





## Underfloor heating system

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# Why INNOFLOOR underfloor heating?

INNOFLOOR is committed to developing energy efficient heating solutions. Bringing together the best and latest technologies, we provide design-led solutions underpinned with unrivalled technical support.

## With you every step of the way

We give you all the help and support you need - before, during and after installation. Whether your project is small, big or complex, we offer a free estimation and technical support service. With our experience, you can be assured that our experts will design the most energy efficient solution.

## Save time and money with easy fit systems

By combining our INNOPEX PE-Xa pipe, INNOTACK/INNOSTUD pipe fixing systems and INNOFLOW manifolds, we offer a comprehensive range of underfloor heating solutions that are quick and easy to install.

## Guaranteed to perform

All of our components are manufactured under the ISO9001 Quality Management System. Our quality assurance team stringently test them at every stage of production. Thus we can provide a **15 years warranty** for a COMPLETE INNOFLOOR SYSTEM (except the electronic/electric components).



## Underfloor heating explained

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INNOFLOOR system advantages  
System description





# Reasons to install Innofloor underfloor heating

At INNOFLOOR we make underfloor heating simple, offering high quality solutions underpinned by unrivalled technical support. Not only does INNOFLOOR underfloor heating create a better use of space, it is more efficient and kinder to the environment too.

Radiant surface heating systems require a much lower flow temperature than radiant heating systems, so there are a number of advantages in terms of thermal comfort and energy savings with a true heating system with low temperatures. Due to lower flow temperatures than conventional heating systems, underfloor heating systems can be easily used in conjunction with alternative heat sources, for example with heat pumps, solar collectors, etc.

## Greater heating control

Create the perfect comfort zone with individual or multi room temperature control - simple, standard and smart solutions.

## More comfort

Like The Sun, Innofloor uses radiant heat to warm objects and the fabric of the building to create a cosy, comfortable environment.

## More living space

By removing bulky and unsightly radiators it will free up wall space and give freedom for interior design. All surfaces in the room are freely accessible, can be freely arranged and are suitable for children.

## Renewable heat source

Compatible with conventional and renewable heat sources that reduce environmental impact and cut fuel bills, including air and ground source heat pumps and solar panels.

## Reduced heating bills

Due to the radiant heat of a underfloor heating system, there is a much lower heat exchange between the radiant surface and the walls of the room compared with radiator heating systems. Thus the room temperature can be kept about 2-3°C lower, without affecting the thermal comfort. **This results in a considerable reduction in heating bills by up to 40%.**

## 50 Durability

Much longer service life than conventional heating systems.

## Healty & Safe living

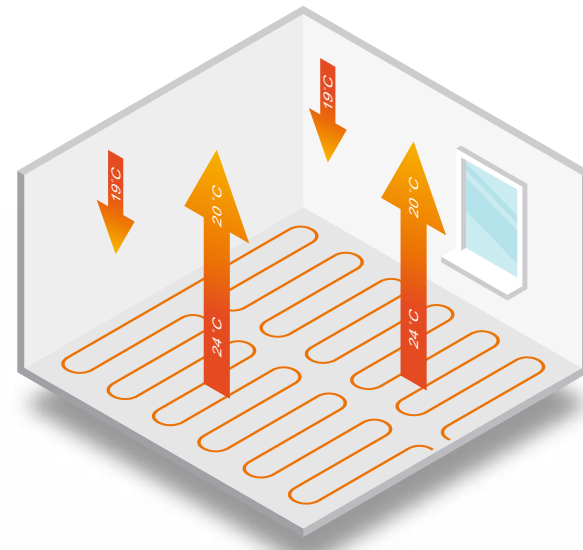
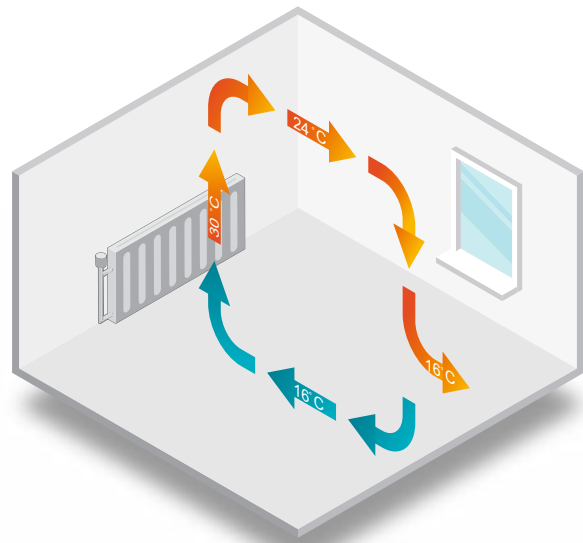
Less moisture and lower air movement may help reduce dust allergens. Plus with no hot radiators and sharp edges it creates a safer space. Due to the low movements of the air, the amount of dust in the inhaled air is much smaller and this represents an improvement in the quality of life, especially for allergic people. In the case of heating with radiators, due to the flow of air caused by convection, dust particles are moved throughout the room, thus increasing the amount of inhaled dust.

## Less noise

Create a relaxing and tranquil ambience with no more creaking pipes or water flow noise. Virtually silent to run

# System description

The INNOFLOOR underfloor heating system mainly uses radiant heat, the most comfortable form of heating, providing a uniform distribution of heat throughout the room. By contrast, radiators transfer energy by convection, heating the air above and around the radiator to a much higher temperature, causing an upward movement of hot air, so the floor becomes the coldest surface in the room and the ceiling accumulates a large mass of useless hot air. Underfloor heating, on the other hand, solves this problem by distributing heat evenly exactly where it is needed. A conventional radiator can also reach temperatures of 75°C, while a underfloor heating system has a much lower and safer surface temperature between 27-29°C.



Radiators transfer heat to a room largely by convection from a hot metal surface. Because the surface area of the radiator is small, compared to the volume of the room, a high temperature of the heating medium is required and the heat is not evenly distributed. Convection currents also move allergens, dust particles, smoke and germs, which are then distributed around the room, contributing to an unhealthy atmosphere.

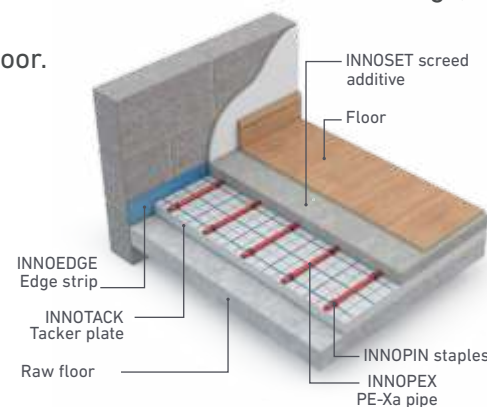
Underfloor heating systems are simple to install, low maintenance and low operating costs. The room is heated mostly by radiation - the most natural and comfortable form of heating, creating a uniform environment without hot or cold currents. With a underfloor heating system, the heat is concentrated at the floor level where it is most needed.

INNOFLOOR underfloor heating is done by a wet fixing system in which the pipes are laid directly in the screed. The minimum thickness of the screed must be 45 mm above the top of the pipe. In this system the heat transfer is very good, however, it is necessary to add screed additive (INNOSET), which reduces the level of air inclusions (thus increasing thermal conductivity) and makes the screed more elastic to withstand repeated expansions and contractions.

