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# Thermoplush - heated pew runners

**Over 40 years' experience in pew upholstery!**  
**Two time-tested systems - one well-engineered product!**

The **Thermoplush** heated pew runners are a real alternative to all previous electric heating systems for churches.

The high-quality upholstery, which has proven itself in many years of sustained use, has a wireless, carbon surface-heating element that generates even heat over the entire surface.

The **Thermoplush** heated pew runners are an investment that is amortised within a short period through the savings in running costs for heating.

The **Thermoplush** heating system is quick and simple to adjust to the customer's particular requirements.

The heated pew runners offer you all the benefits of our patented pew runners:

- Once in place, the runners do not slip, even when under a load.
- They will not deform and are dimensionally stable (no wrinkling).
- The extremely hard-wearing fabric will withstand even the heaviest use.
- It is also especially easy-care as the fibres have been impregnated to make them soil-repellent.

High-grade raw materials and top workmanship ensure a long service life.



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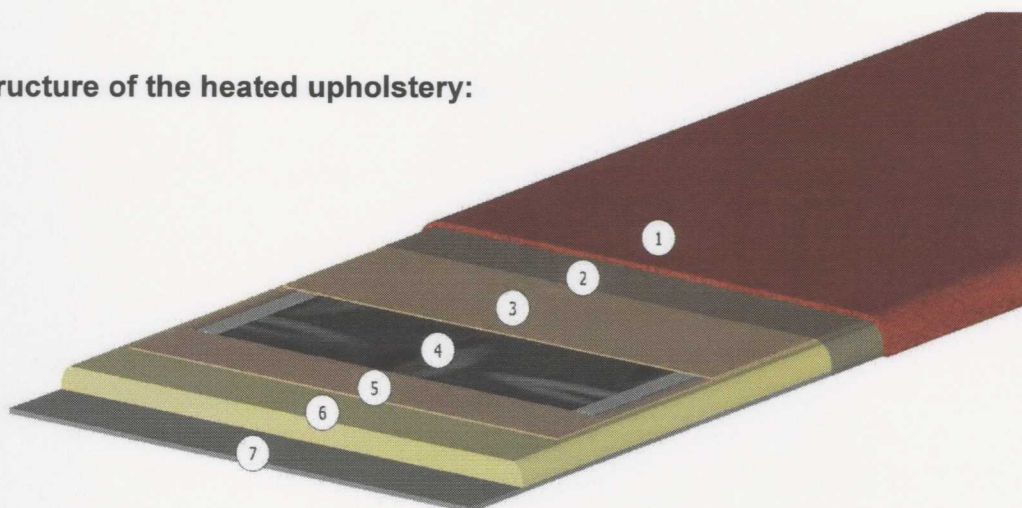
## Description of material

Type: HG0173B



The Thermoplush heated pew runners are heated by built-in electric carbon radiant heating. The temperature of the heated pew runners is regulated by clocking the output and can be adjusted to your specific requirements.

### Structure of the heated upholstery:



- ① velvet – 100% polyamide
- ② PE latex stabilisation layer
- ③ PVC protective insulation, top
- ④ Heating: carbon surface-heating element
- ⑤ PVC protective insulation, bottom
- ⑥ heavy-duty filling foam
- ⑦ non-slip adherent foam

The additional protective sheaths made of PVC (no. 3 and no. 5) are welded to each other, to include the supply line.





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## Description of material

### ① The velvet fabric

Currently, three grades of fabric are available in over 50 different shades for the seat surface (upholstery fabric) of the Thermoplush heated pew runners. All three grades of fabric are premium-grade velvet, made of 100% polyamide 6.6 and are extremely hard-wearing; soil-repellent as fibres are impregnated; anti-static and classed as B1 not easily flammable.

