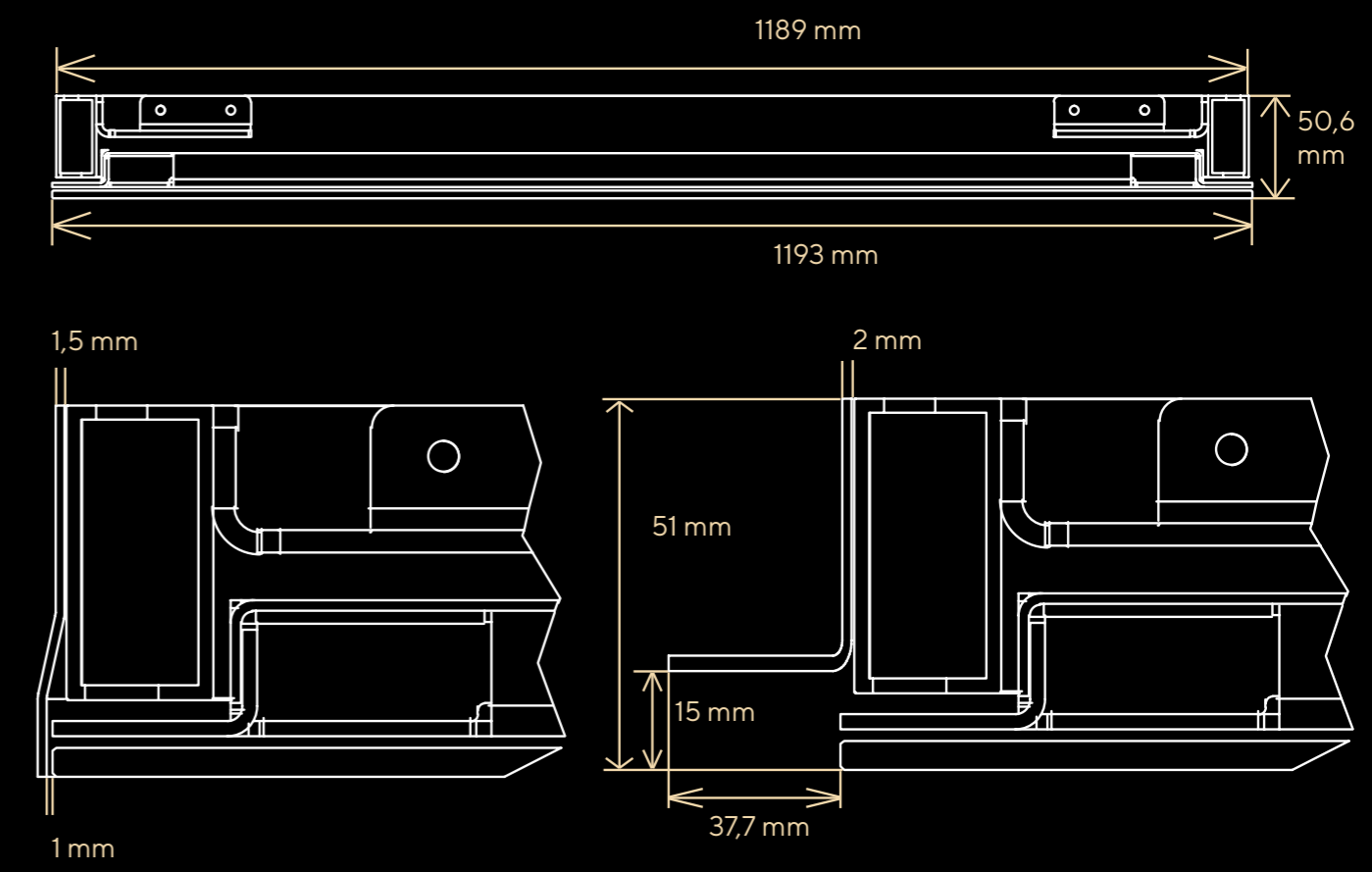
