

CEILING WATER RADIANT PANELS **KSP**



Registernummer: 011-80004



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Uniform heating solution for buildings at heights from 3,5 to 20 m

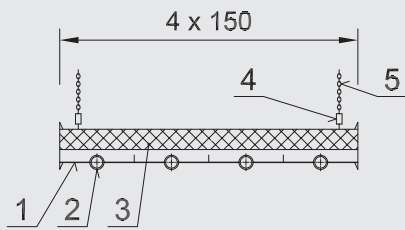
02-10-KSP-L-09-2017-EN



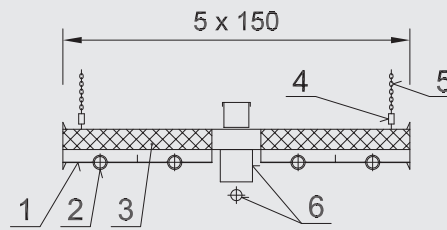
CONSTRUCTION

Main component: aluminium lamela, 150 mm wide
 Lamela: steel pipe embedded in an aluminium sheet
 Sidewings: aluminium sheet
 Thermal insulation: 40 mm thick with aluminium top coating
 Panels' composition: $n \times 150$... width from 300 to 1500 mm
 Optional: Integrated lamps
 Length: 2, 3, 4, 6 m
 Joining: pressfittings, welding
 Hydraulic arrangement in panels: serial, parallel, atypical (distributor)

COMPOSITION AND DIMENSIONS OF PANELS



Panel cross-section

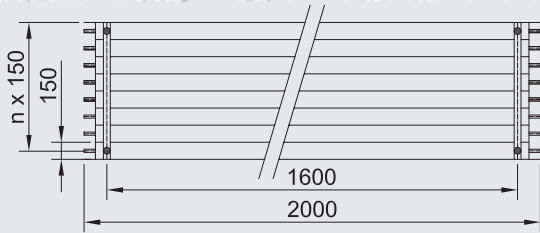


Panel cross-section with integrated lighting

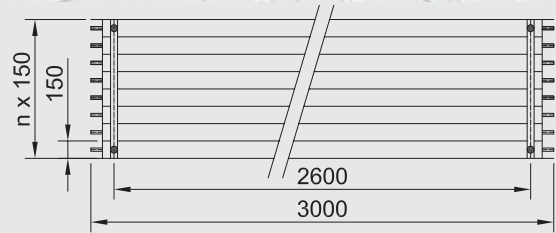
Legend:

- 1 - aluminium heating surface
- 2 - heating pipe
- 3 - thermal insulation
- 4 - quick link
- 5 - cable system or noddal chain with stretching screw (optional)
- 6 - lamp

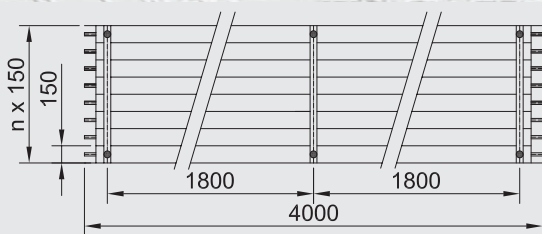
RADIANT PANEL - LENGTH 2 M



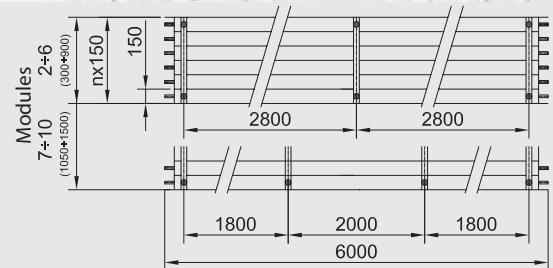
RADIANT PANEL - LENGTH 3 M



RADIANT PANEL - LENGTH 4 M



RADIANT PANEL - LENGTH 6 M



MODULES n	Width [mm] $n \times 150$	Weight [kg]								Suspensions		
		Panel L = 2 m		Panel L = 3 m		Panel L = 4 m		Panel L = 6 m		Length [m]		
		Full	Empty	Full	Empty	Full	Empty	Full	Empty	2, 3	4	6
2	300	11,2	9,2	16,5	13,5	22,4	18,4	33,0	26,9	4	6	6
3	450	16,1	13,1	23,7	19,2	32,4	26,4	47,6	38,6	4	6	6
4	600	20,9	16,9	31,0	25,0	42,3	34,3	62,4	50,4	4	6	6
5	750	25,8	20,8	38,3	30,8	52,1	42,1	77,0	62,0	4	6	6
6	900	30,7	24,7	45,6	36,6	61,7	49,7	91,8	73,8	4	6	6
7	1050	35,5	28,5	52,8	42,3	71,9	57,9	106,6	85,6	4	6	8
8	1200	40,4	32,4	60,0	48,0	81,8	65,8	121,3	97,3	4	6	8
9	1350	45,3	36,3	67,3	53,8	91,7	73,7	136,1	109,1	4	6	8
10	1500	50,2	40,2	74,6	59,6	101,6	81,6	150,9	120,9	4	6	8