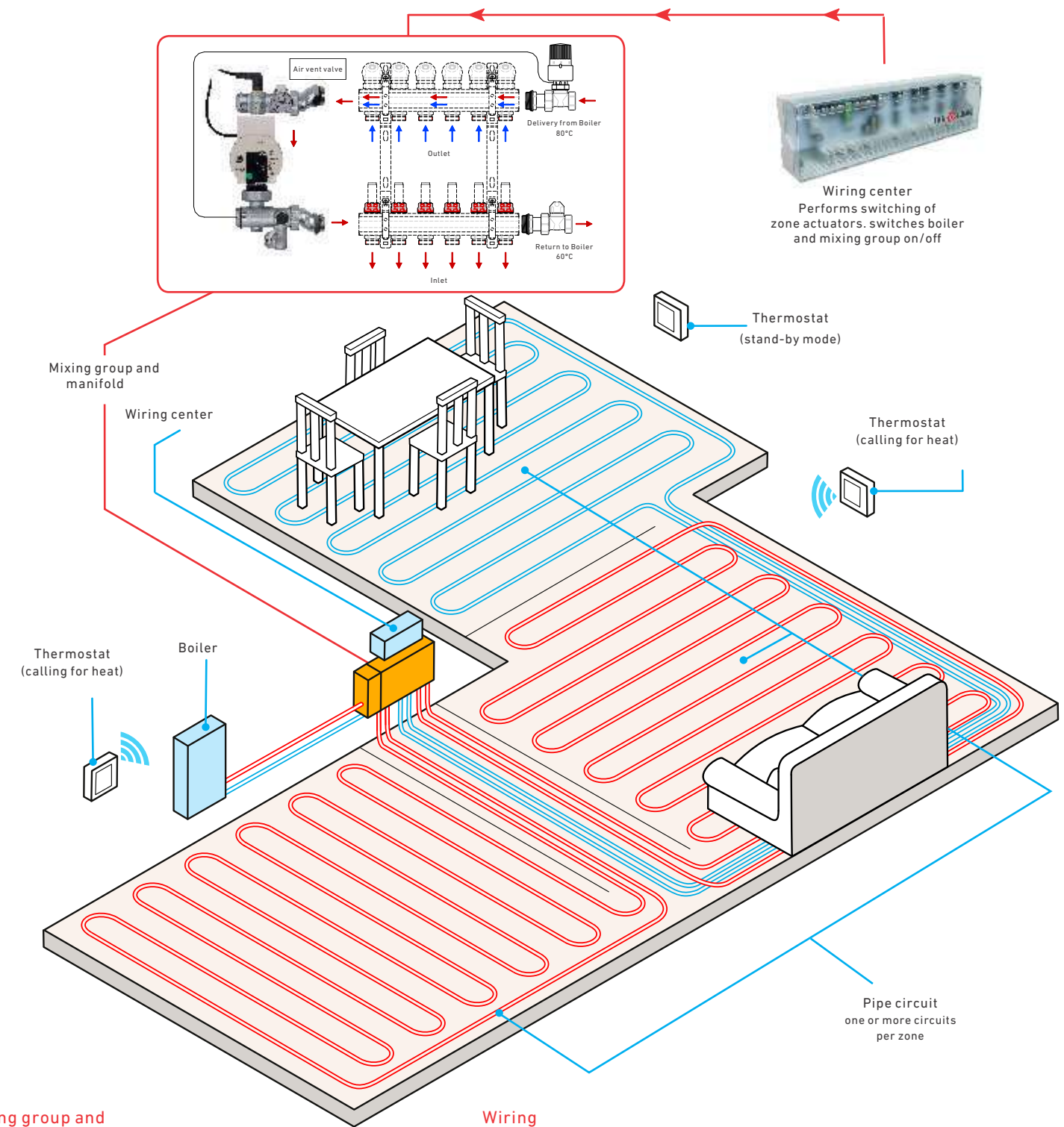
INNOFLOOR proposes INNOTACK Tacker plates as well as INNOSTUD castellated plates as load-bearing systems.

## Wet floor mounting (bottom to top)

- Raw floor construction, such as raw concrete, screed, sand filler, or other similar materials. In the case of fillings, a protective film must be applied.
- If necessary, an insulating layer with a thickness of 20-30 mm for the raw floor.
- Insulating layer for damping noises caused by footsteps, etc.
- Vapor barrier (polyethylene foil)
- Tacker polystyrene mounting plates, castellated plates
- Underfloor heating pipes: INNOPEX Pe-Xa pipes with oxygen barrier
- Screed
- Floor



The INNOFLOOR system monitors the individual room temperatures by using thermostats to send signals to the INNOLINK wiring centers. They control the actuators on each heating circuit and switch off the INNOMIX mixing group and/or boiler pump, as appropriate. INNOMIX mixes water to maintain a constant floor temperature, which means that any heat source can be used, including conventional boilers (solid or gaseous fuel), condensing boilers or heat pumps.



## Mixing group and manifold

The hot water is pumped from the heat source to the manifold and mixed by the mixing group at about 35-40°C (temperature controlled by the thermostatic valve).

## Thermostats

Individual room thermostats control when heating is required in each room, as well as the temperature required in each room.

## Wiring center

Performs central switching of zone actuators, mixing group and boiler as signalled by the thermostats.

## Pipe circuit

When heat is switched on the entire floor area is warmed to between 27°C - 29°C, providing even distribution of heat at slightly higher than room temperature.

## Underfloor heating collection

All INNOFLOOR underfloor heating systems are supplied to specifications and are made of high quality and reliable components.

INNOFLOOR underfloor heating is available for all types of applications: commercial, industrial, public and residential.

The elements of the system - floor insulation, perimeter insulation, moisture barrier, fixing system and pipes - are installed and then covered with the appropriate screed and the final finishes of the floor (marble, granite, ceramic tiles, parquet, etc.).



Education



Leisure  
& Retail



Healthcare



Residential



Churches, Cathedrals  
Museum & Cultural buildings



Government and public buildings



Warehouses  
& industrial buildings

### INN PEX Oxygen barrier PE-Xa floor heating pipes

#### > Description



Art. code	Dimension	Type	PN	Coil length
022729-018	16 x 2	PE-Xa	PN6	100
022729-019	16 x 2	PE-Xa	PN6	240
022729-020	16 x 2	PE-Xa	PN6	500
022729-022	17 x 2	PE-Xa	PN6	240
022729-023	17 x 2	PE-Xa	PN6	500
022729-024	20 x 2	PE-Xa	PN6	100
022729-025	20 x 2	PE-Xa	PN6	240
022729-026	25 x 2.3	PE-Xa	PN6	50
022729-027	32 x 2.9	PE-Xa	PN6	50

Reticulated PE-Xa (peroxide) pipe, with oxygen barrier, produced according to the European standard EN 1264-4.

The EVOH oxygen barrier is a thin layer of ethyl-vinyl-alcohol copolymer that avoids the permeability of the pipe to oxygen diffusion, eliminating the problem of adding oxygen to the water flow and corrosion of the metal fittings of the installation, thus extending the heating system life.

Innopex PE-Xa is a high quality underfloor heating pipe with an EVOH oxygen barrier. Oxygen barrier PE-Xa (peroxide) pipes provide greater flexibility than cross-linked PEX pipes with other cross-linked polyethylene systems. When using PE-Xa pipes with EVOH in the underfloor heating system, due to the low temperatures of the thermal agent on which the system operates, the EVOH oxygen barrier prevents the formation of bacteria and microorganisms that clog circuits and block valves.

#### Advantages of Pe-Xa pipes:

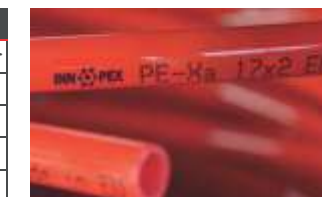
- Easy installation. No welding or machining operations are required.
- Flexibility. PE-Xa pipes have greater flexibility than PEX pipes produced by other methods. They can be bent at low and/or negative temperatures without special tools, saving connections and installation time.
- Resistance to high temperatures. INNOPEX pipes are suitable for use at normal operating temperatures up to 95 ° C and are able to withstand accidental temperatures up to 110 ° C.
- Frost resistance. INNOPEX pipes do not break when water freezes inside. The pipe, due to its flexibility, will expand.
- High pressure resistance. INNOPEX pipes, due to the manufacturing process, are more resistant to high pressure, exceeding by more than 35% those manufactured using other cross-linking methods.
- Corrosion resistance. INNOPEX pipes cannot be attacked by most chemicals (acids, bases, antifreeze, etc.) and are resistant to any kind of corrosion.
- Higher flow. Due to the smooth inner surface, INNOPEX pipes have a lower pressure drop, thus obtaining a higher flow with the same inner diameter.
- Absence of limestone and other deposits. Also, thanks to its extremely smooth surfaces, such frequent limescale deposits are avoided. INNOPEX pipes guarantee that the initial flow will be maintained throughout the use.
- There is no electrical conductivity. INNOPEX pipes do not generate any galvanic corrosion.
- No noise. Due to the flexibility a low transmission of sound waves is achieved at even high speeds of water flow (up to 2.5 m/s).
- Thermal memory effect. INNOPEX pipes regain their original shape when hot air is applied, which allows the correction of installation errors and easier repairs on construction sites.
- Narrow bending radius. The largest bending radius is 10 x the outer diameter of the pipe by manual bending and 5 x the outer diameter of the pipe using the bending guide.