Technical specifications:

Velvet 100% polyamide 6.6	Weight per running metre (width 150 cm)	Resistance to abrasion	Fastness to rubbing	Light fastness	Fastness to water	Fastness to solvents	Fastness to shampoo	Shades
Sitzplush plain	1050 g	280,000 cycles	>=5	>=5	>=4	>= 5	>=5	26
Samtplush crushed	1090 g	290,000 cycles	>=5	>=5	>=4	>=5	>=5	16
Samtplush Classic flecked	975 g	300,000 cycles	>=5	>=5	>=4	>=5	>=5	14

### ② The stabilisation layer

A calendered, PE latex coating is welded to the underside (back) of the velvet material as a stabilisation layer. It makes the velvet more stable and also makes it more difficult for liquids to penetrate (cleaning fluid, urine, vomit etc.) the filling foam. Fire protection class B1 not easily flammable



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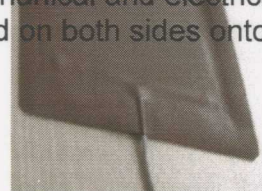
# Thermoplush - heated pew runners

## ③+⑤ The top and underside of the PVC protective insulation

The surface-heating element (4KV dielectric strength) is already insulated with a PET/PE compound foil (polyester/polyethylene 75/100 $\mu$ ). To increase the mechanical and electrical safety values (protective insulation: protection class II) it is also welded on both sides onto a PVC foil, 1 mm thick, to include the opening for the cable.

(dielectric strength over 8KV)

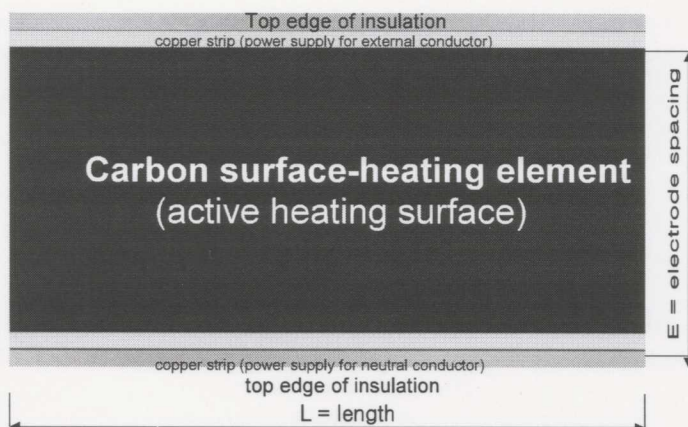
Fire protection class B1 not easily flammable



## ④ The heating

The built-in heating in the HG0173B Thermoplush runner is wireless carbon radiant heating.

### Diagram







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# Thermoplush - heated pew runners

## Technical specifications (heating):

- Output per running metre: 73W-230V/AC
- Dielectric strength: 4000V-1 minute
- Thickness of the heating conductor with PVC reinforcing: 2.2 mm

## Characteristics (heating):

- Heat is distributed evenly over the entire surface.
- The carbon-filled PTFE coating has excellent radiation properties.
- The surface-heating elements are flexible.
- Only a minimum of induction currents occur during operation as the current is conducted across the whole surface.
- The surface-heating elements heat up very fast on account of their very low mass.

## The materials:

### Base material:

fibre glass fabric coated with conductive carbon-filled PTFE plastic

### Contact:

tinned strips made of electrical grade copper 0.1x15 mm (1.5 mm cross section)

### Insulation:

the surface-heating element is hot-laminated over the entire surface with a polyester/PE compound foil, 75/100µ, (dielectric strength 4000V/1Min.); dielectric strength is over 8000V with the additional protective PVC insulation.

## ⑥ The filling foam

Strong, high-grade, dimensionally stable foam, density 60kg/m<sup>3</sup>, compressive strength 8.5; foam height varies depending on thickness of upholstery; fire protection class B1 not easily flammable.

## ⑦ The adherent foam

5 mm non-slip adherent foam with primary backing material made of PES/glass fibre, can be wet-washed. Fire protection class B1 not easily flammable

Our products are updated regularly to reflect the latest standards of technology so changes must be expected.  
Make sure you request our current product literature regularly for this reason!



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# Thermoplush - heated pew runners

## Production method

Velvet fabric with calendered stabilisation layer, damping foam, insulated surface-heating element in PVC sheath, filling foam and adherent foam are welded together and bonded using solvent-free adhesive to form a uniform 'laminate'. All materials used are cut to fit from one piece (not patched together). In addition, all materials are triple-seamed together at the edge under high pressure using special-purpose, tear-resistant polyamide yarn.