Panels with integrated lighting of the length:
 3 meters have 3 crossbars and 6 suspensions
 6 meters have 4 crossbars and 8 suspensions

HEAT TRANSFER MEDIUM, OPERATION

Heat transfer medium: warm water under 110 °C
 hot water up to 140 °C
 (max. pressure 1,6 MPa)
 steam under 160 °C
 (max. pressure 0,5 MPa)

Control options:
 3-way control valve + circulation pump
 2-way control valve + circulation pump
 jet pump + controller with optimization program



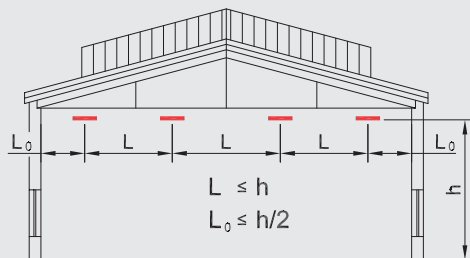
THERMAL OUTPUT - EN 14 037:2016

Δt	Width of panel B [mm]									Δt	Width of panel B [mm]								
	300	450	600	750	900	1050	1200	1350	1500		300	450	600	750	900	1050	1200	1350	1500
[K]	[W/m]	[W/m]	[W/m]	[W/m]	[W/m]	[W/m]	[W/m]	[W/m]	[W/m]	[K]	[W/m]	[W/m]	[W/m]	[W/m]	[W/m]	[W/m]	[W/m]	[W/m]	[W/m]
30	90	127	164	201	237	274	311	343	374	70	247	350	453	555	658	761	864	947	1030
35	108	152	197	241	286	330	375	412	450	75	268	380	492	603	715	827	939	1029	1118
40	127	179	231	283	336	388	440	484	528	80	289	410	531	652	773	894	1015	1111	1208
45	146	206	266	327	387	447	507	557	607	85	311	441	571	701	831	961	1091	1195	1298
50	165	234	302	371	439	508	576	632	689	90	333	472	612	751	890	1030	1169	1280	1390
55	185	262	339	416	492	569	646	709	772	95	355	504	653	798	950	1099	1248	1366	1483
60	205	291	376	461	547	632	717	787	857	100	377	536	694	853	1011	1169	1327	1452	1576
65	226	320	414	508	602	696	790	866	942	105	400	568	736	904	1073	1240	1408	1540	1671

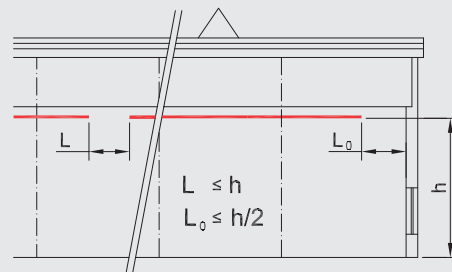
$$\Delta t = (t_{m1} + t_{m2})/2 - t_i$$

where: t_{m1} [°C] water temperature - supply, t_{m2} [°C] water temperature - return,
 t_i [°C] desired indoor temperature