**Caution:** Hot bending of INNOPEX pipes can damage the EVOH layer. Bend INNOPEX pipes only when cold. The use of pipe guides is recommended.

#### > Specification

Characteristics	Value
Linear dilatation	1,4x10 <sup>-4</sup> K <sup>-1</sup>
Max. work temperature	95°C
Peak temperature (Tmal)	110°C
Max. pressure	10 bar
Roughness	0,007 mm
Density	0,945 gr/cm <sup>3</sup>
Thermal conductivity	0,38 W/mK
Min. bending radius	5 x d

Type	Class
16x2	C 4/10 bar; 5/8 bar
17x2	C 4/6 bar; 5/6 bar
20x2	C 4/8 bar; 5/6 bar
25x2.3	A 4/6 bar; 5/6 bar
32x2.9	A 4/6 bar; 5/6 bar



#### > Working conditions in constant heating mode

The maximum parameters of a constant heating system are:

- maximum working pressure - 6 bar
- sizing temperature - 70 ° C
- service life - 50 years

If the application is dimensioned for a service life of less than 50 years, higher temperature/pressure combinations may be used as follows:

- maximum working pressure - 6 bar
- design temperature - 90 ° C
- service life - 10 years

#### > Working conditions in variable heating mode

Summer/winter operating mode, variable temperature curves during heating periods - service life 50 years in the case of a high temperature radiator application:

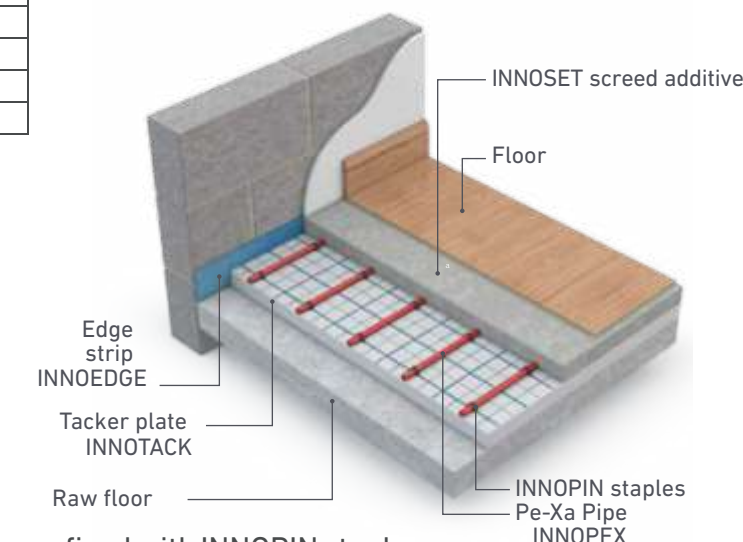
Operating temperature (°C)	Pressure (bar)	Service life
20	6	14 years
40	6	+25 years
60	6	+10 years
80	6	+1 year
Total		50 years

### INN TACK Tacker system

#### > Description

INNOTACK thermal insulation Tacker plate with 25 mm thickness, packed in a roll, used for underfloor heating is made of quality-monitored EPS in accordance with SR EN13163 and a tear-resistant, woven, crimped fabric on the top, as a moisture barrier against screed water.

The thermal insulation roll is an efficient support for the pipes used in the underfloor heating system, which are fixed with INNOPIN staples. Due to the reinforced material, the exit of INNOPIN staples from the plate is no longer possible. The foil has a printed grid with a pitch of 5 cm, which makes it possible to easily cut the roll, as well as a simple and quick installation of pipes. The Tacker board has a self-adhesive overlap of about 3 cm on one side. INNOTACK board is used in underfloor heating systems for thermal insulation, the heat being directed towards the interior of the room.

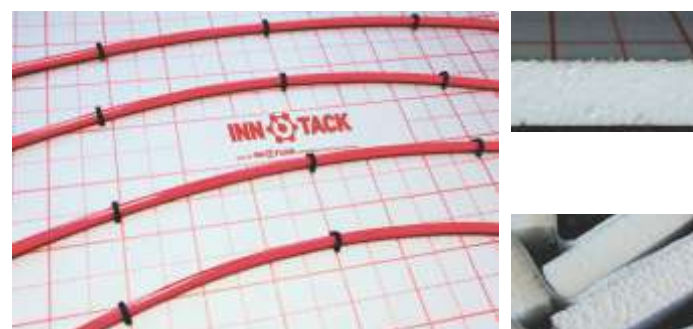


Art. code	Description
023271-035	Innotack Tacker plate 25 - 10 sqm roll
041204-201	Innofoil aluminum insert grid printed foil - 50 m roll



> Specification

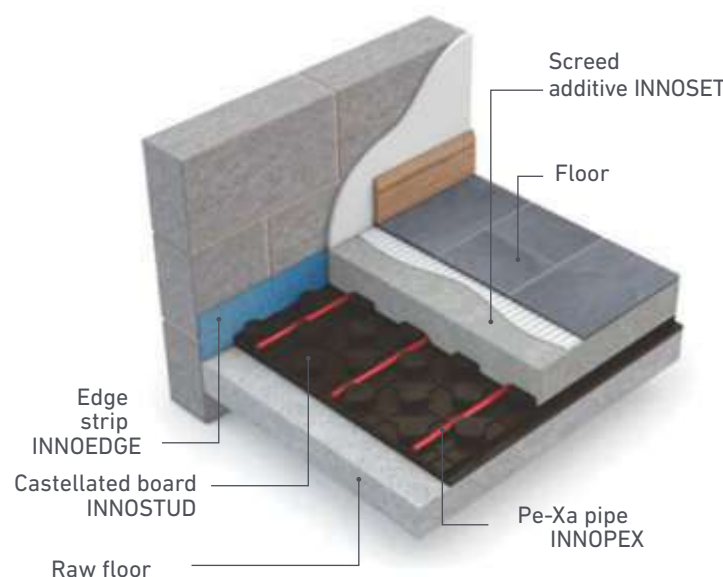
Innotack 25 characteristics	Value
Roll size	1x10 m
Effective area	10 mp
Thermal conductivity	0,038 W/mK
Nominal insulation thickness	25 mm
Thermal resistance	0,65 m <sup>2</sup> K/W
Fire behaviour	E/81
Compressive stress	CS(10)80≥80 kPa
Water absorption	WL(T) 3 %
Dimensional stability	DS(N) 2 %



**INNOSTUD Castellated boards system**

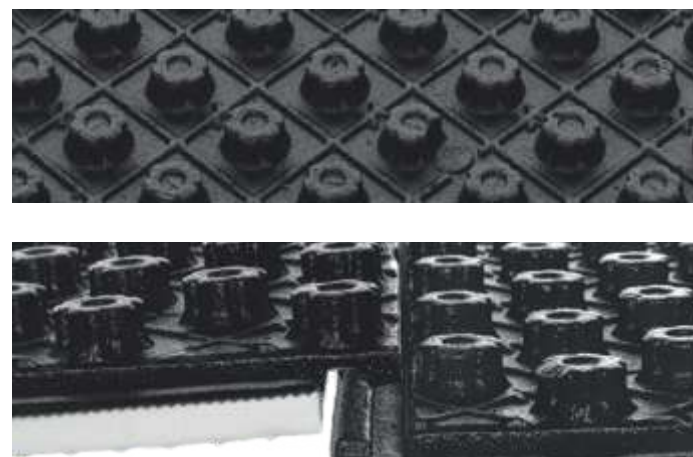
> Description

Expanded polystyrene insulation panel provided with grooves for the installation of INNOPEX Pe-Xa pipes with laying pitch from 50mm, 100mm, 150mm, 200mm. The advantage of grooved boards for underfloor heating is the much easier and safer installation of Pe-Xa pipes. The sides of the plates have a special profile through which their assembly is easy and fast, so the screed cannot drain under the plate avoiding the formation of thermal bridges. The panel is resistant to compression and high temperatures due to the laminated or applied plastic film over the polystyrene board.