**This special method of production makes the non-slip upholstery extremely long-lasting and very stable. The upholstery is not subject to deformation, there is no depression in the seats or wrinkling.**



View of seat pad



non-slip underside





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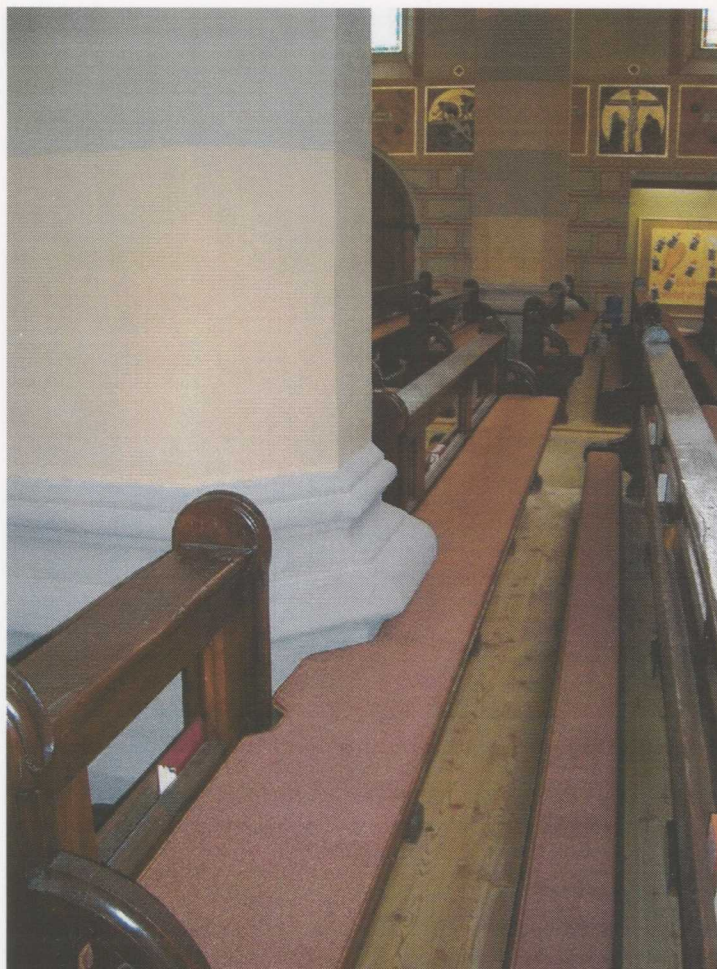
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# Thermoplush - heated pew runners

## Made to measure

The Thermoplush heated pew runners are made to measure exactly for each individual pew. Corners, curves, diagonal edges and recesses are all given a quality finish by hand. A choice of over 50 shades allows you to match the colours and style of the church interior.





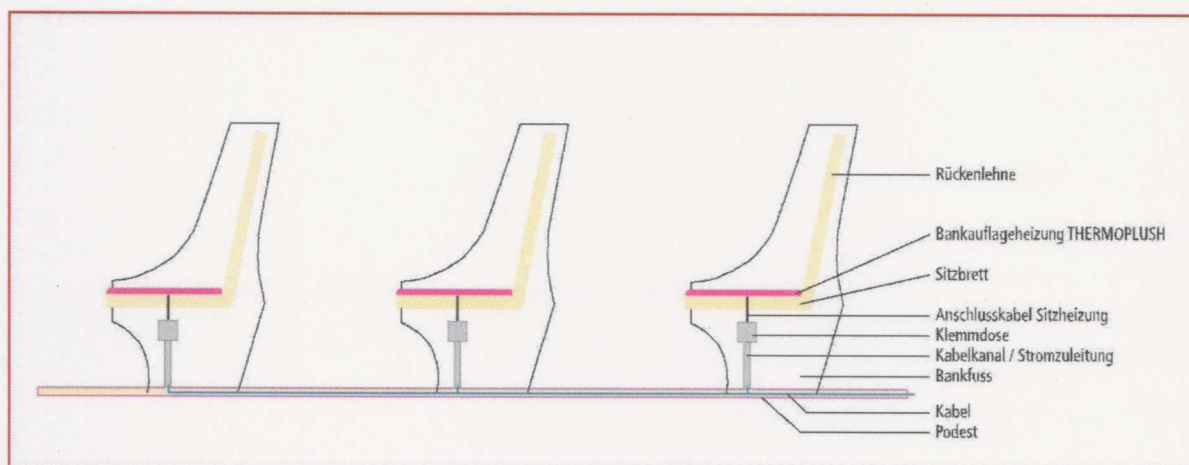
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# Thermoplush - heated pew runners

