

Article group
1.43



07/2006
GB

Katherm HK

KAMP MANN

Quality is our benchmark

Kampmann – the name today is synonymous with innovative and intelligent systems in the fields of heating, cooling and ventilation and, over the last 33 years, the Company has grown into an internationally-renowned group of companies.

Performance and quality are the benchmark for the continued success of Kampmann. Kampmann products are defined by their high performance capability, with guaranteed EN-tested heat outputs, materials fully rated to requirements, first-class workmanship, design-orientated form and shaping and fast delivery times. The quality management system has been documented for many years and is certified by DIN 9001:2000.

Kampmann systems for heating, cooling and ventilation:

- high-output convectors
- underfloor heating and cooling systems
- air handling systems
- door air curtains
- façade heating systems
- air conditioning systems
- radiant ceiling panels
- floor and façade ventilation systems
- fresh air climate with **OXYCELL TECHNOLOGY**

Versatility

The wide product range comprises a mix of standard, non-standard and products tailor-made for specific projects. Kampmann systems are currently proving their reliability and efficiency in industrial, commercial and private buildings around the globe.

Sales

Kampmann places great emphasis on technical discussions and collaboration with architects, project engineers, heating contractors and builders, as well as with wholesalers. In Germany some 50 sales engineers, operating out of six regional offices, and a further 70 sales engineers working in 14 subsidiary offices throughout Europe provide on-the-spot technical assistance.

HQ and production

In addition to the Kampmann headquarters building in Lingen (Ems), there is a second production plant in Gräfenhainichen (Sachsen-Anhalt). The high-quality products are developed, manufactured and sold by a total workforce of over 550 employees in a production area of more than 55,000 m².

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Katherm HK

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Katherm HK – decentralised air conditioning from the floor

Radiators and air conditioning units are often optically unacceptable in modern, glass-fronted public and commercial buildings. And yet the design of these buildings makes the demand for some form of air conditioning all the more urgent. The demand-led supply of filtered, heated or cooled air using **Katherm HK** solves both problems simultaneously and yet, from a practical point of view, the units are hidden out of sight in the floor.

All this using the most modern heating and cooling technology:

- asynchronous external rotor motors produce approximately 50% energy savings, yet provide greater output using large-dimensioned cross-flow fans
- the duct widths match the remainder of the **Katherm** range
- 150 mm deep units are now available to provide even more output - with window-side outlets for maximum air mixing

1.43 Katherm HK - Heating or cooling with cross-flow fans

Ready-to-install floor duct convectors

Type numbers · Grille finishes



1 4 3 0 6 2 3 1 1 20

Type nos.

Length key

- 20 = NP 1250 mm
- 35 = NP 2000 mm
- 50 = NP 2750 mm

Grille design (see diagram on right)

- 1 = roll-up grille

2-/4-pipe/ Floor duct height

- 23 = 2-pipe, duct height 132 mm
- 43 = 4-pipe, duct height 132 mm
- 25 = 2-pipe, duct height 150 mm
- 45 = 4-pipe, duct height 150 mm

Overall frame width

- 6 = overall frame width 340 mm
- 8 = overall frame width 400 mm (132mm deep duct only)

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Grille finishes

- 11 = aluminium, natural anodized



- 12 = aluminium, brass anodized



- 13 = aluminium, bronze anodized



- 14 = aluminium, black anodized



- 15 = aluminium, bronze-effect



- 16 = aluminium, painted basalt grey, DB 703



- 31 = stainless steel



- 32 = stainless steel, polished



- 33 = natural brass CuZn 44



- 34 = natural brass, CuZn 44, polished, oxydation-proof



Further grille finishes (colours) are available on request

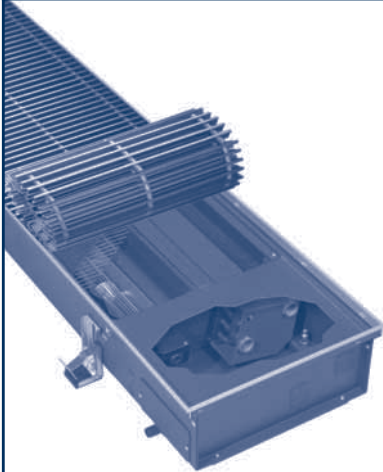
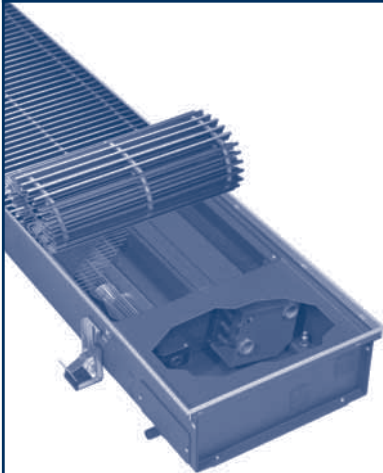
The grilles illustrated here are printed using a 4-colour printing process and may therefore not be an exact replica of the original colour.

Katherm HK - Heating or cooling with cross-flow fans

Ready-to-install floor duct convectors

1.43

Description

	Description	Air discharge	Duct width	Duct height	Duct length	Cooling output ¹⁾ LPCW 16/18 °C, t _i = 27 °C, 50% rel.hum. w	Heat output ¹⁾ LPHW 75/65 °C, t _i = 20 °C w
	Katherm HK 340 2-pipe system	room-side	340 mm	132 mm	1250 mm 2000 mm 2750 mm	288 - 536 556 - 1036 824 - 1536	1781 - 3075 3441 - 5940 5101 - 8805
		window-side	340 mm	150 mm	1250 mm 2000 mm 2750 mm	335 - 753 647 - 1454 959 - 2155	2228 - 3928 4304 - 7587 6380 - 11246
	Katherm HK 340 4-pipe system	room-side	340 mm	132 mm	1250 mm 2000 mm 2750 mm	257 - 457 496 - 883 735 - 1309	1041 - 1751 2011 - 3382 2980 - 5013
		window-side	340 mm	150 mm	1250 mm 2000 mm 2750 mm	365 - 711 706 - 1374 1047 - 2037	1583 - 2274 3057 - 4393 4532 - 6512
	Katherm HK 400 4-pipe system	room-side	400 mm	132 mm	1250 mm 2000 mm 2750 mm	260 - 557 502 - 1075 744 - 1593	1250 - 2125 2415 - 4105 3580 - 6085

¹⁾Heat and cooling outputs given at fan speed 3

1.43 Katherm HK - Heating or cooling with cross-flow fans

Ready-to-install floor duct convectors

Description

Katherm HK – decentralised air conditioning from the floor

Katherm HK can be used within buildings where the cooling load is particularly high in summer months due to sunlight entering through the large expanses of exterior glazing. Experience has shown that cost-effective cooling can be achieved using Katherm HK, which operates at low noise levels, not perceived as disturbing by users of the building.