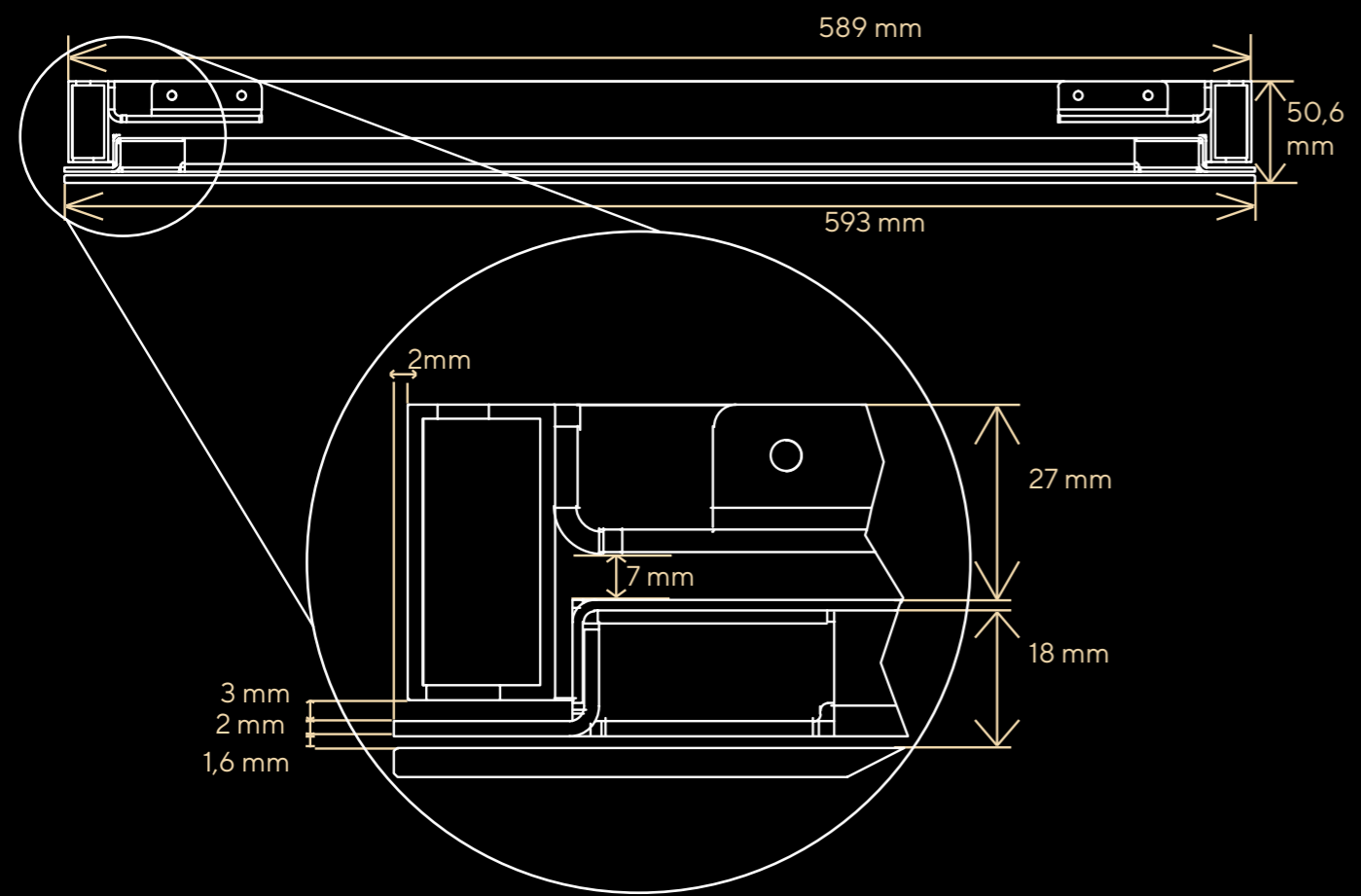