## Instructions for installation – technical specifications



The surface-heating element, TVC series with **73 Watt/230V per RM**, which is built into the Thermoplush heated pew runners, is made of a glass-fibre fabric coated with conductive carbon-filled PFTE.

Operating voltage: 230V / 50Hz

Protection class: class II (protective insulation)

Output: 73 W/230V – per running metre

After approximately 15 minutes' warm-up period, the clocked output (in connection with a Thermoplush controller) in constant operation is approx. 25–30 W/RM at 230V, depending on configuration.

**Caution! Only connect the heated pew runner with an appropriate control system from an authorised specialist electrical supplier.**

**Wiring: two-pole; (fully insulated / protection class II)**

**Use of 30mA residual current devices is mandatory. (protection from physical injury)**

**COMMISSIONING:** lay flat and only on pews with a hard, even surface.

Do not fold or bend. Observe operating instructions!

Make sure you adhere to our technical documentation / wiring diagrams and instructions!





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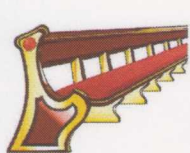


# Thermoplush - heated pew runners

## Advantages of the Thermoplush heated pew runners

- Short amortisation period thanks to extremely low heating costs
- Heating system is 100% invisible
- Heating and upholstery in one product
- Heat generated over the entire surface (wireless)
  - PTFE carbon surface-heating element
- Fast distribution of heat thanks to low mass
- Extremely simple to install (just place in position and connect)
- Comfortable infrared heat
- Lowest energy consumption
- No irritation from magnetic fields thanks to carbon-fibre radiant heating
- Ambient air is not used as medium for transferring heat
- No swirling movements of air
- No convection and transporting of dust
- No burning of dust particles
- No dirt caused by heating
- No irritating odours from heating
- No damage to building, no pollution from heating
- No abrupt changes in temperature or humidity
- Low energy costs
- Low cost for electrical installation
- Low connected load, only 73 Watt while heating up  
(0.073 KW) per RM / -230 V
- Extremely long-lasting
- Short warm-up phase for approx. 15 minutes
- Surface temperature is continuously variable
- The mild thermal radiation prevents brief fluctuations in temperature and air humidity
- The system is easily regulated and can be adjusted to suit varying requirements quickly
- Heating does not cause the organ to go out of tune
- Purchase costs are low compared with other types of heating
- Heat source is located where it is needed, so no loss during transfer

**With the Thermoplush heated pew runners, it is the person who is kept warm not the ambient air. This avoids unpleasant stratification, as well as swirling of dust, burning of dust particles and condensation.**



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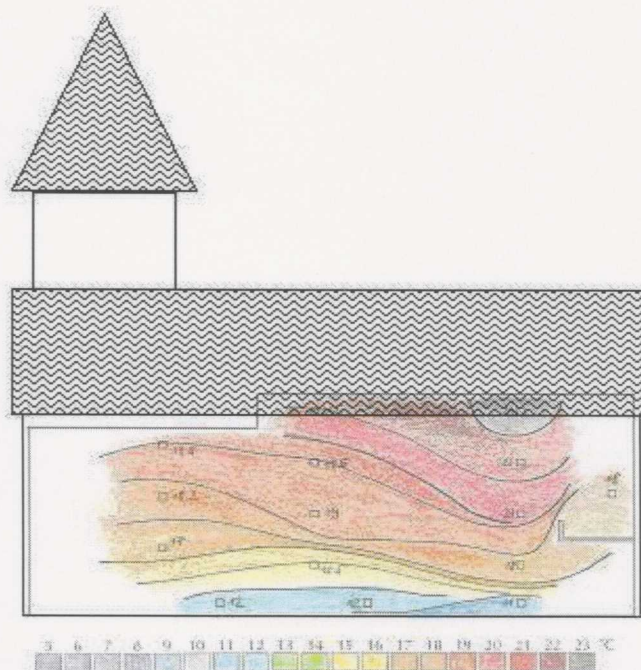
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# Thermoplush - heated pew runners