**1. INNOSTUD EPS laminated boards**

- laminated with 0.34 mm thick PE film which increases the surface strength;
- special nut-feder design for easy and precise installation of pipes
- the way of inter-plate connection allows the use of liquid screed
- quick assembly
- INNOSTUD 35 has soundproofing properties - it reduces noise by 26 dB
- **laminated film thickness - 0.34 mm**

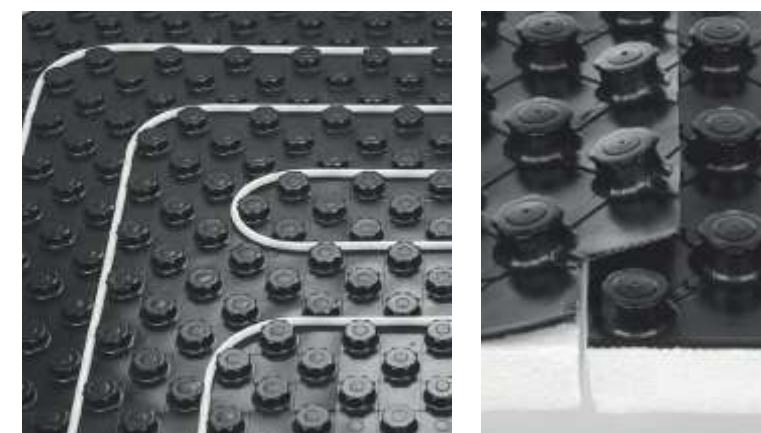


> Specification

Characteristics	023271-034 INNOSTUD 20	023271-033 INNOSTUD 35
Board dimension	1030x530 mm	1030x530 mm
Nominal insulation thickness	20 mm	35 mm
Total thickness	39 mm	57 mm
Effective board area (0,5 m <sup>2</sup> )	1000x500 mm	1000x500 mm
Laying grid (pipe spacing)	50 mm	50 mm
Thermal conductivity	0,035 W/mK	0,040 W/mK
Thermal resistance	0,57 m <sup>2</sup> K/W	0,87 m <sup>2</sup> K/W
Fire behaviour per EN13501-1	E	E
Packing	15 boards = 7,5 sqm	12 boards = 6 sqm

**2. INNOSTUD plus castellated boards**

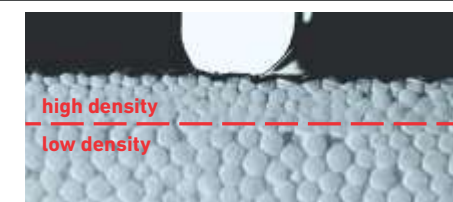
- the special mushroom-shaped shape of the nut ensures that the pipes are kept in the mounting position
- waste-free laying thanks to the "nub on nub" principle
- special design for easy and precise installation of pipes
- the secure, tight fit of the castellated floor boards makes them suitable for liquid screed
- quick one-person assembly
- applied film thickness - 0.6 mm



> Specification

Characteristics	023271-036 INNOSTUD PLUS 11	023271-037 INNOSTUD PLUS 20	023271-038 INNOSTUD PLUS 30
Effective board size	1400x800 mm	1400x800 mm	1400x800 mm
Nominal insulation thickness	11 mm	20 mm	30 mm
Total thickness	30 mm	39 mm	50 mm
Pipe diameter	14-17	14-17	14-17
Laying grid (pipe spacing)	50 mm	50 mm	50 mm
Thermal conductivity	0,034 W/mK	0,034 W/mK	0,034 W/mK
Thermal resistance	0,32 m <sup>2</sup> K/W	0,59 m <sup>2</sup> K/W	0,88 m <sup>2</sup> K/W
Fire behaviour per EN13501-1	E	E	E
Packing	13 boards = 14,56 sqm	10 boards = 11,2 sqm	8 boards = 8,96 sqm

Double density INNOSTUD PLUS 30-2 SILENT guarantees optimum impact resistance and ideal noise and sound insulation (**28 dB noise reduction**)



**3. INNOSTUD plus Solotop castellated boards**

- without EPS insulation
- ideal for renovations - low installation heights
- the special mushroom-shaped shape of the nut ensures that the pipes are kept in the mounting position
- waste-free laying thanks to the "nub on nub" principle
- special design for easy and precise installation of pipes
- the secure, tight fit of the castellated floor boards makes them suitable for liquid screed
- quick one-person assembly
- film thickness - 1 mm



> Specification

Characteristics	023271-028 SOLOTOP INNOSTUD PLUS 1 mm
Board dimensions	1450x850 mm
Effective board size	1400x800 mm
Effective board area	1,12m <sup>2</sup>
Pipe diameter	14-17
Laying grid (pipe spacing)	50 mm
Total thickness	20 mm
Packing	12 boards = 13,44 sqm



**Innotack & Innostud accesories**

**1. INN PIN Tacker staples - article code 010502-022**

INNOPIN Tacker staples allows quick and easy assembly of pipes in underfloor heating systems on Tacker plates with a thickness of at least 25 mm with any configuration of heating pipes (spiral or meander). With a height of 40 mm, they allow the fixing of pipes with diameters of 14-16-17-20 mm.

Staples can be installed with the INNOCLIP quick stapler(see page 25).



**2. INN EDGE Edge strips**

The edge strips allows the screed to expand to all sides and must be applied to all external and internal walls. This is necessary as screeds with underfloor heating have an increased heat expansion in comparison to non-heated screeds. The edge insulation creates an expansion joint between the wall and floor to provide the necessary expansion and to avoid the formation of thermal bridges. At the joints, the strips will be overlapped at least 5 cm.

**INN EDGE Plus**

LDPE perimeter tape with self-adhesive tape and protective foil 150 x 8 mm



**INN EDGE Projekt**

LDPE perimeter tape with 100 x 5 mm protective foil



Characteristics	023270-040 INNOEDGE PLUS	023271-020 INNOEDGE PROJEKT
Dimension	150x8 mm	100x5 mm
Roll lenght	25 ml	25 ml
Density	20 kg/m <sup>3</sup>	20 kg/m <sup>3</sup>
Thermal conductivity	0,05 W/mK	0,05 W/mK
Thermal resistance	0,5 m <sup>2</sup> K/W	0,5 m <sup>2</sup> K/W
Fire behaviour	E	E
Acoustic absorption coefficient	≤ 0,5	≤ 0,5
Working temperature range	-40 ... +80°C	-40 ... +80°C

**3. INN BEND Bend formers 90°**

Bend formers are used to stiffen pipes at the place of the bend at an angle of 90°. It provides optimal change in direction of the pipe without creating folds. Bend formers allow safe and secure outlet of the pipe from the floor (underfloor heating) to the manifold cabinet or from vertical surface (wall heating) to the horizontal without the risk of excessive stress at the bend of the pipe, which could lead to damage. Bend formers are also used to change the direction of the pipe at an angle of 90° directly on the insulation layer of the surface heating.



Art. code	Description/Dimensiune țevă
010502-030	Bend former INNOBEND 14-18
010502-031	Bend former INNOBEND 20-22
010502-032	Bend former INNOBEND 25
010502-033	Bend former INNOBEND 32-34

**4. INN SET Screed additive- article code 060301-097**

Professional water-reducing plasticizer, specially produced for screeds that cover underfloor heating installations. Used in a mixture with cement, the additive gives the screed a higher elasticity, increasing its malleability and mechanical resistance to vibration through the action of quickly removing the existing air in the concrete. The mixture ensures better contact with the underfloor heating circuits, optimizing heat transfer. The screed additive is completely soluble in water, does not contain chlorides and does not corrode metal structures or equipment. The product bears the CE mark and is manufactured according to SR EN 934-2 T2 being compatible with all varieties of cement recommended for the realization of underfloor heating installations.



The required additive quantity is calculated as follows:

- if the final thickness of the screed is known:  $0,035 \times \text{area [sqm]} \times \text{screed height [cm]} = \text{additive quantity [kg]}$

- if the final thickness of the screed is not known: 0,5 - 1 kg additive per 100 kg of cement

**5. INN JOINT Expansion joint profile**

It is used for surfaces larger than 40 sqm or with a side greater than 8 m for the realization of joints with permanent elasticity in the heating screed as well as the delimitation of screed fields (eg - in the case of doors).

Characteristics	041204-200
Dimensions	80x30x2000 mm
Density	30 kg/m <sup>3</sup>

**6. INN STUD plus Tape / connecting element**

Thermoformed film tape for joining INNOSTUD PLUS boards with and without insulation.

Characteristics	023271-021
Dimensions	1400x100 mm
Packing	28 pcs/box

**7. INN STUD plus Compensating element**

Element for door openings and distributor area.

