
Radiant heating general results

Source/Source: 1	Application: Heating systems	Medium: Water
	39,0	28,7

Project: Underfloor and wall heating example



Detailed radiant heating results

Heating/cooling zone symbol	Area	Occupied / peripheral zone	Surface temperature	Thermal resistance of covering	Required output of heating	Output gained	Output lost	Unit power	Pipe spacing	Temp. diff. supply-return	Area occupied by passing feeds	Heating power from passing feeds	Length of circuit feeds	Overall circuit length (feeds + loop)	Mass flow rate	Flow velocity	Pressure loss in circuit	Pressure drop on regulating valves	Total pressure loss	Valve setting
H/C Area	A	Type	°C	(m ² ·K)/W	W	W	W	W/m ²	mm	K	m ²	W	m	m	kg/h	m/s	kPa	kPa	kPa	n
	m ²																			

001_1_1	14,0	OZ	25,2	0,048	768	766	188	54,9	125	11,6	0,0	0	6,9	118,6	73,7	0,18	6,7	0,6 0,4	7,7	8,00 rot.
002_2_1	8,4	OZ	26,7	0,014	613	612	122	72,8	75	12,4	0,0	0	11,6	116,7	55,3	0,14	2,7	3,7 1,3	7,7	3,00 rot.
003_1_1	11,6	OZ	25,3	0,048	601	629	76	55,4	125	10,0	5,7	303	1,3	48,3	34,6	0,08	0,7	6,6 0,4	7,7	1,00 rot.
003_2_1	6,1	OZ	25,3	0,048	474	474	135	56,1	125	11,2	0,0	0	20,8	90,5	56,0	0,14	2,1	3,8 1,8	7,7	3,00 rot.
	2,2	cPZ	25,6					59,8	100											
003_2_2	9,5	OZ	25,4	0,048	544	543	146	57,0	125	10,9	0,1	9	17,7	92,6	62,0	0,15	3,9	2,9 0,9	7,7	3,50 rot.
004_1_1	3,6	OZ	25,2	0,048	197	191	38	54,2	100	11,8	0,7	34	2,8	30,4	14,5	0,04	0,2	1,2 6,3	7,7	1,00 rot.

Project: Underfloor and wall heating example



H/C Area	A m ²	Type	°C	(m ² ·K)/W	W	W	W	W/m ²	mm	K	m ²	W	m	m	kg/h	m/s	kPa	kPa	kPa	n
006_1_1	2,1	OZ	28,9	0,010	83	83	16	39,5	100	5,1			10,8	30,7	23,6	0,08	0,6	3,1 4,0	7,7	1,00 rot.
006_3_1	3,2	OZ	29,5	0,014	184	184	46	58,7	50	9,9	0,2	13	4,2	59,5	20,3	0,05	0,5	2,3 4,9	7,7	1,00 rot.
9_1_1	8,6	OZ	25,6	0,048	474	510	124	59,1	125	10,2	0,0	0	10,6	79,5	57,3	0,14	1,8	3,9 1,9	7,7	3,00 rot.
9_1_2	9,4	OZ	24,9	0,048	518	482	121	51,1	125	11,6	0,2	13	7,5	80,8	45,8	0,11	1,5	3,8 2,3	7,7	2,50 rot.
101_1_1	10,5	OZ	25,2	0,048	578	578	86	55,0	125	11,4	0,0	0	16,6	100,7	58,3	0,14	2,4	4,1 0,6	7,1	3,00 rot.
102_1_1	10,5	OZ	25,2	0,048	578	578	77	55,0	125	10,0	0,0	0	7,7	91,8	59,5	0,15	3,6	2,7 0,9	7,1	3,50 rot.
103_1_1	2,2	OZ	28,9	0,010	86	86	15	39,4	100	5,0			11,2	31,8	22,4	0,08	0,6	2,7 3,8	7,2	1,00 rot.
103_3_1	6,2	OZ	30,6	0,014	435	421	50	71,1	75	6,4	1,2	64	1,0	63,7	55,0	0,14	1,4	5,5 0,3	7,1	2,50 rot.
104_1_1	12,4	OZ	25,2	0,048	683	683	90	55,0	125	11,4	0,0	0	8,5	107,9	61,5	0,15	4,5	2,0 0,7	7,1	4,00 rot.