## Frequent problems with conventional types of heating

- drop in temperature near windows
- long warm-up phase
- risk of air drying out
- usually complicated to install
- unpleasant smell due to burnt dust
- irritating noise from fans
- dirt and dust particles are spread through convection
- expensive to purchase
- very high energy consumption
- frequently strong currents of air – increase in draughts in the chancel – brief fluctuations in temperature, which cause damage to the masonry and works of religious art (structural damage)







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# Thermoplush - heated pew runners

## Instructions for planning and installation with bill of materials

Sample calculation and bill of materials for a church with approx. 100 RM heated pew runners = 2 rows of pews with 15 pews, each 3.3 RM

### 1. Calculating connected load:

30 pews with 3.3 RM = 99 RM heating at 73 W/RM = 7227 W/230V = 7.30 kW total output

### 2. Power distribution assuming four heating sectors 7.30 kW: 4 = 1.83 kW / 9.1 A power consumption per heating sector

### 3. Calculating conductor cross-sections and fuses:

a) wiring for pew rows "left and right" (3.65 KW each distributed over 3 phases -R,S,T) equals 1.22 KW per phase

Wiring: 4x 2.5 mm<sup>2</sup> (cable 5 x 2.5) – earth conductor is not required (double-insulated)

b) Further connection between the individual pews (from terminal box to terminal box) can be made in this case with a 1.5 mm<sup>2</sup> cross-section.

### 4. Controls

We recommend installing at least four heating circuits.

(e.g. heating circuit 1 & 2 left-hand row of pews, heating circuit 3 & 4 right-hand row of pews).

The Thermoplush SSR3/50A power regulator is used to regulate temperatures for the entire heating system and its configuration (warm-up time, automatic shut-off)

Indicator lights should signal the status of the controls. (Main contactor "on", heating circuit "in operation" etc.)

An all-pole shut-off device with a 3 mm contact opening must be provided in order to disconnect the entire heating system from the mains. (main contactor)



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# Thermoplush - heated pew runners

## Bill of materials / switchgear

Control-circuit fuse:	1 x 6A	miniature circuit-breaker
Semiconductor safety fuse for SSR3:	3 x 50A	DZ III
Back-up fuse:	3 x 16A	miniature circuit-breakers
Residual current device:	1 x 10-30A	300 mA
Main contactor:	1 x 25A	miniature contactor 3-pole
Master switch:	1x	
Indicator light / Heating on	1x	
Sector switch:	4x	
Indicator light / Sector heating:	4x	
Thermoplush regulator		
SSR3 3x50 A:	1x, see data sheet SSR 3	

## Bill of materials / electrical installation

Wiring for the pew rows:	40 – 60 m 4 x 2.5mm <sup>2</sup>
Pew wiring:	60 – 100 m <sup>2</sup> x 1.5 mm <sup>2</sup>
Terminal boxes on the pews, surface-mounted	30x
Cable duct:	15 RM
Misc. incidental material:	cable clips, terminals, wood screws, etc.

N.B.: all information subject to change without prior notice. The above description is regularly updated to reflect the latest standards of technology so that you must expect some changes. If you have any questions, please do not hesitate to contact us.





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# Thermoplush - heated pew runners

## Prerequisites for heated pew runners:

- Each pew needing to be heated requires an electrical connection  
(The operating voltage for the pew heating is 230 V)
- Clarification of energy requirement – total – per heating sector  
(The electrical output of the heating amounts to 73 Watt / 230 V per RM during the warm-up phase (approx. 15 min)) Formula: Number of running metres of pews requiring heating x 0.073 = connected load in kW; this calculates the corresponding method of installation - sector distribution - power distribution, - fuse protection and cross-section requirements
- Check with power supply company (kW required)
- The pew runner heating must be installed by an authorised electrical installer only.
- The heating should be firmly connected to the mains.
- The appropriate control system must be clarified (programming with phase-controlled modulators, clocking, etc.)
- The heating is a purely ohmic resistor and can therefore also be controlled and programmed both electro-mechanically and electronically.
- FI/RCD is required as protection.