Characteristics	023271-022
Dimensions	1400x200 mm
Packing	14 pcs/box

**8. INN STUD plus Pipe mount**

Allows the pipes to be fixed at 45 degrees.

Characteristics	023271-023
Dimensions	565x70 mm
Packing	40 pcs/box

**9. INN BRIDGE Nub bridge**

Allows the pipes fixing in difficult areas or mounting at 45 degrees.

Characteristics	010502-027
Dimensions	90x28 mm
Packing	100 pcs/box

**INN BOX Manifolds cabinets**

**> Description**

Metal boxes used for wall mounting of manifolds, wiring centers and mixing groups.

Made entirely of galvanized steel sheet with 0.8 mm thickness and electrostatically painted with white paint.

INNOBOX boxes are available in two constructive variants:

- fixed

- adjustable in depth and height.

**> Specification**

**INN BOX fixed**

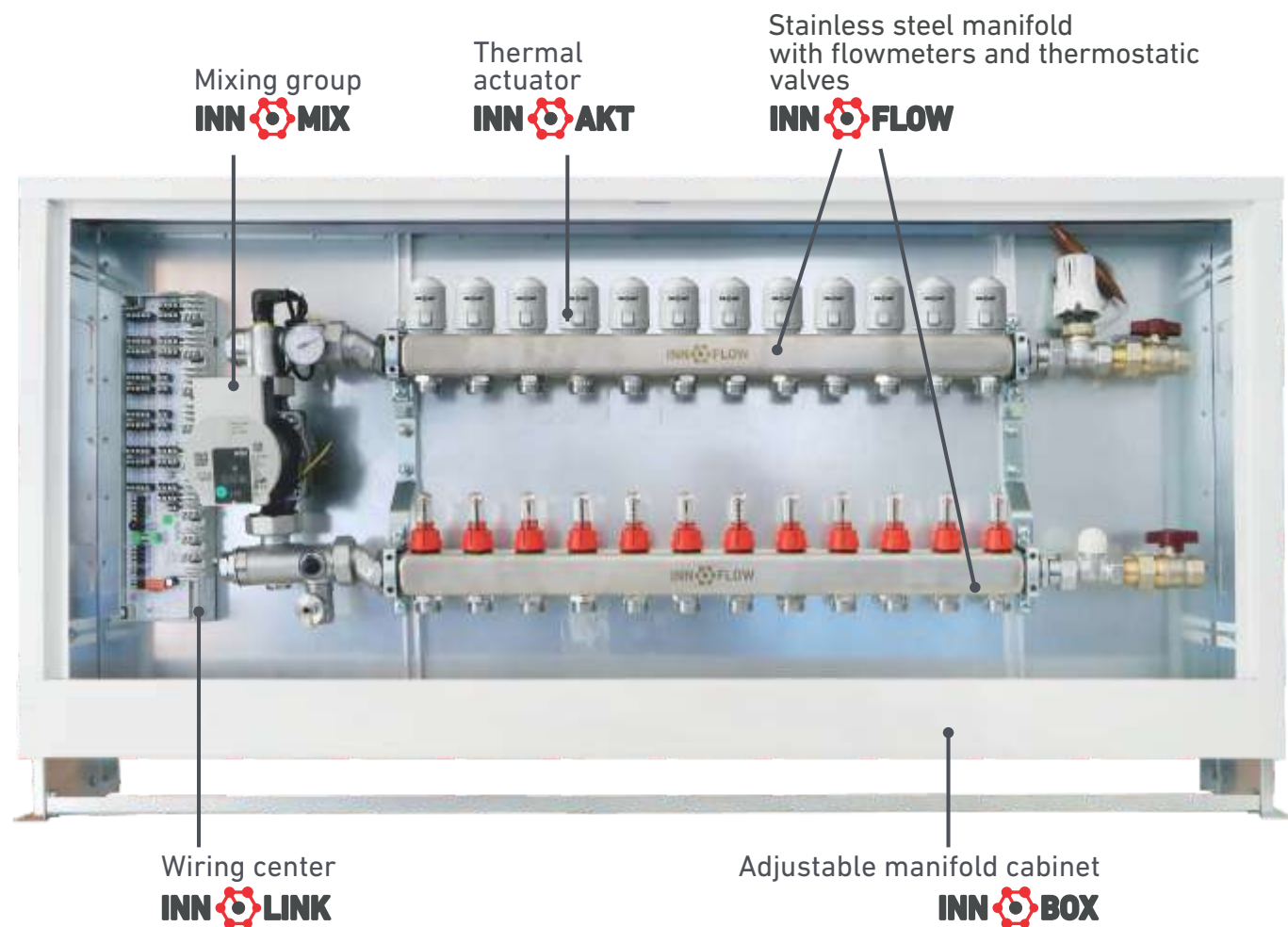
Art. code	Description	Width	Height	Depth
023260-058	INNF-0	335	450	110
023260-059	INNF-1	435		
023260-060	INNF-2	565		
023260-061	INNF-3	715		
023260-062	INNF-4	795		
023260-063	INNF-5	965		
023260-064	INNF-6	1140		

**INN BOX adjustable in depth and height**

Art. code	Description	Width	Height	Depth
023260-051	INNA-0	335	575-665	110-170
023260-052	INNA-1	435		
023260-053	INNA-2	565		
023260-054	INNA-3	715		
023260-055	INNA-4	795		
023260-056	INNA-5	965		
023260-057	INNA-6	1140		

All dimensions in mm.





**INN FLOW** Stainless steel manifolds with flow meters and thermostatic valves

> Description

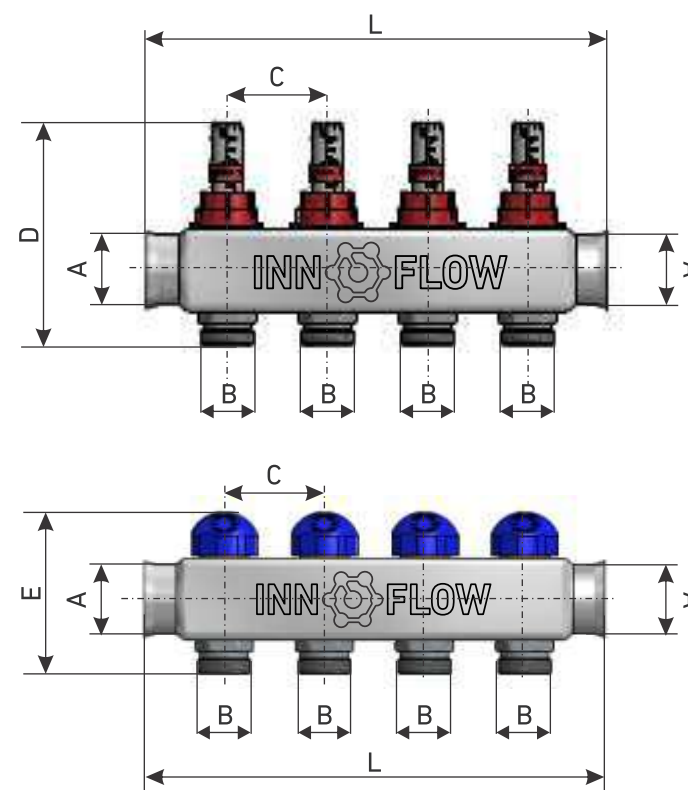
INNOFLOW distributors / collectors are designed for heating agent flow distribution and regulation. Made of stainless steel, in one piece - without welding points or other welds, they are ideal for underfloor heating systems. The particular design of the distributor has a high flow section, with low pressure drops and therefore low energy consumption in circulating pumps. Their large flow section allows the water to reduce its speed so will not produce noise.



The manifolds are equipped with 3/4 "Eurocon connections with an interaxial distance of 50 mm and are composed of a flow distributor with flow regulators (flow meters with 0 - 5 l / min adjustment) and return collector with thermostatic valves on which thermal actuators can be mounted. Distributors / collectors are packed in a cardboard box with labels included to identify the connected circuits.

> Specification

- AISI304 stainless steel distributor
- Available from 2 to 13 circuits
- 3/4 "connection size
- Distributor body connection diameter: 1" FE
- Flow meters with PPA technopolymer housing
- Flow distributor equipped with flow meters with a scale from 0 - 5 l / min, and flow control valves
- Return manifold with thermostatic valves equipped with ABS caps for manual adjustment (closed / open), suitable for mounting electrothermal actuators with pivot nut connection INNOAKT M30x1.5
- Maximum operating pressure 6 bar
- Operating temperature 0 ÷ 60 ° C
- Maximum test pressure 10 bar
- Maximum percentage of glycol 30%
- KV factors in wide opening conditions - Supply manifold KV=1.2 / Return manifold KV=2.8
- Supply + return KV = 0.84



The manifolds are installed in cabinets with mounting brackets - inter-axial distance = 210 mm provided with rubber shock absorbers for vibration remittance and noise elimination.