Project: Underfloor and wall heating example



H/C Area	A m ²	Type	°C	(m ² ·K)/W	W	W	W	W/m ²	mm	K	m ²	W	m	m	kg/h	m/s	kPa	kPa	kPa	n
105_1_1	17,1	OZ	25,3	0,048	940	940	102	55,6	150	10,1	2,6	135	5,0	96,2	78,9	0,19	6,1	0,6 0,4	7,2	8,00 rot.
002_1_1	2,7			0,014	0	0	0	0,0												
005_1_1	7,0			0,014	0	0	0	0,0												
006_2_1	1,3			0,014	0	0	0	0,0												
103_2_1	2,4			0,014	0	0	0	0,0												

List of rooms - heating

Room Symbol	Room surface area	Thermal resistance of covering	Design room temperature	Heat loss in room	Required output of heating	Required specific heating output	Required radiant heating output	Required convection heating output	Obtained radiant heating output	Obtained convection heating output	Output recovered from pipe-runs	Coverage of required heating output
Room	A											
	m²	(m²·K)/W	°C	W	W	W/m²	W	W	W	W	W	%

Storey: 0 , Elevation 0 m

Bld. unit: 01

001 Living room	13,96	0,048	20,0	0	768	55,00	768	0	766	0	0	100
002 Kitchen	11,15	0,014	20,0	0	613	55,00	613	0	612	0	0	100
003 Living room	29,44	0,048	20,0	0	1619	55,00	1619	0	1646	0	0	102
004 Anteroom	3,58	0,048	20,0	0	197	55,00	197	0	191	0	0	97
006 Bathroom	4,41	0,014 / 0,014	24,0	0	267	60,50	267	0	267	0	0	100
9 Living room	18,03	0,048	20,0	0	992	55,00	992	0	991	0	0	100

Storey: 1 , Elevation 3 m

Bld. unit: 01

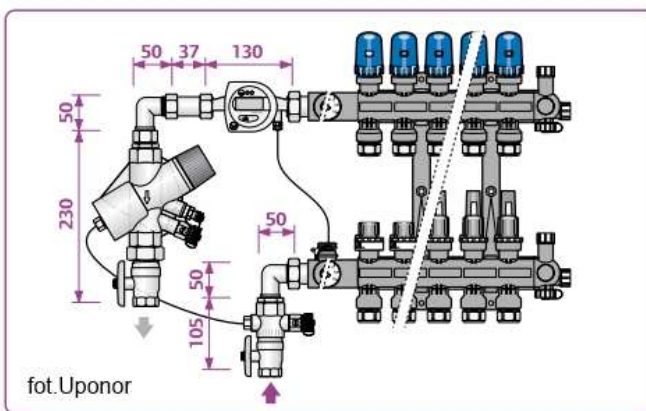
101 Bedroom	10,51	0,048	20,0	0	578	55,00	578	0	578	0	0	100
102 Bedroom	10,51	0,048	20,0	0	578	55,00	578	0	578	0	0	100
103 Bathroom	8,60	0,014 / 0,014	24,0	0	521	60,50	521	0	507	0	0	97
104 Bedroom	12,42	0,048	20,0	0	683	55,00	683	0	683	0	0	100
105 Anteroom	17,09	0,048	20,0	0	940	55,00	940	0	940	0	0	100

Manifold board: 0051

Storey: 0 Building unit: 01 Type: Manifold with balancing screws Number of outlet pairs: 10 Manifold set: Heat meter, balancing valve vertical Manifold cabinet: Concealed manifold cabinet Balancing valve preset: kv= 3,13							
	Type				Pipe type	Diameter r mm	Valve preset (S) rot.
1	Heating/cooling floor	006_3_1	006	Bathroom	PEX pipe	16x2.0	1,00
2	Heating/cooling wall	006_1_1	006	Bathroom	PEX pipe	14x2.0	1,00
3	Heating/cooling floor	001_1_1	001	Living room	PEX pipe	16x2.0	8,00
4	Heating/cooling floor	002_2_1	002	Kitchen	PEX pipe	16x2.0	3,00
5	Heating/cooling floor	003_2_1	003	Living room	PEX pipe	16x2.0	3,00
6	Heating/cooling floor	003_2_2	003	Living room	PEX pipe	16x2.0	3,50
7	Heating/cooling floor	003_1_1	003	Living room	PEX pipe	16x2.0	1,00
8	Heating/cooling floor	9_1_1	9	Living room	PEX pipe	16x2.0	3,00
9	Heating/cooling floor	9_1_2	9	Living room	PEX pipe	16x2.0	2,50
10	Heating/cooling floor	004_1_1	004	Anteroom	PEX pipe	16x2.0	1,00