## T3 DOOR/WINDOW CONTACT

The T3 door/window contact consists of a permanent magnet and a battery-powered sensor that detects the opening and closing of your windows and doors. This T3 door/window contact should be paired with the T3 Gateway to indicate on the Smart Home APP that a window/window is open or closed.

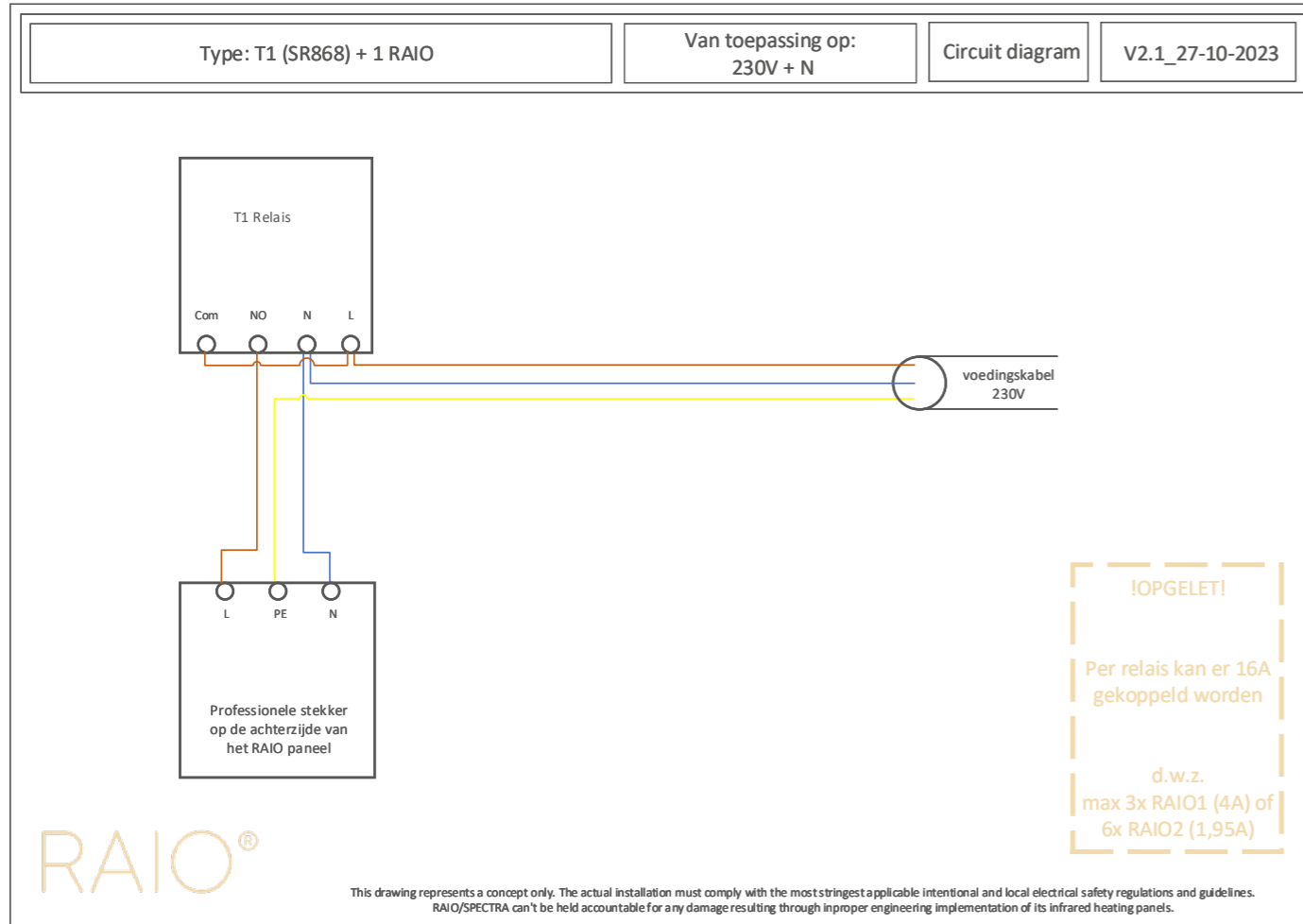