Katherm HK are available in two widths (Katherm HK 340 = 340 mm wide):

- Katherm HK 340
- Katherm HK 400

Duct height:

132 mm, 150 mm (HK 340 only)

Heating and cooling media:

Heating: Low pressure hot water (LPHW)

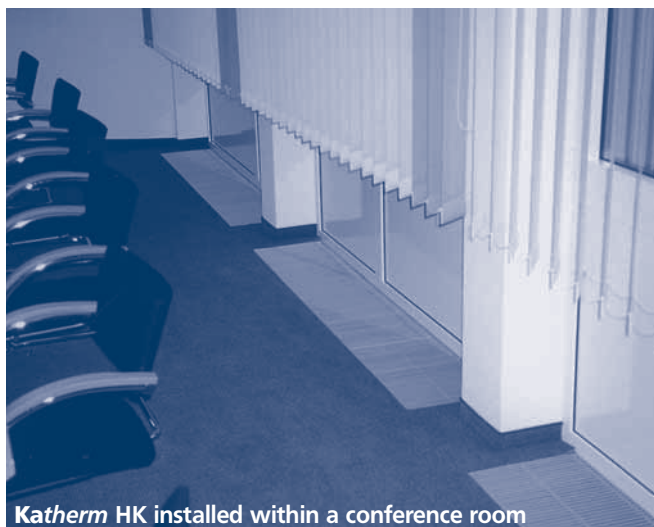
Cooling: Low pressure cold water (LPCW)

Construction:

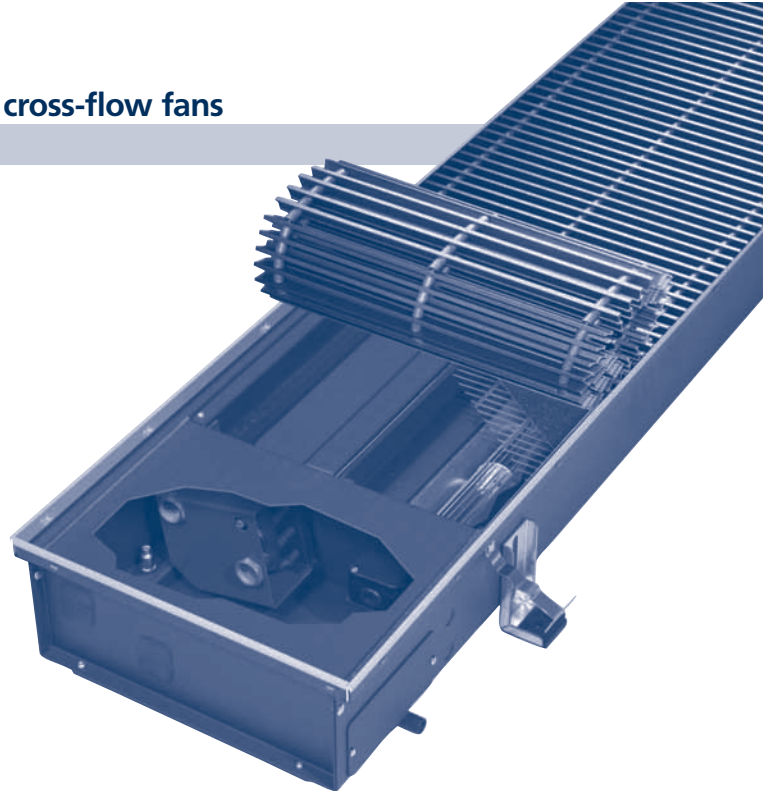
- **New:** asynchronous external rotor motor with approx. 50 % energy-savings but with enhanced output using large-dimensioned cross-flow fans
- **New:** duct widths to match the remainder of the Katherm range
- **New:** 150 mm duct height for even more output; with air outlet on window-side for optimum air distribution within the body of the room

Air outlet:

Katherm HK (duct height 132mm) has the convector positioned on the room-side, whereas Katherm HK 340 (duct height 150mm) has the convector and air outlet on the window-side. The greater air volume produced by the 150mm deep Katherm HK ensures that the air is effectively mixed.



Katherm HK installed within a conference room



Katherm HK - the engineering at a glance

- asynchronous external rotor motor for energy-efficiency and enhanced output
- sendzimir galvanized steel duct with all visible surfaces painted graphite grey
- two duct widths - 340 mm and 400 mm, two duct heights - 132 mm and 150 mm (HK 340 only) for even more output
- duct length - 1250, 2000, 2750 mm; non-standard lengths on request
- copper/aluminium heat exchanger, 1/2" connection, fitted at an angle along the convector for enhanced output levels and fed with low pressure hot water LPHW (2-pipe system) or low pressure cold water LPCW; a 4-pipe system can be provided on request
- with raised floor height adjustment feet on both window- and room-side and screed anchoring lugs
- duct is welded throughout, is sealed against water underneath the heat exchanger and doubles as condensation tray
- air filter is provided as standard
- extensive range of controls
- Kampmann roll-up grille for noise-free air discharge

Linear grilles:

The most recent series of tests have demonstrated that the use of linear grilles, irrespective of which type or design, can produce stable short circuit currents in cooling mode. The resulting reduction in output can be as high as 60% depending on operating mode, fan stage and location of the unit. For this reason, we do not recommend the use of linear grilles.

Description

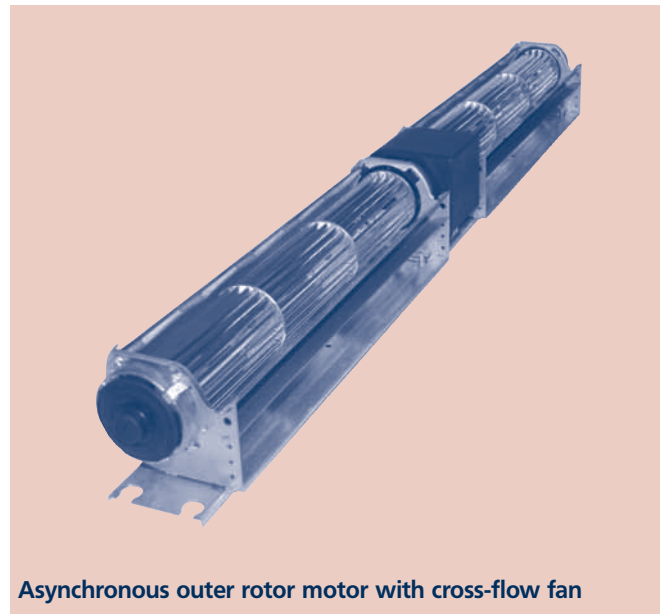
New: Asynchronous external rotor motor

Kampmann **Katherm HK** has been optimised, both in terms of comfort and heat output, by the use of asynchronous external rotor motors:

- very low sound pressure levels
- approx. 50 % energy-savings using high-quality motor engineering
- enhanced efficiency levels

Guaranteed heating and cooling outputs

Katherm HK heat outputs have been tested by the HLK test institute, Stuttgart, in accordance with DIN 4704 and the cooling outputs in accordance with DIN EN 14518.



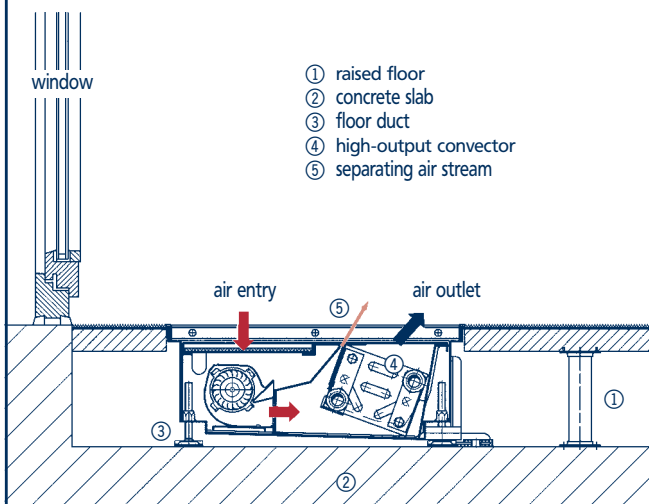
Asynchronous outer rotor motor with cross-flow fan

Standard range (NP) and non-standard range (MP)

Katherm HK are available in standard (NP) lengths of 1250, 2000 and 2750 mm. Non-standard (MP) lengths can also be manufactured if required.