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# Thermoplush - heated pew runners

## Regulating the temperature of the heated pew runners

Correct temperature settings depend on the following factors:

- ambient temperature

The colder the ambient or room temperature, the higher the output needs to be set. The temperature in churches hardly fluctuates at all. It should therefore only be necessary to adjust the temperature once in autumn and in spring.

- Seating times

As soon as visitors stand up or kneel down (seat unoccupied), the surface of the seat upholstery cools down slightly but warms up again fast as soon as the seat is occupied again (see table 1).

In the event of a church concert however, the visitor remains seated without interruption and their body heat therefore continuously counteracts the effect of the heated upholstery. In this case, 10% heat output is sufficient as a rule (see table 2).

By tweaking the warm-up time and the heat output, you can adjust the heated pew runners to your particular requirements.

As a rule of the thumb: a seat temperature of 30 to 35°C maximum is enough and is perceived as pleasant.

(Refer to illustration overleaf)



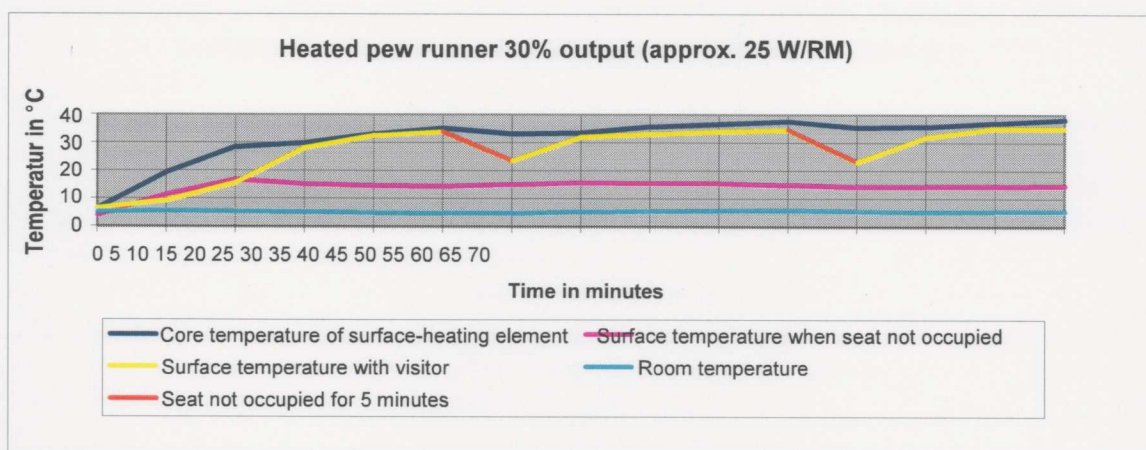


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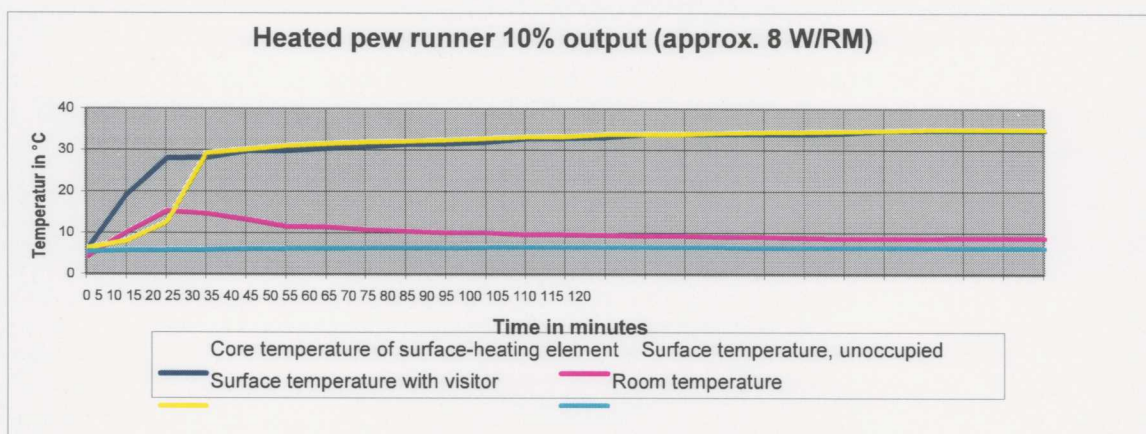
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# Thermoplush - heated pew runners