# TECHNICAL DRAWINGS

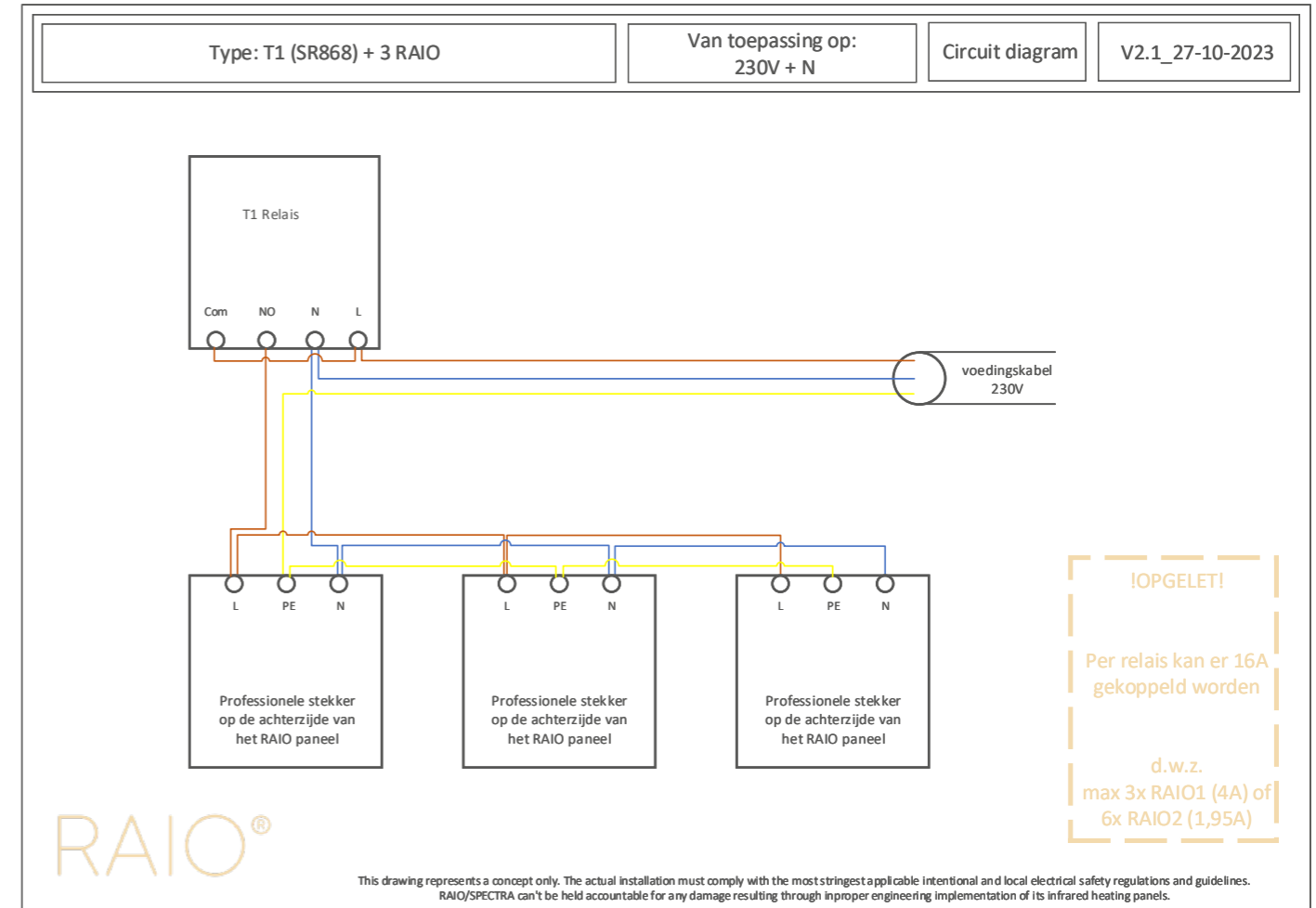


# CONNECTION DIAGRAMS

CONNECTION DIAGRAM ONE RAIO HEATING PANEL TO ONE T1 RELAY



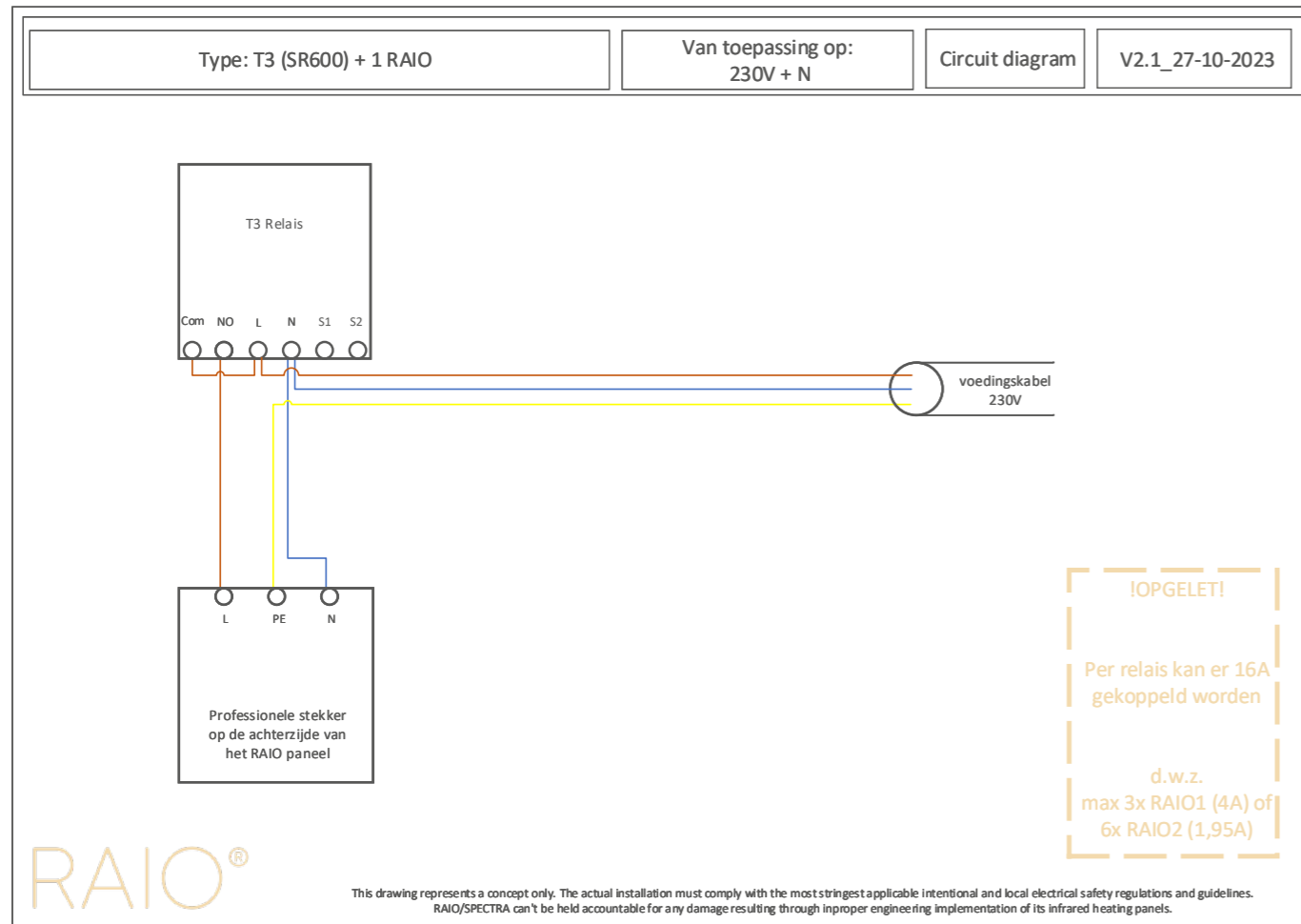
CONNECTION DIAGRAM FOR MULTIPLE RAIO HEATING PANELS TO ONE T1 RELAY



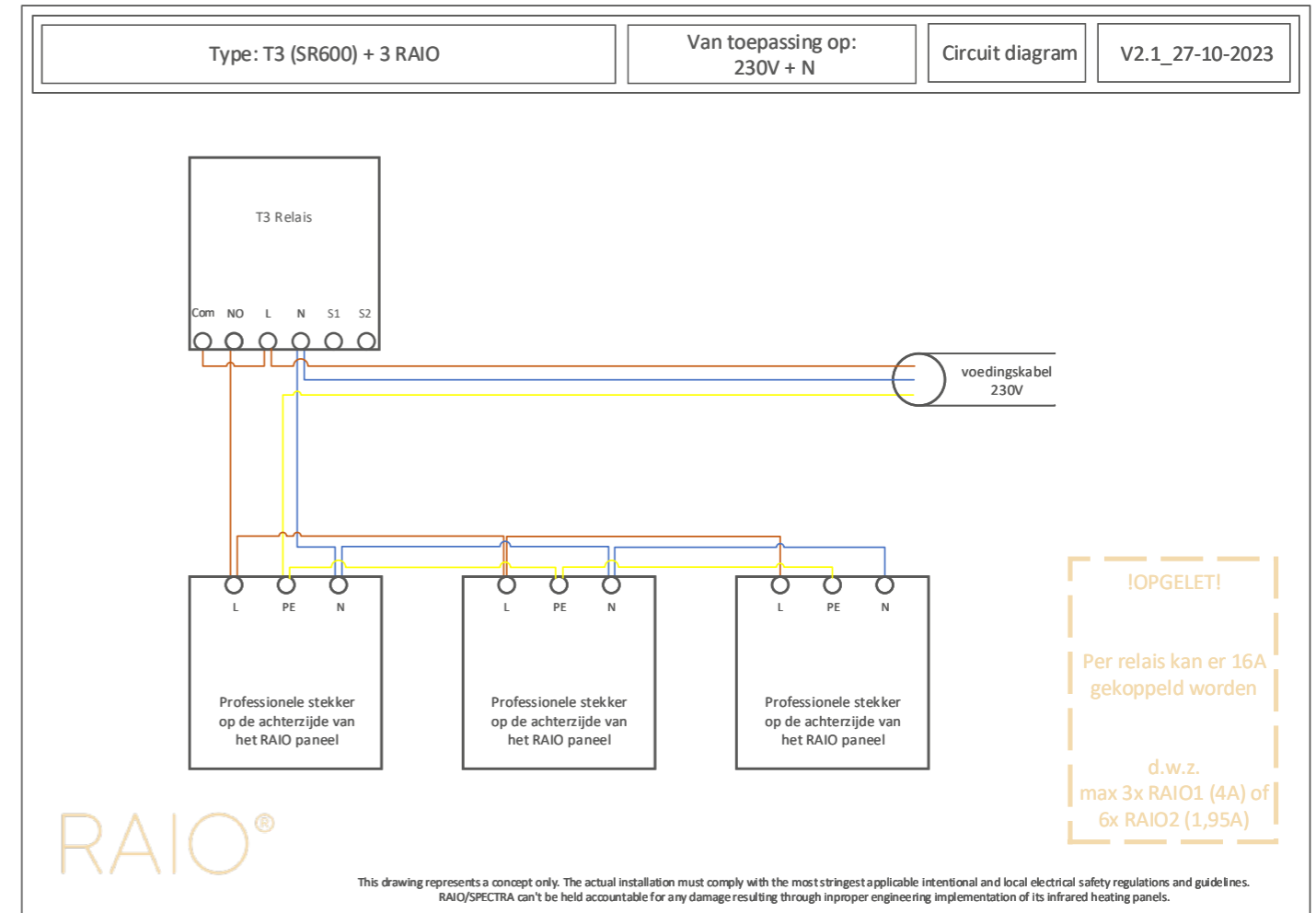