Description

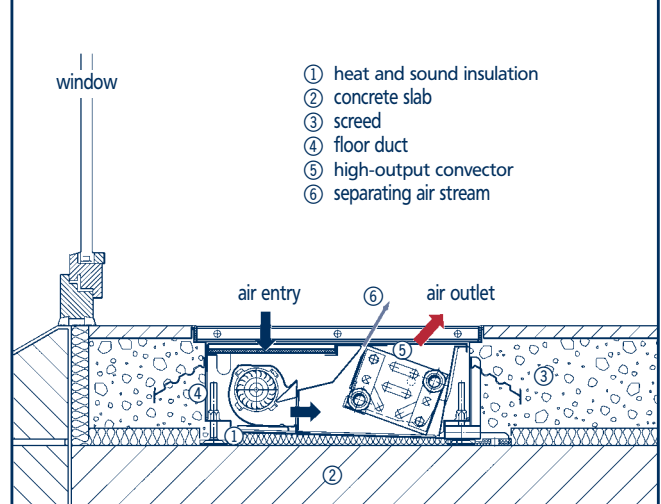
Katherm HK, 132 mm deep, cooling unit - shown installed within a raised floor



Cooling: summer

Warm air falls into the duct through the filter; the cross-flow fan passes it through the convector fed with cold water where it is cooled. The separating air stream prevents the entering air from mixing with the outlet air.

Katherm HK, 132 mm deep, heating unit - shown installed in a screed floor



Heating: winter

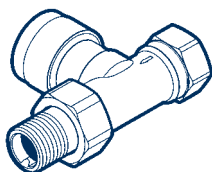
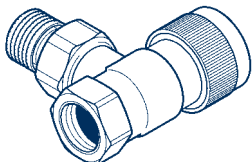
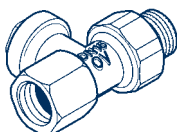
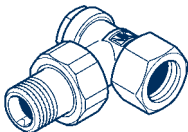
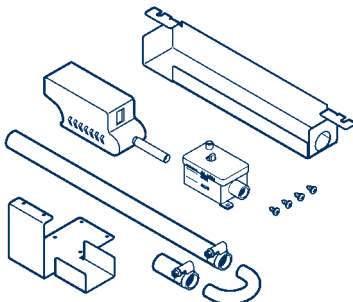
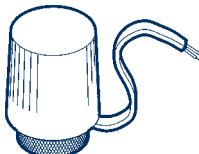
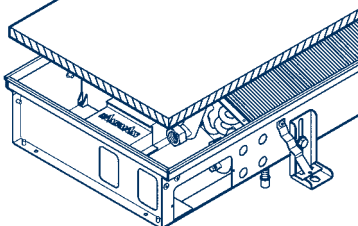
Cold air falling from the window is drawn through the filter by the cross-flow fan which passes it through the angled convector where it is heated. The separating air stream prevents the warm discharged air from mixing with the cooler entering air.

1.43 Katherm HK - Heating or cooling with cross-flow fans

Ready-to-install floor duct convectors

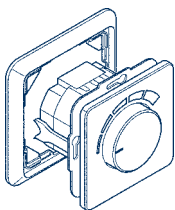
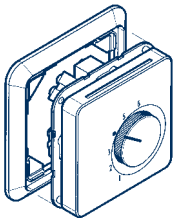
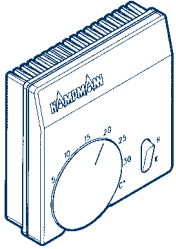
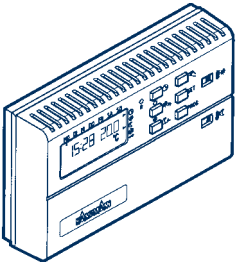
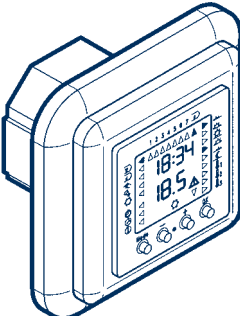
Accessories

Description

	1/2" Valve body, type 146909, straight low noise, optimum flow with Niro steel spindle and double o-ring seal; for use with Katherm HK when using actuator type 146905	
	Max. operating temperature	120 °C
	Max. operating pressure	10 bar
	1/2" Valve body, type 100970, angled low noise, optimum flow with Niro steel spindle and double o-ring seal; for use with Katherm HK when using actuator type 146905	
	Max. operating temperature	120 °C
	Max. operating pressure	10 bar
 	1/2" Return shut-off valve, type 145952, straight; 1/2" Return shut-off valve, type 145953, angled brass valve with nickel-plate housing with o-ring seal	
straight design	Max. operating temperature	120 °C
angled design	Max. operating pressure	10 bar
	Condensate pump assembly kit for the use with Katherm HK with condensate pump, please refer to the drawings (increased duct height) on page 16	
	for Katherm HK 340, height 132mm	type 143801
	for Katherm HK 340, height 150mm	type 143802
	for Katherm HK 400, height 132mm	type 143803
	Maximum delivery height	8 m
	Maximum delivery volume	3 l/h
	Supply voltage	230 V/50 Hz (separate mains supply is required)
	Power uptake	20 W
	Condensate discharge-line	DN 6 mm (hose connection)
	Condensate overflow warning contact	change-over contact, single-ended; switching capacity 230 V/8(5) A
	Thermoelectric actuator 230 V, type 146905 actuator for use with valve body type 146909 or 100970	
	Power intake	approx. 5 w
	Cable length	approx. 1900 mm
	Height	69 mm
	Diameter	42 mm
	Connecting thread	30 x 1.5 mm
	Installation cover If required, all Katherm HK units can be supplied with their grilles packed separately to prevent them from becoming soiled or damaged on site prior to fitting. The floor duct is supplied with a disposable wooden installation cover.	
	Type no. according to overall frame width	
Floor duct length mm	340 mm	400 mm
1250	143921	143931
2000	143922	143932
2750	143923	143933

Article no. for DataNorm/EDV entry: 194 000 (enter type no.)