Art. code	Description
010502-129	Mounting brackets interaxial=210 mm-2 pcs

Pipe connection to the manifold is done with EUROCON threaded connectors INNOCON.



**INN CON**

Art. code	Description
041204-303	EUROCON conector INNOCON 16x2x3/4"
041204-304	EUROCON conector INNOCON 17x2x3/4"
023273-202	EUROCON conector 20X2x3/4"

Art. code	Description	A	B	C	D	E	L
030910-321	Innoflow 2 way	1"	3/4"	50	115	90	130
030910-322	Innoflow 3 way	1"	3/4"	50	115	90	180
030910-323	Innoflow 4 way	1"	3/4"	50	115	90	230
030910-324	Innoflow 5 way	1"	3/4"	50	115	90	280
030910-325	Innoflow 6 way	1"	3/4"	50	115	90	330
030910-326	Innoflow 7 way	1"	3/4"	50	115	90	380
030910-327	Innoflow 8 way	1"	3/4"	50	115	90	430
030910-328	Innoflow 9 way	1"	3/4"	50	115	90	480
030910-329	Innoflow 10 way	1"	3/4"	50	115	90	530
030910-330	Innoflow 11 way	1"	3/4"	50	115	90	580
030910-331	Innoflow 12 way	1"	3/4"	50	115	90	630
030910-332	Innoflow 13 way	1"	3/4"	50	115	90	680

**Pumping and control systems**

**1. INN MIX Mixing group**

The mixing group is an essential component of the INNOFLOOR system and has a dual function:

- a) adjusts the working temperature of the heating agent.
- b) pumps the thermal agent to the collector-distributor and then to the heating circuits.

Factory pre-assembled, the groups are delivered with 2 eccentrics to allow installation on any type of distributor.

Innomix groups are equipped with air vent and drain valve.

They can be used with both conventional and condensing boilers for underfloor heating.



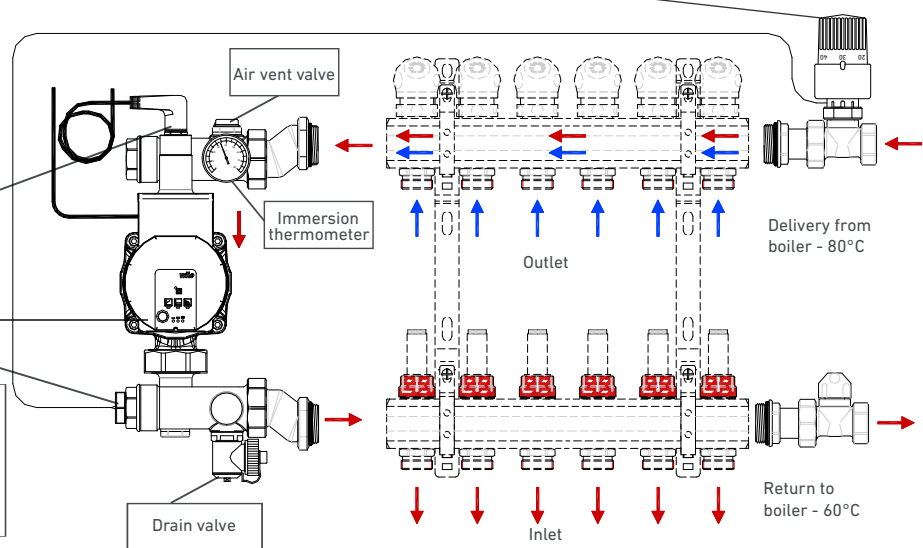
<b>Regulation thermostatic head</b>	
Max. static working pressure	10 bar
Max. working temperature	120°C
Max. differential pressure	1 bar
Regulating range	20-65°C
Capillary length	2m

Max. working pressure	10 bar
Min. working pressure	0.1 bar
Max. working temperature	90 °C

<b>Safety thermostat</b>	
Default set:	65°C
Contact:	Normally closed
Protection:	IP67
Max. temperature:	150°C

<b>Thermostat head sensor</b>	
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Circulator model	Wilo Para 25/7 SC
Power supply	230V +10%/-15%, 50/60Hz
Center distance	130 mm
Connections	G1"1/2
Temperature range	0-95°C
Max. working pressure	PN10



Art. code	Description
023273-022	Mixing group INNOMIX 250KE-Y8763, circulating pump WILO Yonos Para 25/7

**2. INN MIX COMPACT mixing group**

Control unit with connections at the bottom of the Wilo primary circulation pump, 65°C safety thermostat, flow valve, thermostatic valve and hydraulic control valve.

Supply voltage 230V - 50Hz.

Factory pre-assembled, the groups are delivered with 2 eccentrics to allow installation on any type of distributor.



Art. code	Description
023273-301	Mixing group INNOMIX COMPACT 249KE-065-873, circulating pump WILO Yonos Para 25/7

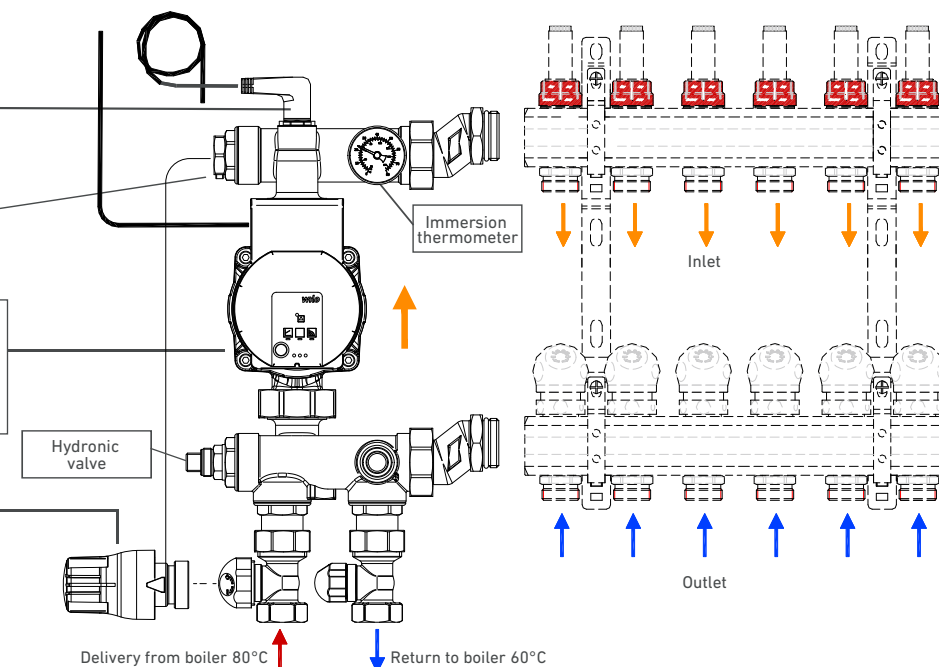
Max. working pressure	10 bar
Min. working pressure	0.1 bar
Max. working temperature	90 °C

<b>Safety thermostat</b>	
Default set	65°C
Contact	Normally closed
Protection	IP67
Max. temperature	150°C

<b>Thermostat head sensor</b>	
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Circulator model	Wilo Para 25/7 SC
Power supply	230V +10%/-15%, 50/60Hz
Center distance	130 mm
Threaded connections	G1"1/2
Temperature range	0-95°C
Max. working pressure	PN10

<b>Regulation thermostatic head</b>	
Max. static working pressure	10 bar
Max. working temperature	120°C
Max. differential pressure	1 bar
Regulating range	20-65°C
Capillary length	2m



**3. INN AKT Thermal actuators**

**Description**

The thermal actuator is operating the thermostatic valves installed on distributors in the heating and / or cooling circuits. The main field of application is energetic efficiency by temperature control.