**Table 1:** Setting: 10 minutes warm-up time / 30% heating operation at 5°C room temperature



**Table 2:** Setting: 10 minutes warm-up time / 10% heating operation at 5°C room temperature (e.g. concert)





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# Thermoplush - heated pew runners

## General description of Thermoplush programmer



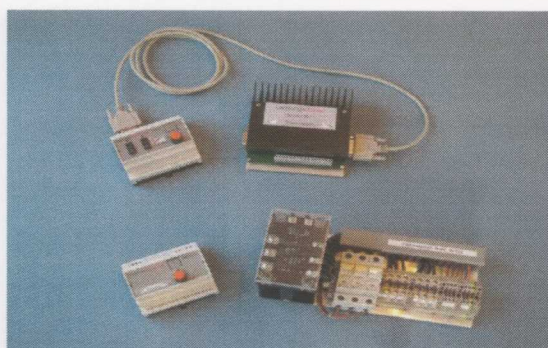
Special-purpose heating programmers have been developed for controlling and regulating the Thermoplush heated pew runners and Thermoplush heated carpets.

They are simple to use and allow smooth operation of the Thermoplush heating.

There are various programmers available to satisfy all requirements.



small programmer and wall-mounted  
programmer



distributor installation modules with zone  
switching

It is also possible to program heated sedilia carpets or heating for organ benches as well as to program heating of a small chapel or a large system with several hundred metres of heated pew runners.

The product portfolio ranges from simple wall-mounted programmers to integrated distribution installation solutions with groups of heating zones right on up to comprehensive customised distribution solutions.

Operation is incredibly simple:

One control knob for switching the heating on and off.

The seat temperature can be adjusted continuously by turning the knob anti-clockwise or clockwise.

If zones have been configured, these can also be directly turned on or turned off at the programmer module depending on the model.

If required, the entire control module, or simply just one switch, can be installed in the vestry, for example, in order to start up the system separately from the distributor board.

The integral warm-up time ensures that the heating only needs to be turned on shortly before the start of the church service. As a rule, 15 minutes are enough. In order to avoid continuous heating (forgetting to switch heating off), there is an automatic shut-off, which switches the programmer and the heating off automatically after a set time.

In the event that church services are held at the same time every day or every week, an external timer can be connected.