Speed controllers · Room and clock thermostats

	Speed controller, type 146936 with setting dial for fan speed; controls up to 10 units between 5 fan speeds <table border="1"> <tr> <td>Housing</td><td>Jung system, flush-mounted, white</td></tr> <tr> <td>Voltage</td><td>230 V/50 Hz</td></tr> <tr> <td>Protection</td><td>IP 20</td></tr> <tr> <td>Dimensions W x H x D</td><td>65 x 65 x 42 mm</td></tr> </table>	Housing	Jung system, flush-mounted, white	Voltage	230 V/50 Hz	Protection	IP 20	Dimensions W x H x D	65 x 65 x 42 mm								
Housing	Jung system, flush-mounted, white																
Voltage	230 V/50 Hz																
Protection	IP 20																
Dimensions W x H x D	65 x 65 x 42 mm																
	Room thermostat, type 146937 temperature setting dial; thermal setback; heating/cooling change-over contact; switch between heating/cooling only possible using external contact <table border="1"> <tr> <td>Housing</td><td>Jung system, flush-mounted, white</td></tr> <tr> <td>Voltage</td><td>230 V/50 Hz</td></tr> <tr> <td>Temperature range</td><td>5 - 30 °C</td></tr> <tr> <td>Max. amperage</td><td>2 A</td></tr> <tr> <td>Protection</td><td>IP 20</td></tr> <tr> <td>Dimensions W x H x D</td><td>65 x 65 x 42 mm</td></tr> </table>	Housing	Jung system, flush-mounted, white	Voltage	230 V/50 Hz	Temperature range	5 - 30 °C	Max. amperage	2 A	Protection	IP 20	Dimensions W x H x D	65 x 65 x 42 mm				
Housing	Jung system, flush-mounted, white																
Voltage	230 V/50 Hz																
Temperature range	5 - 30 °C																
Max. amperage	2 A																
Protection	IP 20																
Dimensions W x H x D	65 x 65 x 42 mm																
illustrated on p 10	Double frame, type 146929 Jung system, white; to fit speed controller type 146936 and room thermostat type 146937 within the same frame																
	Room thermostat with speed controller, type 146934 attractive, slim-line, surface-mounted housing with thermal setback and temperature range limiter; heating/cooling switch <table border="1"> <tr> <td>Housing</td><td>surface-mounted, white</td></tr> <tr> <td>Voltage</td><td>230 V/50 Hz</td></tr> <tr> <td>Temperature range</td><td>5 - 30 °C</td></tr> <tr> <td>Max. amperage</td><td>2 A</td></tr> <tr> <td>Protection</td><td>IP 30</td></tr> <tr> <td>Dimension W x H x D</td><td>70 x 70 x 35 mm</td></tr> </table>	Housing	surface-mounted, white	Voltage	230 V/50 Hz	Temperature range	5 - 30 °C	Max. amperage	2 A	Protection	IP 30	Dimension W x H x D	70 x 70 x 35 mm				
Housing	surface-mounted, white																
Voltage	230 V/50 Hz																
Temperature range	5 - 30 °C																
Max. amperage	2 A																
Protection	IP 30																
Dimension W x H x D	70 x 70 x 35 mm																
	Clock thermostat, type 146910 a clock and room thermostat in one; precise digital clock for week or day programming of room temperature and setback temperature; party function (setback interval override) <table border="1"> <tr> <td>Voltage</td><td>230 V/50 Hz</td></tr> <tr> <td>Temperature range</td><td>10 - 30 °C</td></tr> <tr> <td>Max. amperage</td><td>4 A</td></tr> <tr> <td>Protection</td><td>IP 20</td></tr> <tr> <td>Dimensions W x H x D</td><td>140 x 70 x 30 mm</td></tr> </table>	Voltage	230 V/50 Hz	Temperature range	10 - 30 °C	Max. amperage	4 A	Protection	IP 20	Dimensions W x H x D	140 x 70 x 30 mm						
Voltage	230 V/50 Hz																
Temperature range	10 - 30 °C																
Max. amperage	4 A																
Protection	IP 20																
Dimensions W x H x D	140 x 70 x 30 mm																
	Clock thermostat, type 146932 digital clock and room thermostat in one; with electronic 2-point control; display showing set and actual temperatures; easy-to-use 4-button control; day or week programming; party function and frost protection <table border="1"> <tr> <td>Housing</td><td>flush-mounted, white</td></tr> <tr> <td>Voltage</td><td>230 V/50 Hz</td></tr> <tr> <td>Temperature range</td><td>5 - 30 °C</td></tr> <tr> <td>Protection</td><td>IP 20</td></tr> <tr> <td>Power reserve</td><td>approx. 1 hour</td></tr> <tr> <td>Contact</td><td>change-over contact, single-ended</td></tr> <tr> <td>Max. amperage</td><td>2 A</td></tr> <tr> <td>Dimensions W x H x D</td><td>84 x 84 x 18 mm (height)</td></tr> </table>	Housing	flush-mounted, white	Voltage	230 V/50 Hz	Temperature range	5 - 30 °C	Protection	IP 20	Power reserve	approx. 1 hour	Contact	change-over contact, single-ended	Max. amperage	2 A	Dimensions W x H x D	84 x 84 x 18 mm (height)
Housing	flush-mounted, white																
Voltage	230 V/50 Hz																
Temperature range	5 - 30 °C																
Protection	IP 20																
Power reserve	approx. 1 hour																
Contact	change-over contact, single-ended																
Max. amperage	2 A																
Dimensions W x H x D	84 x 84 x 18 mm (height)																

Controls

Sound levels · Conversion of heat and cooling outputs

Sound level

At the design stage it should be noted that some noise may occur at higher fan speeds. The sound pressure level and sound power level are given in the tables on pages 17 to 36. As the noise level is influenced not only by the Katherm but also to a great extent by the acoustic characteristics of a space, these figures may deviate somewhat in practice.

The sound pressure level is calculated at a distance of 2 m on the basis of the hemispherical mode (acoustic source at floor level).

If the calculations are based on a half-hemispherical model, there is generally an increase in sound pressure level of approx. 3 db(A).

We recommend that Katherm HK is designed to operate at medium fan speed, taking into account the relevant sound level.

Conversion to other water temperatures

If the water temperatures are not shown in the tables on pages 17 to 36, they can be calculated using the diagrams and tables on this page.

Heat outputs:

Conversion factor f_w diagrams

Cooling outputs:

Cooling output correction factors f_k and f_s table

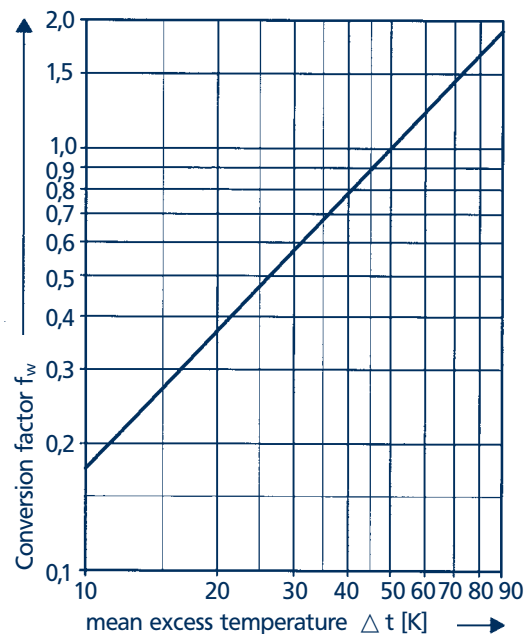
See also the formulae and abbreviations on pages 12 and 13.

Heat and cooling outputs for non-standard lengths can be provided on request;

For heating and cooling calculations see also pages 12 and 13.