Manifold board: 0051



Product	Size	Catalogue code	Qty.	Unit
Basic radiant systems				
Manifolds				
Manifold with balancing screws	10 ways	any producer	1	pcs.
Valves				
Straight ball valve 1"	25	any producer	1	pcs.
Heat meters				
Heat meter mounting set (vertical)		any producer	1	pcs.
Heat meters	¾"MT, Qnom: 1,5 m³/h	any producer	1	pcs.
Automatic system				
Actuators	230V	any producer	10	pcs.
Control valves				
Balancing valve	25	any producer	1	pcs.
Manifold cabinets				
Concealed manifold cabinet	1200x750x160	any producer	1	pcs.

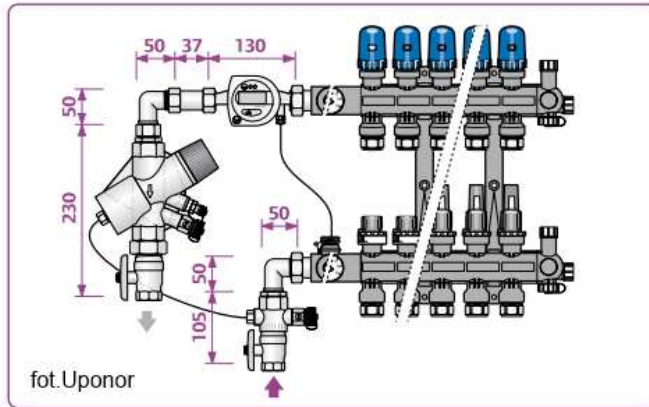
Manifold board: 1031

Storey: 1
Building unit: 01
Type: Manifold with balancing screws
Number of outlet pairs: 6
Manifold set: Heat meter, balancing valve vertical
Manifold cabinet: Concealed manifold cabinet
Balancing valve preset: kv= 2,13



	Type				Pipe type	Diameter r mm	Valve preset (S) rot.
1	Heating/cooling floor	103_3_1	103	Bathroom	PEX pipe	16x2.0	2,50
2	Heating/cooling wall	103_1_1	103	Bathroom	PEX pipe	14x2.0	1,00
3	Heating/cooling floor	104_1_1	104	Bedroom	PEX pipe	16x2.0	4,00
4	Heating/cooling floor	105_1_1	105	Anteroom	PEX pipe	16x2.0	8,00
5	Heating/cooling floor	101_1_1	101	Bedroom	PEX pipe	16x2.0	3,00
6	Heating/cooling floor	102_1_1	102	Bedroom	PEX pipe	16x2.0	3,50

Manifold board: 1031



Product	Size	Catalogue code	Qty.	Unit
Basic radiant systems				
Manifolds				
Manifold with balancing screws	6 ways	any producer	1	pcs.
Valves				
Straight ball valve 1"	25	any producer	1	pcs.
Heat meters				
Heat meter mounting set (vertical)		any producer	1	pcs.
Heat meters	¾"MT, Qnom: 1,5 m³/h	any producer	1	pcs.
Automatic system				
Actuators	230V	any producer	6	pcs.
Control valves				
Balancing valve	25	any producer	1	pcs.
Manifold cabinets				
Concealed manifold cabinet	1200x750x160	any producer	1	pcs.

Radiant system installation parameters

Heating/cooling zone symbol and thermal resistance of covering	Occupied / peripheral zone	Area	Pipe spacing	Pipe type Coil Manner of arrangement Number of circuits		Valve setting	Heating/cooling surface structure
(m ² ·K)/W	Type	m ²	VA mm	Pipe	m	Valve set.	Structure

Double apartment manifold:0051, Storey: 0, Bld. unit: 01
No. of outlets: 10, Manifold with balancing screws Manifold cabinet type: Concealed manifold cabinet
 Supply valve: Lockshield, Return valve: Thermostatic valve,