# CONNECTION DIAGRAMS

WIRING DIAGRAM ONE RAI0 HEATING PANEL ON ONE T3 SMART RELAY

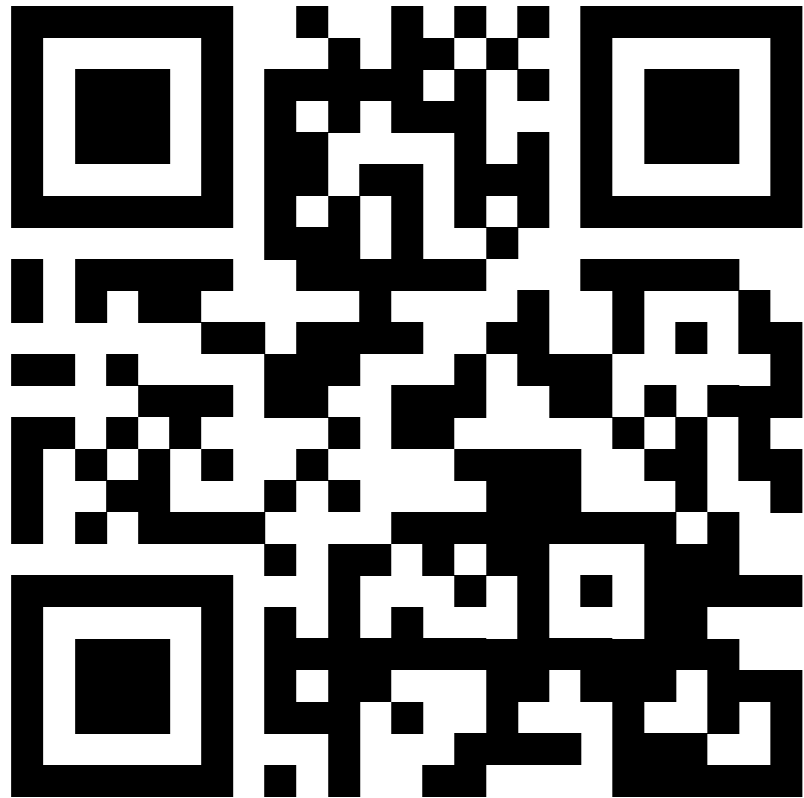


CONNECTION DIAGRAM FOR MULTIPLE RAI0 HEATING PANELS TO ONE T3 SMART RELAY



## INSTALLATION HELP

The QR code below leads to [raio.be/installation](https://raio.be/installation) where all information, videos, manuals and technical sheets regarding the installation can be found.



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RAIO.BE

RAIO® is a patented product from Spectra, an innovative Belgian company that makes heating radically more efficient - and thus more economical, environmentally friendly and smart.

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