Cooling output correction factors f_k , f_s								
Basis: LPCW 16/18 °C, t_{L1} = 27 °C, 50 % rel. humidity								
Water temp.	Entering air temperature							
	t_{L1} rel. humidity	30 °C 50 %	28 °C 50 %	27 °C 50 %	26 °C 55 %	24 °C 55 %	22 °C 55 %	20 °C 55 %
LPCW 4/8 °C	total f_k	3,92	3,39	3,13	3,16	2,66	2,17	1,73
	sensible f_s	2,30	2,11	2,02	1,93	1,75	1,56	1,38
LPCW 4/10 °C	total f_k	3,67	3,13	2,87	2,91	2,39	1,89	1,43
	sensible f_s	2,21	2,02	1,93	1,84	1,65	1,47	1,28
LPCW 6/10 °C	total f_k	3,51	2,95	2,70	2,74	2,24	1,75	1,29
	sensible f_s	2,11	1,93	1,84	1,75	1,56	1,38	1,19
LPCW 6/12 °C	total f_k	3,22	2,68	2,41	2,44	1,93	1,43	1,09
	sensible f_s	2,02	1,84	1,75	1,65	1,47	1,28	1,09
LPCW 7/12 °C	total f_k	3,13	2,58	2,33	2,37	1,86	1,35	1,05
	sensible f_s	1,98	1,79	1,70	1,61	1,42	1,24	1,05
LPCW 8/12 °C	total f_k	3,05	2,51	2,25	2,28	1,77	1,28	1,00
	sensible f_s	1,93	1,75	1,65	1,56	1,38	1,19	1,00
LPCW 8/14 °C	total f_k	2,74	2,18	1,91	1,96	1,42	1,09	0,90
	sensible f_s	1,84	1,65	1,56	1,47	1,28	1,09	0,90
LPCW 10/14 °C	total f_k	2,56	2,02	1,77	1,80	1,27	1,00	0,81
	sensible f_s	1,75	1,56	1,47	1,38	1,19	1,00	0,81
LPCW 10/16 °C	total f_k	2,22	1,64	1,38	1,39	1,09	0,90	0,71
	sensible f_s	1,65	1,47	1,38	1,28	1,09	0,90	0,71
LPCW 12/16 °C	total f_k	2,05	1,50	1,28	1,25	1,00	0,81	0,62
	sensible f_s	1,56	1,38	1,28	1,19	1,00	0,81	0,62
LPCW 12/18 °C	total f_k	1,63	1,28	1,19	1,09	0,90	0,71	0,52
	sensible f_s	1,47	1,28	1,19	1,09	0,90	0,71	0,52
LPCW 14/18 °C	total f_k	1,48	1,19	1,09	1,00	0,81	0,62	0,42
	sensible f_s	1,38	1,19	1,09	1,00	0,81	0,62	0,42
LPCW 16/18 °C	total f_k	1,32	1,09	1,00	0,90	0,71	0,52	0,32
	sensible f_s	1,28	1,09	1,00	0,90	0,71	0,52	0,32

Conversion factor - heat outputs f_w



1.43 Katherm HK - Heating or cooling with cross-flow fans

Design

Heat output calculation

Formulae - heating

$$\Delta t_H = \frac{t_{w1} + t_{w2}}{2} - t_L \quad (1)$$

$$Q_H = f_w \cdot Q_{Hn} \quad (2)$$

$$\Delta t_{w,H} = t_{w1} - t_{w2} \quad (3)$$

$$t_{L2} = t_L + \frac{Q_H}{V \cdot c} \quad (4)$$

$$m_H = \frac{Q_H}{\Delta t_{w,H}} \cdot 0.86 \quad (5)$$

Abbreviations

t_{w1}	[°C]	= flow temperature
t_{w2}	[°C]	= return temperature
$\Delta t_{w,H}$	[K]	= water temperature difference
Δt_H	[K]	= mean excess temperature
t_L	[°C]	= room temperature
t_{L2}	[°C]	= outlet air temperature
Q_H	[W]	= heat output
Q_{Hn}	[W]	= nominal heat output at LPHW 75/65 °C, $t_L = 20$ °C
f_w	[-]	= heat output conversion factor
m	[l/h]	= flow rate
R_H	[kPa]	= water pressure - heating
V	[m³/h]	= air volume
c	[Wh/m³ K]	= multiplier to calculate outlet air temperature

t_L	c
+ 30 °C	0.33 Wh/m³K
+ 20 °C	0.34 Wh/m³K
+ 10 °C	0.35 Wh/m³K

Heat output calculation

Given:

Katherm HK 340, 2-pipe, duct height 132 mm, duct length 1250 mm

flow temperature t_{w1} = 65 °C
 return temperature t_{w2} = 55 °C
 room temperature t_L = 22 °C
 required fan speed stage = 3

Required:

heat output Q_H in W
 outlet air temperature t_{L2} in °C
 water pressure R_H in kPa

Calculation

$$\Delta t_H = \frac{t_{w1} + t_{w2}}{2} - t_L \quad (1) = \frac{65 + 55}{2} - 22 = 38 \text{ K}$$

from heat output conversion factor diagram f_w on page 11:
 when $\Delta t = 38$ K: $f_w = 0.75$

from the heat outputs at fan speed stage 3 table on page 18:
 $Q_{Hn} = 2326$ W at LPHW 75/65 °C, $t_L = 20$ °C

$$Q_H = f_w \cdot Q_{Hn} \quad (2) = 0.75 \cdot 2326 \text{ W} = 1745 \text{ W}$$

from the heat outputs at fan speed stage 3 table on page 18:
 air volume = 160 m³/h

multiplier to calculate outlet air c at $t_L = 22$ °C = 0.338 Wh/m³ K

$$\Delta t_{w,H} = t_{w1} - t_{w2} \quad (3) = 65 - 55 = 10 \text{ K}$$

$$t_{L2} = t_L + \frac{Q_H}{V \cdot c} \quad (4) = 22 + \frac{1745}{160 \cdot 0.338} = 54.3 \text{ °C}$$

$$m_H = \frac{Q_H}{\Delta t_{w,H}} \cdot 0.86 \quad (5) = \frac{1745}{10} \cdot 0.86 = 150 \text{ l/h}$$

from water pressure diagram on page 17:
 graph 1 at $m_H = 150$ l/h = 0.78 kPa

Result

heat output $Q_H = 1745$ W
 outlet air temperature $t_{L2} = 54.3$ °C
 water pressure $R_H = 0.78$ kPa

Formulae • Abbreviations • Cooling output calculation

Formulae - cooling

$\Delta t_{w,K}$	=	$t_{w2} - t_{w1}$	(6)
Q_K	=	$f_K \cdot Q_{Kn}$	(7)
Q_S	=	$f_S \cdot Q_{Sn}$	(8)
t_{L2}	=	$t_L - \frac{Q_S}{V \cdot c}$	(9)
m_K	=	$\frac{Q_K}{\Delta t_{w,K}} \cdot 0.86$	(10)

Abbreviations

t_{w1}	[°C]	= flow temperature
t_{w2}	[°C]	= return temperature
$\Delta t_{w,K}$	[K]	= water temperature difference
t_L	[°C]	= room temperature
t_{L2}	[°C]	= outlet air temperature
Q_K	[W]	= total cooling output
Q_{Kn}	[W]	= total standard cooling output at LPCW 16/18 °C, room temperature 27 °C, rel. humidity 50 %
Q_S	[W]	= sensible cooling output
Q_{Sn}	[W]	= sensible standard cooling output at LPCW 16/18 °C; room temperature 27 °C, rel. humidity 50 %
f_K	[-]	= total cooling output correction factor
f_S	[-]	= sensible cooling output correction factor
$f_{D,K}$	[-]	= fan speed conversion factor - cooling (total)
$f_{D,S}$	[-]	= fan speed conversion factor - cooling (sensible)
m_K	[l/h]	= flow rate - cooling
R_K	[kPa]	= water pressure - cooling
V	[m³/h]	= air volume
c	[Wh/m³ • K]	= multiplier to calculate outlet air temperature

t_L	c
+ 30 °C	0.33 Wh/m³K
+ 20 °C	0.34 Wh/m³K
+ 10 °C	0.35 Wh/m³K

Cooling output calculation

Given:

Katherm HK 340, 2-pipe, duct height 132 mm,
duct length 2000 mm
designed at fan speed stage 3

flow temperature t_{w1} = 8 °C
return temperature t_{w2} = 12 °C
room temperature t_L = 26 °C
relative humidity = 55 %

Required:

total cooling output Q_K in W
sensible cooling output Q_S in W
outlet air temperature t_{L2} in °C
water pressure R_K in kPa

Calculation

Establish the nominal cooling outputs from the cooling output table on page 19 at fan speed stage 3 and LPCW 16/18 °C, $t_L = 27$ °C, rel. humidity = 50 %:

$Q_{Kn} = 843$ W; $Q_{Sn} = 843$ W

from the cooling output conversion factor f_K, f_S table on page 11: at LPCW 8/12 °C, $t_L = 26$ °C, rel. humidity = 55 %
 $f_K = 2.28$; $f_S = 1.56$

$$Q_K = f_K \cdot Q_{Kn} \quad (7) = 2.28 \cdot 843 \text{ W} = \underline{1922 \text{ W}}$$

$$Q_S = f_S \cdot Q_{Sn} \quad (8) = 1.56 \cdot 843 \text{ W} = \underline{1315 \text{ W}}$$

air volume V from the cooling output table on page 19 at fan speed stage 3; $V = 380$ m³/h

multiplier to calculate outlet air temperature c at $t_L = 26$ °C = 0.334 Wh/m³ • K

$$t_{L2} = t_L - \frac{Q_S}{V \cdot c} \quad (9) = 26 - \frac{1315}{380 \cdot 0.334} = \underline{13.7 \text{ °C}}$$

$$\Delta t_{w,K} = t_{w2} - t_{w1} \quad (6) = 12 - 8 = \underline{4 \text{ K}}$$

$$m_K = \frac{Q_K}{\Delta t_{w,K}} \cdot 0.86 \quad (10) = \frac{1922}{4} \cdot 0.86 = \underline{413 \text{ l/h}}$$

from water pressure diagram on page 17:
graph 2 at $m_K = 413$ l/h = 6.5 kPa

Result

total cooling output $Q_K = 1922$ W
sensible cooling output $Q_S = 1315$ W
outlet air temperature $t_{L2} = 13.7$ °C
water pressure $R_K = 6.5$ kPa

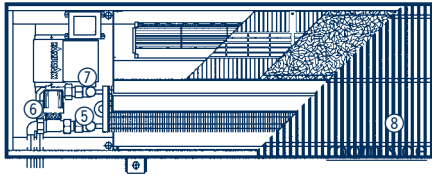
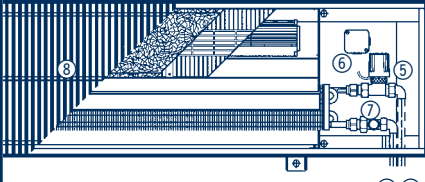
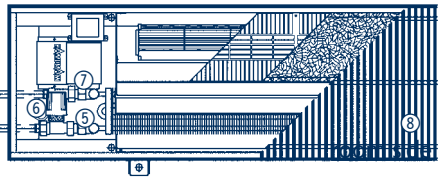
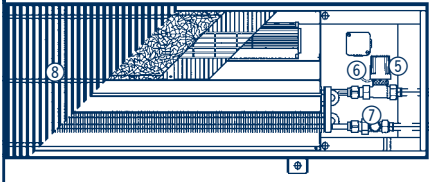
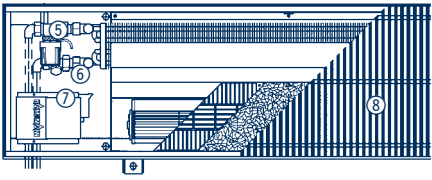
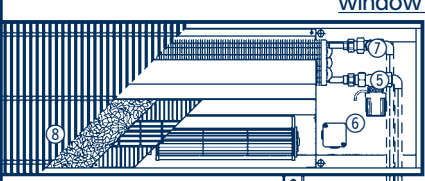
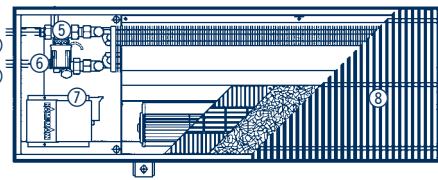
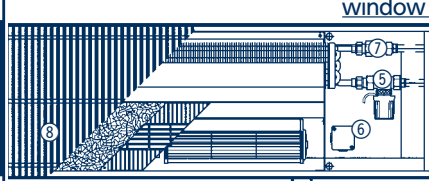
1.43 Katherm HK - Heating or cooling with cross-flow fans

Technical data

Water connections · Pipe entry

Katherm HK 340		
Model	Room-side connection	End connection
Katherm HK 340, 2-pipe, duct height 132 mm ① Flow connection - heating/cooling ② Return connection - heating/cooling ③ 1/2" valve body, straight, type 146909 ④ Thermoelectric actuator, type 146905 ⑤ Return shut-off valve, straight, type 145952 ⑥ Roll-up grille ⑦ Pipe entry, stamped	window side connection: 1/2", same end, left room side	window side connection: 1/2", same end, left room side
Katherm HK 340, 2-pipe, duct height 150 mm ① Flow connection - heating/cooling ② Return connection - heating/cooling ③ 1/2" valve body, straight, type 146909 ④ Thermoelectric actuator, type 146905 ⑤ 1/2" Return shut-off valve, angled, type 145953 ⑥ 1/2" Return shut-off valve, straight, type 145952 ⑦ Roll-up grille ⑧ Pipe entry, stamped	window side connection: 1/2", same end, left room side window side connection: 1/2", same end, left room side	window side connection: 1/2", same end, left room side

Water connections · Pipe entry

Katherm HK 340		Room-side connection	End connection
Model Katherm HK 340, 4-pipe, duct height 132 mm		window side  ① ② cooling mode – connection: 1/2", same end, left room side  ④ ③ heating mode – connection: 1/2", same end, right	window side  cooling mode – connection: 1/2", same end, left room side  heating mode – connection: 1/2", same end, right
Model Katherm HK 340, 4-pipe, duct height 150 mm		window side  ① ② cooling mode – connection: 1/2", same end, left room side  ④ ③ heating mode – connection: 1/2", same end, right	window side  cooling mode – connection: 1/2", same end, left room side  heating mode – connection: 1/2", same end, right

1.43 Katherm HK - Heating or cooling with cross-flow fans

Technical data

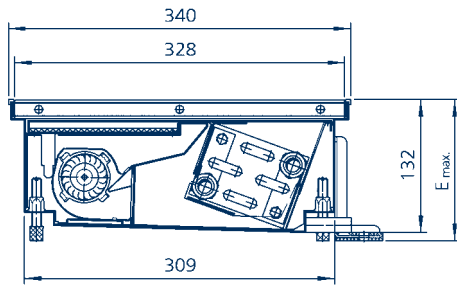
Water connections · Pipe entry

Katherm HK 400		
Model	Room-side connection	End connection
Katherm HK 400, 4-pipe, duct height 132 mm ① Flow connection - cooling ② Return connection - cooling ③ Flow connection - heating ④ Return connection - heating ⑤ 1/2" valve body, straight, type 146909 ⑥ Thermoelectric actuator, type 146905 ⑦ 1/2" Return shut-off valve, straight, type 146952 ⑧ Roll-up grille ⑨ Pipe entry, stamped	window side room side cooling mode – connection: 1/2", same end, left window side room side heating mode – connection: 1/2", same end, right	window side room side cooling mode – connection: 1/2", same end, left window side room side heating mode – connection: 1/2", same end, right