001_1_1 Parquet λ=0,21 10mm - 0,048	OZ	14,0	125	PEX pipe 16x2.0 Spiral pipe pattern	118,6	8,00	Cement screed 6,1 cm (Su 4,5 cm) rot. System plate 30 mm Styrofoam insulation board (lambda 0,04) 20 mm Hydroinsulation PE Foil 0.2 mm Rλ,floor = 0,500 (m ² ·K)/W
002_2_1 Ceramic tiles λ=1,0 14mm - 0,014	OZ	8,4	75	PEX pipe 16x2.0 Spiral pipe pattern	116,7	3,00	Cement screed 6,1 cm (Su 4,5 cm) rot. System plate 30 mm Styrofoam insulation board (lambda 0,04) 20 mm Hydroinsulation PE Foil 0.2 mm Rλ,floor = 0,500 (m ² ·K)/W
003_1_1 Parquet λ=0,21 10mm - 0,048	OZ	11,6	125	PEX pipe 16x2.0 Spiral pipe pattern	48,3	1,00	Cement screed 6,1 cm (Su 4,5 cm) rot. System plate 30 mm Styrofoam insulation board (lambda 0,04) 20 mm Hydroinsulation PE Foil 0.2 mm Rλ,floor = 0,500 (m ² ·K)/W

Project: Underfloor and wall heating example



$(m^2 \cdot K)/W$	Type	m^2	VA mm	Pipe	m	Valve set.	Structure
003_2_1 Parquet $\lambda=0,21$ 10mm - 0,048	OZ cPZ	6,1 2,2	125 100	PEX pipe 16x2.0 Spiral pipe pattern	90,5	3,00 rot.	Cement screed 6,1 cm (Su 4,5 cm) System plate 30 mm Styrofoam insulation board (lambda 0,04) 20 mm Hydroinsulation PE Foil 0.2 mm $R_{\lambda, floor} = 0,500 (m^2 \cdot K)/W$
003_2_2 Parquet $\lambda=0,21$ 10mm - 0,048	OZ	9,5	125 100	PEX pipe 16x2.0 Spiral pipe pattern	92,6	3,50 rot.	Cement screed 6,1 cm (Su 4,5 cm) System plate 30 mm Styrofoam insulation board (lambda 0,04) 20 mm Hydroinsulation PE Foil 0.2 mm $R_{\lambda, floor} = 0,500 (m^2 \cdot K)/W$
004_1_1 Parquet $\lambda=0,21$ 10mm - 0,048	OZ	3,6	100	PEX pipe 16x2.0 Spiral pipe pattern	30,4	1,00 rot.	Cement screed 6,1 cm (Su 4,5 cm) System plate 30 mm Styrofoam insulation board (lambda 0,04) 20 mm Hydroinsulation PE Foil 0.2 mm $R_{\lambda, floor} = 0,500 (m^2 \cdot K)/W$
006_1_1 Parquet $\lambda=0,21$ 10mm - 0,048	OZ	2,1	100	PEX pipe 14x2.0 Spiral pipe pattern	30,7	1,00 rot.	Gypsum plaster 0.370 W/(m x K) 2,3 cm (Su 0,5 cm) none $R_{\lambda, wall} = 2,143 (m^2 \cdot K)/W$
006_3_1 Ceramic tiles $\lambda=1,0$ 14mm - 0,014	OZ	3,2	50	PEX pipe 16x2.0 Spiral pipe pattern	59,5	1,00 rot.	Cement screed 6,1 cm (Su 4,5 cm) System plate 30 mm Styrofoam insulation board (lambda 0,04) 20 mm Hydroinsulation PE Foil 0.2 mm $R_{\lambda, floor} = 0,500 (m^2 \cdot K)/W$
9_1_1 Parquet $\lambda=0,21$ 10mm - 0,048	OZ	8,6	125	PEX pipe 16x2.0 Spiral pipe pattern	79,5	3,00 rot.	Cement screed 6,1 cm (Su 4,5 cm) System plate 30 mm Styrofoam insulation board (lambda 0,04) 20 mm Hydroinsulation PE Foil 0.2 mm $R_{\lambda, floor} = 0,500 (m^2 \cdot K)/W$