**Specification**

- Compact size, small dimensions
- Snap-on installation
- 360° installation position
- Patented 100% protection against leaky valves
- Valve adapter concept
- All around function indicator
- Maintenance-free, noiseless
- delivered in first open function
- Low power consumption
- High functional safety and long expected service life
- High over-voltage protection
- Supply 230V - 50 Hz



Characteristics	041204-189 INNOAKT - INN244A	041204-302 INNOAKT KOMFORT
Type	Normally closed	Normally closed
Voltage	230 V AC, 50/60 Hz	DC 12, 24V AC 110,230V 50/60Hz
Operating power	2 W	2 W
Actuator travel	4 mm	4.0 ± 0.5mm
Closing and opening time	aprox. 3 min.	3 - 5 min
Actuating force	100 N ±5%	110 N
Class of protection	IP54	IP54
Working temperature	0... +60°C	-5... +60°C
Connection size	M30x1,5 mm	M30x1,5 mm
Connecting cable length	1000 mm	800 mm

#### 4. INN LINK Electronic wiring center

##### > Description

The INNOLINK wiring center is the central unit for connecting the thermostats in the multi-zone floor heating and cooling control systems.

With a minimal investment, the INNOLINK wiring center ensures the connection to all system components such as thermostats and thermal actuators. The system components are supplied directly with voltage from the wiring center. All switching commands from the thermostats are transmitted directly to the actuators through the INNOLINK.

The high quality wiring center from the INNOLINK series are available in 6 and 8 zone versions. For a more precise adaptation to the specifics of the installation, four versions are available: INNOLINK Basic, INNOLINK, INNOLINK Plus and INNOLINK Komfort. Fully equipped, INNOLINK wiring centers include extensive functions for energy-efficient operation and increased comfort.

INNOLINK gives you the possibility to offer customers an easy installation and maximum comfort by adjusting the temperature of the heated surfaces and the environment.



Art. code	Description	Zones	Pump/boiler control	Max. actuators
041204-188	Innolink Base - INN5032-6B	6	- / -	15
041204-080	Innolink - NN2142-6	6	x / -	15
041204-115	Innolink Plus - INN2052-6	6	x / x	15
041204-301	Innolink Komfort - INTCC	8	x / x	16

##### > Specification

- Available in 4 versions: Innolink Basic, Innolink, Innolink Plus, Innolink Komfort
- Design with 6 and 8 zones
- Power supply directly from the mains - 230V
- Heating and / or cooling equipment
- Simple and intuitive installation and operation
- Signaling the operation status with LEDs (Plus and Komfort version)
- Proven cable guide and standard-complying strain relief, wear resistant
- Quick connection clamps, without screws
- Clearly structured connection terminals
- Pump and boiler control, depending on the model
- Adjustable follow-up time for pump and boiler control
- Connection for a temperature limiter or dew point sensor
- Selectable control direction NC or NO via micro-switches (NC: normally closed / NO: normally open), depending on the model
- High functional security
- Maintenance free

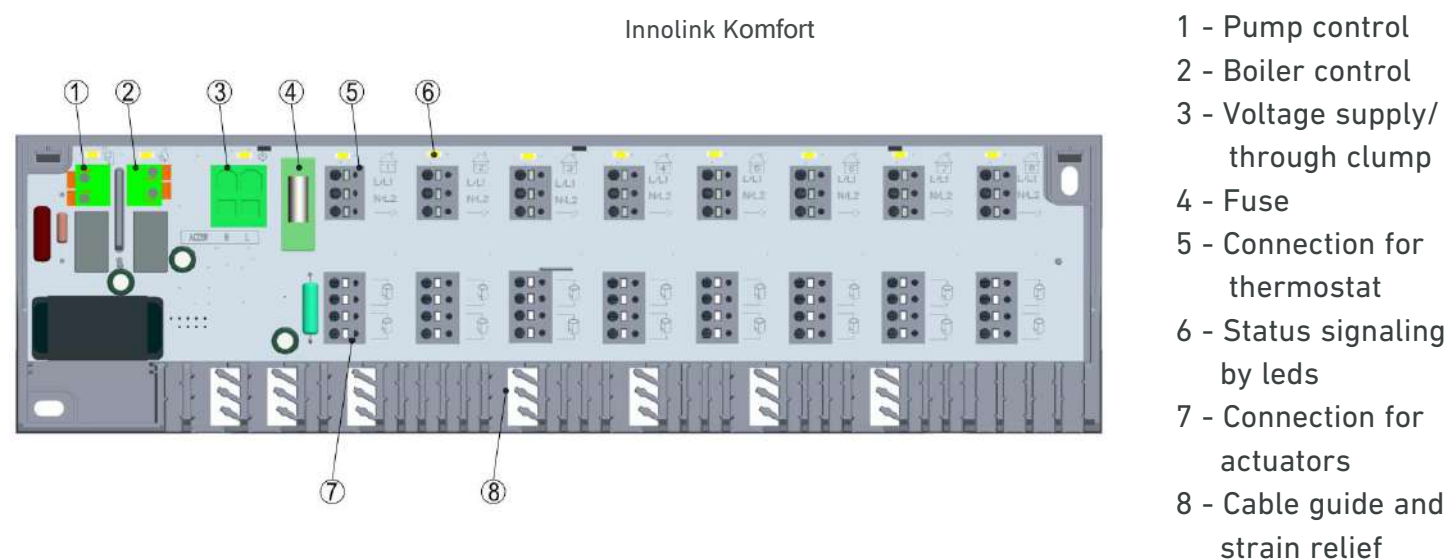
The quality of INNOLINK components ensures a simple and intuitive installation, operation and maintenance of the entire system.

Characteristics	Innolink Base	Innolink	Innolink Plus	Innolink Komfort
Operating voltage	230 V / ±10% / 50 Hz			
Voltage supply	external voltage source			
Max. power consumption (without consumers)	50 W		< 80 W	
Fuse	T4AH		5-10 A	
Max. thermostats number	6		8	
Max. actuators number	15		16	
Pump circuit	Closing contact (monopolar switching)/Direct connection via L/N			Active (potential)
Boiler circuit	Closing contact (monopolar switching)			Potential free contact
Pump control and boiler control	Switching power	2A, 200 VA inductive		
	Switching element	Relay		
	Turn-on delay	2 min		
	Follow-up time	2 min, additionally 0-15 min. adjustable with DIP switch		2 min
Control direction	NC	NC with connected pump	NC/NO adjustable with DIP switch	NC
Admissible ambient temperature	0...+50°C			
Admissible storage temperature	-20...+70°C			
Admissible ambient humidity	80%, non-condensing			
Connection terminals	screw less terminals for 0,2 to 1,5 mm <sup>2</sup> , vertical cable entry			
Connection line	massive	NYM-J/NYM-0 (max 5 x 1,5 mm <sup>2</sup> )		
	flexible	H03V2V2H2-F / H05V2V2H2-F		
Cable strain relief	integrated			
Standards	EN 60730-1, EN 60730-2-9			
Protection class	II			
Protection type	IP20			
Material	ABS			
Weight	380g	394g	410g	510g
Dimensions (HxLxD)	90x326,5x52 mm			90x324x52 mm

##### > Electrical connections

For the connection of the voltage supply, the cable sections must be a minimum of 0.75 mm<sup>2</sup> for 24 V or 1.5 mm<sup>2</sup> for 230 V. Depending on the voltage version of the base, it is possible to take L1 or L and L2 or N, as well as the protective conductor, from the base. If no temperature limiter is connected, the connection TB/%H must be bridged (provided for at the factory). The bridge must be removed as soon as a temperature limiter is connected. The temperature limiter must be a normally closed contact.

**The wiring of the thermostats depends on type. For wiring purposes, please observe the instructions of the thermostat or of the respective component.**



### 5. INN TROLL Room thermostats

Keep warm. Save energy.

#### > Description

Electronic room thermostats that use PWM control technology (pulse width modulation) performing a proportional control with INNOAKT thermal actuators.

Models with analog adjustment or illuminated display, with or without programming clock, without batteries.

Models for heating-cooling mode with inlet for temperature limiter or dew point sensor.

The thermostats can work in conjunction with the wiring centers but can also be connected directly to the thermal actuators.

The quality of Innotroll products ensures easy and intuitive installation, as well as easy use and maintenance of the entire system.