Connection of condensate pump assembly kit

Floor duct height 132 mm		Floor duct height 150 mm	
window side Connection right hand (seen from room side) room side Ex. Katherm HK 340, 4-pipe system Cross-section showing higher duct around condensate pump		window side Connection right hand (seen from room side) room side Ex. Katherm HK 340, 4-pipe system Cross-section showing higher duct around condensate pump	

Katherm HK 340, 2-pipe, duct height 132 mm



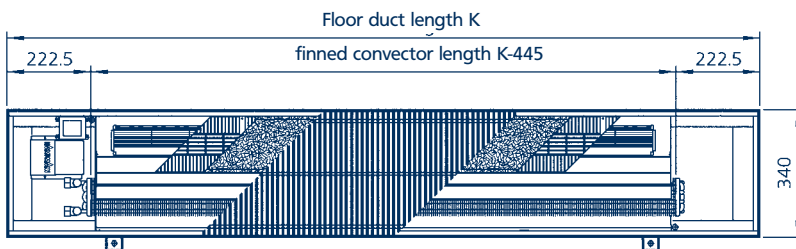
Cross-section through Katherm HK 340, 2-pipe, 132mm deep, shown with roll-up grille

Katherm HK (2-pipe) units are available in standard (NP) lengths of 1250 mm, 2000 mm and 2750 mm. Katherm HK 340 (2-pipe), 132 mm deep units, can also be supplied in non-standard (MP) lengths if required.

Technical data/Dimensions

Katherm HK 340, 2-pipe, H=132 mm

Overall frame width	[mm]	340
Floor duct width	[mm]	309
Grille width	[mm]	328
Max adjustment height	E_{max} [mm]	132-157
Floor duct height	[mm]	132
Convactor height	[mm]	75
Convactor depth	[mm]	100
Connection, female		1/2", same end, seen from room-side
Condensation connection		15 mm spigot
Floor duct length	K [mm]	1250 2000 2750
Finned convactor length	[mm]	805 1555 2305
Number of impellers		2 4 6
Number of fan motors		1 2 3
Max. power uptake of cross-flow fan	[w]	20 40 60
Max. amperage	[A]	0,11 0,22 0,33



Plan view of Katherm HK 340, 2-pipe, duct height 132 mm

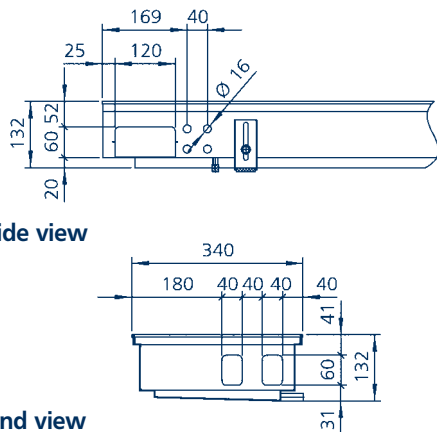
Important:

The flow and return connections are located on the left hand side, and the condensation connection on the right hand side, seen from the room side looking outwards.

Grille:

only roll-up grille is possible

↑
window side
room side
↓



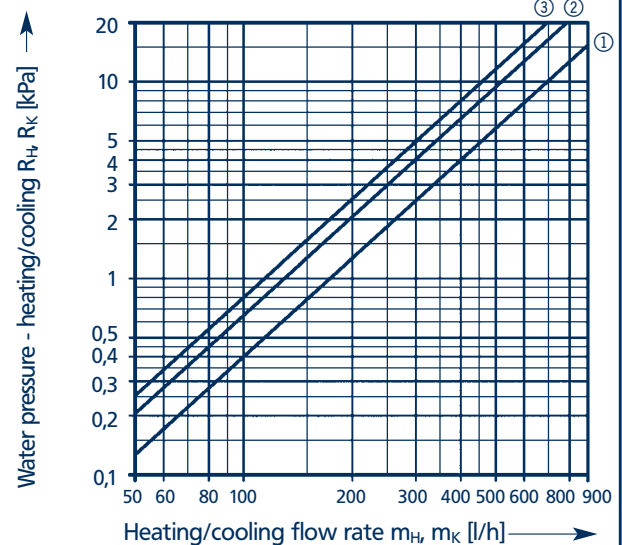
left hand side view

left hand end view

Water pressure rate graph

Duct length	mm	1250	2000	2750
Heating graph		1	2	3
Cooling graph		1	2	3

Katherm HK water pressure rate - heating and cooling



1.43 Katherm HK 340 - Heating or cooling with cross-flow fans

Technical data

Katherm HK 340, 2-pipe, duct height 132 mm

Heat outputs - Katherm HK 340, 2-pipe, duct height 132 mm, floor duct length 1250 mm												
Fan speed			max. fan speed		medium fan speed						min. fan speed	
Fan speed stage			5		4		3		2		1	
Air volume m³/h			255		200		160		130		105	
Sound pressure level ¹⁾ dB(A)			41		31		25		22		20	
Sound power level ²⁾ dB(A)			55		45		39		36		34	
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Heat outputs at room temperature t_L [W]									
			Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]
NP 1250	LPHW 90/70 °C	20	3663	62,3	3008	64,2	2771	70,9	2447	75,4	2122	79,4
		15	3751	57,6	3080	59,6	2837	66,4	2506	70,9	2173	75,0
	LPHW 82/71 °C	18	3575	59,0	2936	60,9	2704	67,4	2388	71,7	2071	75,7
		20	3458	59,9	2839	61,8	2616	68,1	2310	72,3	2003	76,1
		22	3340	60,8	2743	62,6	2527	68,7	2231	72,8	1935	76,5
			15	3370	53,3	2767	55,1	2549	61,2	2251	65,2	1952
	LPHW 75/65 °C	18	3193	54,6	2622	56,3	2415	62,1	2133	66,0	1849	69,5
		20	3075	55,5	2525	57,1	2326	62,8	2054	66,5	1781	69,9
		22	2957	56,3	2428	57,9	2237	63,4	1975	66,9	1713	70,3
			15	2927	48,3	2404	49,8	2214	55,1	1955	58,6	1695
	LPHW 70/55 °C	18	2750	49,5	2258	51,0	2080	56,0	1837	59,3	1592	62,3
		20	2631	50,3	2160	51,8	1990	56,6	1757	59,8	1524	62,7
		22	2512	51,1	2063	52,5	1900	57,1	1678	60,2	1455	63,0
			15	2183	39,8	1793	41,0	1652	44,9	1458	47,5	1265
	LPHW 55/45 °C	18	2003	41,0	1645	42,1	1515	45,7	1338	48,1	1160	50,3
		20	1883	41,7	1546	42,7	1424	46,2	1258	48,5	1091	50,6
		22	1762	42,4	1447	43,4	1333	46,7	1177	48,8	1021	50,8