PANEL'S POSSITIONING

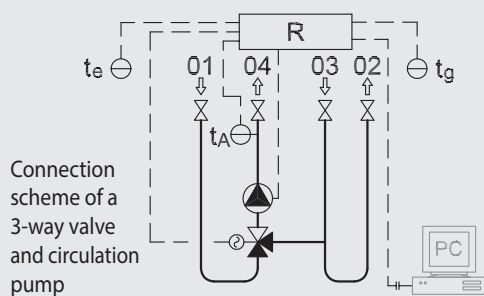


Maximum distance between panels in width-wise direction

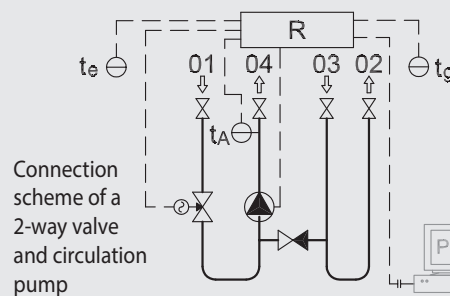


Maximum distance between panels in length-wise direction

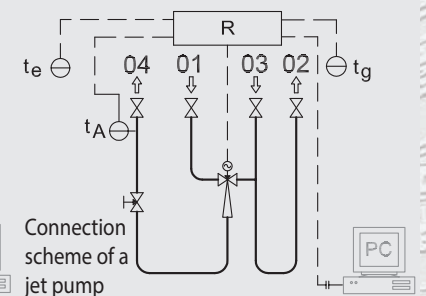
CONTROL



Connection scheme of a 3-way valve and circulation pump



Connection scheme of a 2-way valve and circulation pump



Connection scheme of a jet pump

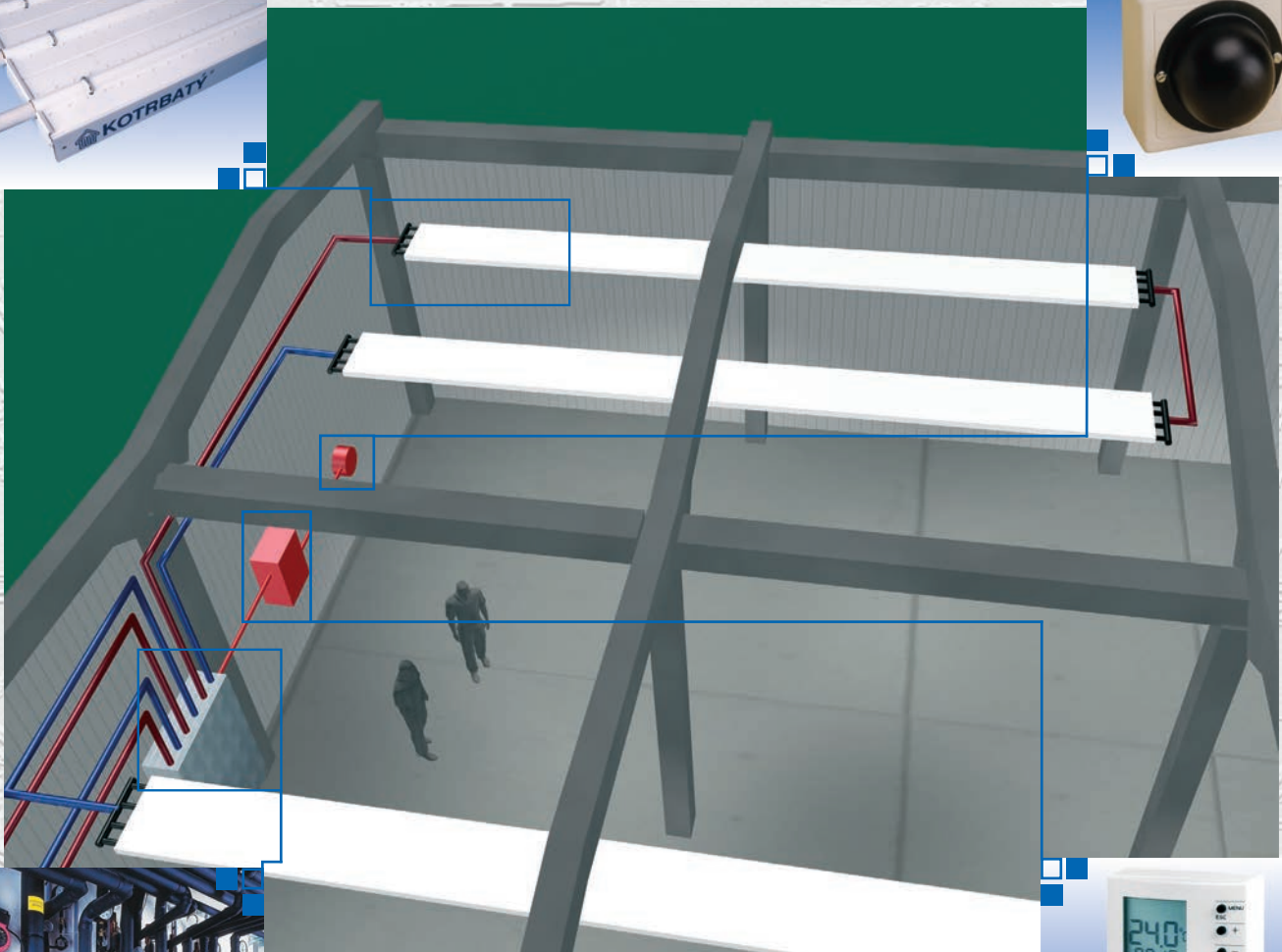
01 - supply primary, 02 - return primary, 03 - return secondary, 04 - supply secondary

CONNECTION SCHEME



**CEILING RADIANT
PANEL KSP**

**TEMPERATURE
SENSOR**



**CONTROL
POINT**

**ROOM
THERMOSTAT**