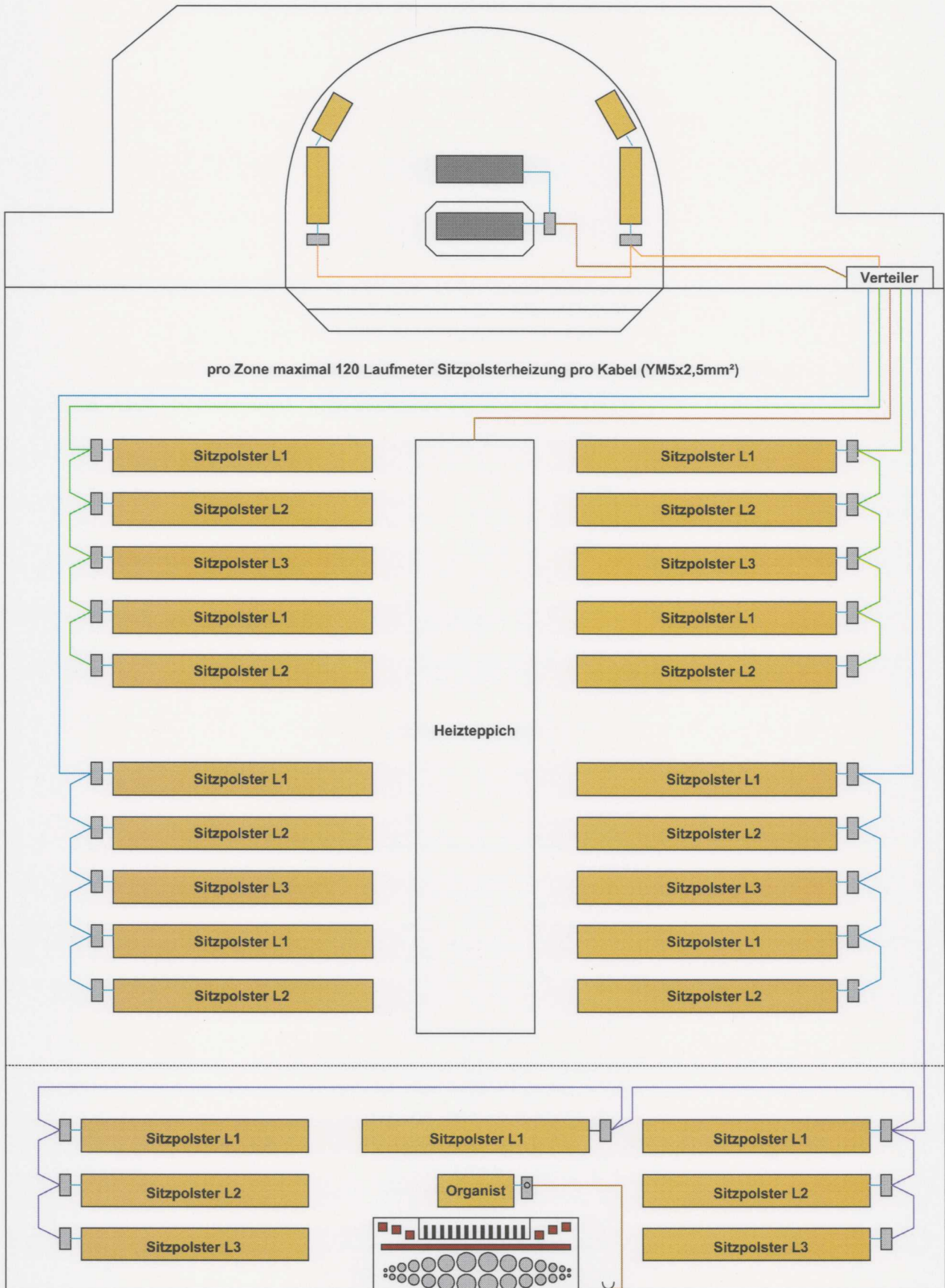


# Verkabelungsschema Thermoplushprodukte

Angezeigte Beispiel: 3 Zonen

- Zuleitung Zone 1 - YM-5x2,5mm<sup>2</sup>
- Zuleitung Zone 2 - YM-5x2,5mm<sup>2</sup>
- Zuleitung Zone 3 - YM-5x2,5mm<sup>2</sup>
- Zuleitung Prespeterium - YM-3x2,5mm<sup>2</sup>

- Zuleitungen ungeregelt - YM-3x1,5mm<sup>2</sup>
- Anschlusskabel Heizung YML2x1mm<sup>2</sup>
- Altarauflegeheizung oder Altarteppich
- Klemmdosen unter den Bänken



## Wiring diagram for Thermoplush products      Illustrated example: 3 zones

Supply line for zone 1 - YM-5x2.5 mm<sup>2</sup>

Unregulated supply lines - YM-3x1.5mm<sup>2</sup>

Supply line for zone 2 - YM-5x2.5 mm<sup>2</sup>

Connection cable for heating YML2x1mm<sup>2</sup>

Supply line for zone 3 - YM-5x2.5 mm<sup>2</sup>

Heated altar mat or altar carpet

Supply line for presbytery - YM-2x2.5 mm<sup>2</sup>

Terminal boxes below the pews

Distributor

Maximum of 120 running metres heated pew runner per cable, per zone (YM5x2.5mm<sup>2</sup>)

Heated pew runner L1 (usw.)

Heated pew runner L1 (usw.)

Heated carpet

Organist