Art. code	Description
041526-321	Analog electronic thermostat INNOTROLL STANDARD without LCD - R20203-10
041526-322	Digital electronic thermostat INNOTROLL STANDARD with LCD - RD20203-10N5
041526-323	Programmable digital electronic thermostat INNOTROLL CONTROL with LCD - RD25203-60N5
041526-325	Programmable digital electronic thermostat INNOTROLL with LCD - HT 3m temperature limiter
041526-326	Programmable digital electronic thermostat SMART INNOTROLL with LCD - HT WiFi 3m temperature limiter

Programmable digital electronic thermostat INNOTROLL CONTROL with LCD - RD25203-60N5 optionals

Art. code	Description
041204-082	Temperature limiter - 3m - ES 1000
041526-324	Dew point sensor KG-A/1

Analog electronic thermostat INNOTROLL STANDARD without LCD R20203-10 wall mount



Digital electronic thermostat INNOTROLL STANDARD with LCD R20203-10N5 wall mount



Programmable digital electronic thermostat INNOTROLL CONTROL with LCD RD25203-60N5 wall mount



Programmable digital electronic thermostat INNOTROLL with LCD HT SMART HT WiFi flush mounted



#### > Specification

- Control algorithm to match heating system
- Smart Start/Smart Stop function
- Intuitive user navigation and operation
- Heating and cooling program settings exact to the day
- Target temperature adjustable
- Adjustable temperature reduction
- Set point limiter
- Control direction NC/NO selectable
- Frost and valve protection function
- Heating/cooling (change over)
- High quality modern design

Characteristics	R20203-10	R20203-10N5	RD25203-60N5	HT WiFi
Power supply	230 V / ±10% / 50 Hz			
Voltage supply	via base / mains connection			
Target temperature setting range	10°C -28°C	5°C-30°C		5°C -35°C
Controlling precision	±0,5°C			
Switching power	2A	1A		3A
Included temperature limiter	NO	NO	OPTIONAL	YES
OPEN WINDOW function	NO			YES
Admissible ambient temperature	0°C-50°C			
Admissible ambient humidity	80% non condensing			85%

## INN CLIP Tacker staple gun

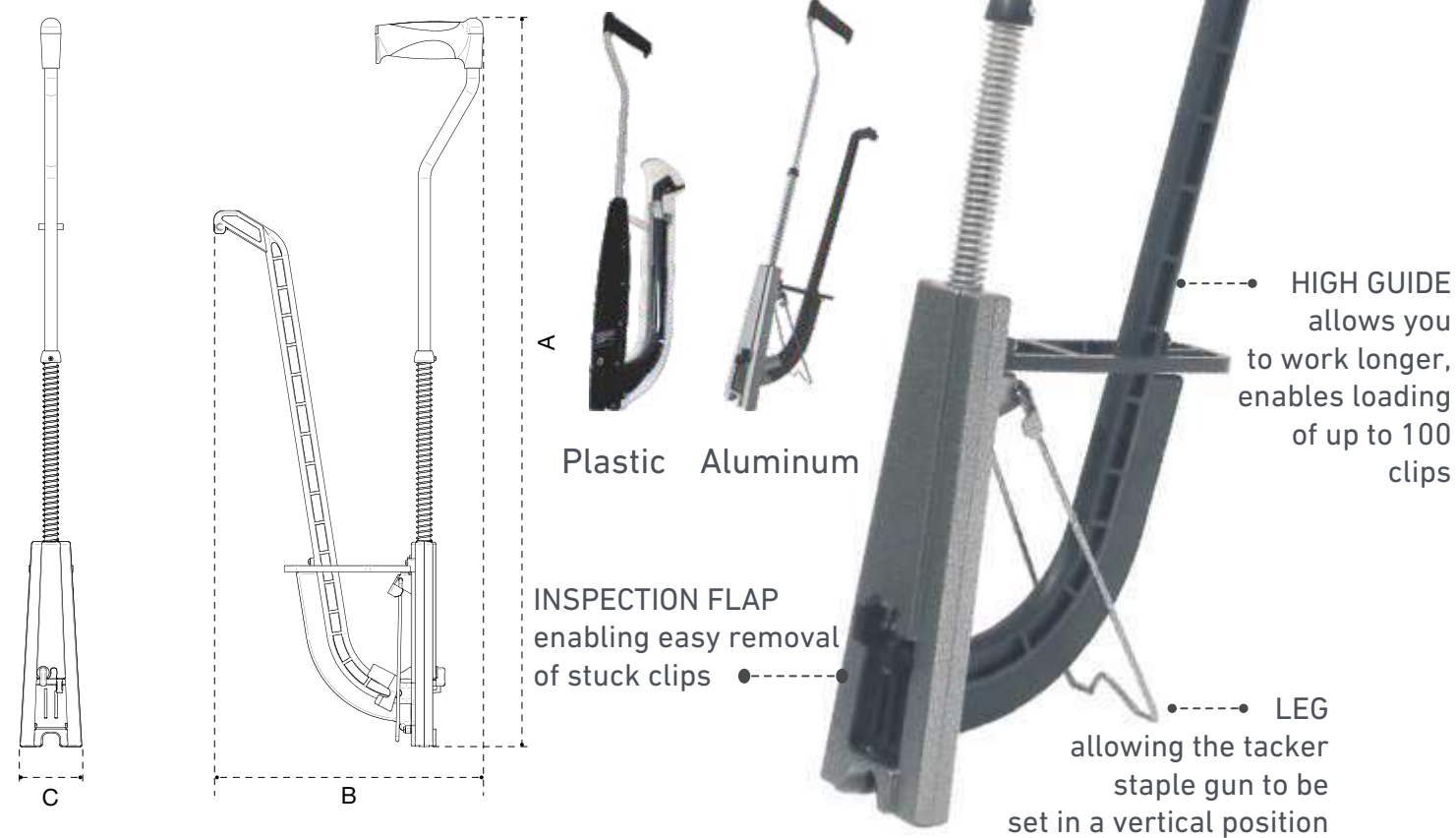
NEW

Innoclip Tacker staple gun is made of high quality material guaranteed for long operation and durability. It's light functional design manufactured from metal/plastic alloy is meant to save time and effort when fixing pipe onto insulation. Simply load the magazine of clips onto the tacker gun arm and begin fixing. This product will help reduce the time it takes to lay underfloor heating pipe dramatically.

Enhanced by an effective support system (metal foot), large capacity of the guide (up to 4 packages) and an inspection flap enabling easy removal of a stuck clip.

MORE CLIPS ON THE GUIDE  
GREATER EFFICIENCY.  
Extended guide enabling loading of up to 100 clips.

Art. code	Description	A(mm)	B(mm)	C(mm)
010502-025	Tacker staple gun Innoclip Aluminum	942	348	80
010502-026	Tacker staple gun Innoclip Plastic	938	276	82



We offer all the help and support you need - before, during and after installation. With the help of a customized software we offer you free services of sizing and estimating the necessary materials. With our experience, you can be sure that our experts will present you the most energy efficient solution. The software goes through all the stages of sizing the works, starting from the installation diagrams, through hydraulic and thermal calculations and ends with prints. The calculation of underfloor heating systems is done according to the SR EN 1264 standard ,

Manifold: Distributor Type: Manifold with flowmeters Manifold set: With ball valve straight valve Secondary side temp. (heating): 44.7 / 32.7° Manifold cabinet: Concealed manifold cabinet 500x750x160 Feed mass flow: 299.1 kg/h Min. required differential pressure: 4.41 kPa Available differential pressure: 4.41 kPa										
Nr.	Type	To terminal unit	Room label	L	Effect. area	Pipe spc.	Obtained heating output	m	Δp	Valve preset (S)
				m	m <sup>2</sup>	mm	W	kg/h	kPa	l/min
1	H/C FI	Bedroom-1-2	Bedroom	86.5	4.4	100/50	288	25.9	3.4	0.9 0.0
2	H/C FI	Bedroom-1-1	Bedroom	88.6	9.1	100	548	44.5	2.7	1.5 0.1
3	H/C FI	Bathroom-1-1	Bathroom	50.5	2.3	50	221	23.4	3.8	0.4 0.0
4	H/C FI	Living room -1-1	Living room	98.2	8.8	100	532	49.2	2.3	1.8 0.2
5	H/C FI	Living room-1-3	Living room	95.9	8.2	100	492	48.4	2.4	1.8 0.2
6	H/C FI	Living room-1-2	Living room	94.2	4.2	100/50	273	32.0	3.1	1.1 0.1
7	H/C FI	Kitchen-1-1	Kitchen	64.0	6.3	100	494	75.8	0.3	3.6 0.4