Project: Underfloor and wall heating example



(m ² ·K)/W	Type	m ²	VA mm	Pipe	m	Valve set.	Structure
9_1_2 Parquet λ=0,21 10mm - 0,048	OZ	9,4	125	PEX pipe 16x2.0 Spiral pipe pattern	80,8	2,50	Cement screed 6,1 cm (Su 4,5 cm) rot. System plate 30 mm Styrofoam insulation board (lambda 0,04) 20 mm Hydroinsulation PE Foil 0.2 mm Rλ,floor = 0,500 (m ² ·K)/W
Double apartment manifold:1031, Storey: 1, Bld. unit: 01 No. of outlets: 6, Manifold with balancing screws Manifold cabinet type:Concealed manifold cabinet Supply valve: Lockshield, Return valve: Thermostatic valve,							
101_1_1 Parquet λ=0,21 10mm - 0,048	OZ	10,5	125	PEX pipe 16x2.0 Spiral pipe pattern	100,7	3,00	Cement screed 6,1 cm (Su 4,5 cm) rot. System plate 30 mm Rλ,floor = 0,500 (m ² ·K)/W
102_1_1 Parquet λ=0,21 10mm - 0,048	OZ	10,5	125	PEX pipe 16x2.0 Spiral pipe pattern	91,8	3,50	Cement screed 6,1 cm (Su 4,5 cm) rot. System plate 30 mm Rλ,floor = 0,500 (m ² ·K)/W
103_1_1 Parquet λ=0,21 10mm - 0,048	OZ	2,2	100	PEX pipe 14x2.0 Spiral pipe pattern	31,8	1,00	Gypsum plaster 0.370 W/(m x K) 2,3 cm (Su 0,5 cm) rot. none Rλ,wall = 2,143 (m ² ·K)/W
103_3_1 Ceramic tiles λ=1,0 14mm - 0,014	OZ	6,2	75	PEX pipe 16x2.0 Spiral pipe pattern	63,7	2,50	Cement screed 6,1 cm (Su 4,5 cm) rot. System plate 30 mm Rλ,floor = 0,500 (m ² ·K)/W
104_1_1 Parquet λ=0,21 10mm - 0,048	OZ	12,4	125	PEX pipe 16x2.0 Spiral pipe pattern	107,9	4,00	Cement screed 6,1 cm (Su 4,5 cm) rot. System plate 30 mm Rλ,floor = 0,500 (m ² ·K)/W
105_1_1 Parquet λ=0,21 10mm - 0,048	OZ	17,1	150	PEX pipe 16x2.0 Spiral pipe pattern	96,2	8,00	Cement screed 6,1 cm (Su 4,5 cm) rot. System plate 30 mm Rλ,floor = 0,500 (m ² ·K)/W

$(m^2 \cdot K)/W$	Type	VA m ² mm	Pipe	m	Valve set.	Structure
Zones heated by feed pipes or with no pipes, Storey: 0, Bld. unit: 01						
002_1_1 Ceramic tiles $\lambda=1,0$ 14mm - 0,014		2,7				Cement screed 6,1 cm (Su 4,5 cm) System plate 30 mm Styrofoam insulation board (lambda 0,04) 20 mm Hydroinsulation PE Foil 0.2 mm $R_{\lambda, floor} = 0,500 (m^2 \cdot K)/W$
005_1_1 Ceramic tiles $\lambda=1,0$ 14mm - 0,014		7,0				Cement screed 6,1 cm (Su 4,5 cm) System plate 30 mm Styrofoam insulation board (lambda 0,04) 20 mm Hydroinsulation PE Foil 0.2 mm $R_{\lambda, floor} = 0,500 (m^2 \cdot K)/W$
006_2_1 Ceramic tiles $\lambda=1,0$ 14mm - 0,014		1,3				Cement screed 6,1 cm (Su 4,5 cm) System plate 30 mm Styrofoam insulation board (lambda 0,04) 20 mm Hydroinsulation PE Foil 0.2 mm $R_{\lambda, floor} = 0,500 (m^2 \cdot K)/W$

Project: Underfloor and wall heating example



$(m^2 \cdot K)/W$	Type	VA m ² mm	Pipe	m	Valve set.	Structure
Zones heated by feed pipes or with no pipes, Storey: 1, Bld. unit: 01						
103_2_1 Ceramic tiles $\lambda=1,0$ 14mm - 0,014		2,4				Cement screed 6,1 cm (Su 4,5 cm) System plate 30 mm $R_{\lambda, floor} = 0,500 (m^2 \cdot K)/W$

Coils allocation

Summary	0,00	0,00	0,00
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