Cooling outputs - Katherm HK 340, 2-pipe, duct height 132 mm, floor duct length 1250 mm																					
Fan speed				max. fan speed			medium fan speed										min. fan speed				
Fan speed stage				5			4			3			2			1					
Air volume				m³/h			255			200			160			130			105		
Sound pressure level ¹⁾				dB(A)			41			31			25			22			20		
Sound power level ²⁾				dB(A)			55			45			39			36			34		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Rel. humid. [%]	 Cooling outputs at room temperature t _L [W]																	
				Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]			
NP 1250	LPCW 6/12 °C	30	45	1456	1084	17,1	1271	936	15,8	1204	882	13,3	972	732	12,9	824	583	13,2			
		28	50	1366	986	16,4	1185	852	15,2	1095	802	12,9	956	666	12,6	793	530	12,8			
		26	50	970	887	15,6	946	766	14,5	893	722	12,5	761	599	12,2	628	477	12,4			
		24	50	812	788	14,8	710	680	13,9	666	641	12,1	566	532	11,8	467	423	12,0			
	LPCW 8/14 °C	30	45	1184	986	18,3	1031	852	17,1	959	802	14,8	829	666	14,5	680	530	14,7			
		28	50	1039	887	17,5	958	766	16,5	891	722	14,4	762	599	14,1	620	477	14,3			
		26	50	788	788	16,8	706	680	15,8	675	641	14,0	577	532	13,7	474	423	13,9			
		24	50	688	688	16,0	594	594	15,2	559	559	13,6	464	464	13,4	369	369	13,5			
	LPCW 10/15 °C	30	45	998	912	19,2	884	788	18,1	838	742	16,0	713	616	15,6	595	490	15,9			
		28	50	907	813	18,4	801	702	17,4	765	661	15,6	634	549	15,3	531	437	15,5			
		26	50	713	713	17,6	616	616	16,8	580	580	15,2	481	481	14,9	383	383	15,1			
		24	50	612	612	16,9	529	529	16,1	498	498	14,7	413	413	14,5	329	329	14,7			
	LPCW 12/16 °C	30	45	855	837	20,0	740	723	19,0	702	681	17,1	612	566	16,8	494	450	17,0			
		28	50	738	738	19,3	653	637	18,4	626	600	16,7	528	498	16,5	441	396	16,6			
		26	50	637	637	18,5	550	550	17,8	518	518	16,3	430	430	16,1	342	342	16,2			
		24	50	536	536	17,7	463	463	17,1	436	436	15,9	362	362	15,7	288	288	15,8			
	LPCW 16/18 °C	30	45	688	688	21,8	594	594	21,0	559	559	19,4	464	464	19,2	369	369	19,3			
		28	50	587	587	21,1	507	507	20,4	477	477	19,0	396	396	18,8	315	315	19,0			
		27	50	536	536	20,7	463	463	20,0	436	436	18,8	362	362	18,6	288	288	18,8			
		26	50	485	485	20,3	419	419	19,7	394	394	18,6	328	328	18,5	261	261	18,6			
24		50	382	382	19,5	330	330	19,1	311	311	18,2	258	258	18,1	205	205	18,2				

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

Katherm HK 340, 2-pipe, duct height 132 mm

Heat outputs - Katherm HK 340, 2-pipe, duct height 132 mm, floor duct length 2000 mm

Fan speed			max. fan speed		medium fan speed						min. fan speed	
Fan speed stage			5		4		3		2		1	
Air volume m³/h			510		400		320		260		210	
Sound pressure level ¹⁾ dB(A)			43		34		27		24		22	
Sound power level ²⁾ dB(A)			57		48		41		38		36	
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Heat outputs at room temperature t_L [W]									
			Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]
NP 2000	LPHW 90/70 °C	20	7076	60,8	5811	62,7	5351	69,2	4726	73,5	4099	77,4
		15	7246	56,2	5950	58,1	5480	64,6	4839	68,9	4198	72,9
	LPHW 82/71 °C	18	6906	57,6	5672	59,5	5223	65,7	4612	69,9	4001	73,7
		20	6679	58,5	5485	60,3	5051	66,4	4461	70,5	3869	74,2
		22	6452	59,4	5299	61,2	4879	67,1	4309	71,0	3738	74,7
		LPHW 75/65 °C	15	6509	52,0	5345	53,7	4922	59,6	4347	63,5	3771
	18		6168	53,4	5065	55,0	4664	60,6	4119	64,3	3573	67,7
	20		5940	54,3	4878	55,9	4492	61,3	3967	64,9	3441	68,2
	22		5712	55,1	4691	56,7	4319	61,9	3815	65,4	3309	68,6
	LPHW 70/55 °C	15	5655	47,1	4644	48,6	4276	53,7	3776	57,1	3276	60,2
		18	5311	48,5	4362	49,9	4017	54,7	3547	57,9	3077	60,8
		20	5082	49,3	4173	50,7	3843	55,3	3394	58,4	2944	61,2
		22	4852	50,1	3985	51,5	3669	55,9	3240	58,9	2811	61,6
	LPHW 55/45 °C	15	4218	39,0	3464	40,1	3190	43,9	2817	46,4	2443	48,7
		18	3870	40,2	3178	41,2	2927	44,7	2585	47,1	2242	49,2
		20	3638	41,0	2987	42,0	2751	45,3	2429	47,5	2107	49,5
		22	3404	41,7	2796	42,7	2575	45,8	2274	47,9	1972	49,8

Cooling outputs - Katherm HK 340, 2-pipe, duct height 132 mm, floor duct length 2000 mm

Fan speed				max. fan speed			medium fan speed									min. fan speed		
Fan speed stage				5			4			3			2			1		
Air volume m³/h				510			400			320			260			210		
Sound pressure level ¹⁾ dB(A)				43			34			27			24			22		
Sound power level ²⁾ dB(A)				57			48			41			38			36		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Rel. humid. [%]	 Cooling outputs at room temperature t_L [W]														
				Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]
NP 2000	LPCW 6/12 °C	30	45	2962	2095	17,5	2557	1808	16,3	2421	1705	13,9	2044	1414	13,5	1648	1125	13,8
		28	50	2759	1905	16,7	2402	1644	15,6	2262	1551	13,4	1912	1286	13,1	1535	1023	13,3
		26	50	2223	1715	15,9	1944	1480	14,9	1830	1395	12,9	1543	1157	12,7	1256	920	12,9
		24	50	1726	1522	15,1	1507	1314	14,2	1421	1239	12,5	1215	1027	12,2	971	817	12,4
	LPCW 8/14 °C	30	45	2457	1905	18,7	2133	1644	17,5	2020	1551	15,3	1709	1286	15,0	1392	1023	15,2
		28	50	2249	1715	17,9	1962	1480	16,9	1859	1395	14,9	1587	1157	14,6	1282	920	14,8
		26	50	1710	1522	17,1	1486	1314	16,2	1419	1239	14,4	1206	1027	14,2	982	817	14,4
		24	50	1329	1329	16,2	1147	1147	15,5	1081	1081	13,9	897	897	13,7	713	713	13,9
	LPCW 10/15 °C	30	45	2111	1762	19,5	1826	1521	18,5	1750	1434	16,4	1473	1189	16,1	1198	946	16,4
		28	50	1901	1571	18,7	1662	1355	17,8	1569	1278	16,0	1328	1060	15,7	1093	843	15,9
		26	50	1378	1378	17,9	1189	1189	17,1	1136	1121	15,5	958	929	15,3	783	739	15,5
		24	50	1183	1183	17,1	1021	1021	16,4	963	963	15,0	798	798	14,9	635	635	15,0
	LPCW 12/16 °C	30	45	1755	1619	20,4	1527	1397	19,4	1449	1317	17,5	1226	1092	17,3	1015	869	17,5
		28	50	1554	1426	19,6	1362	1230	18,7	1289	1160	17,1	1092	962	16,9	883	765	17,0
		26	50	1232	1232	18,8	1063	1063	18,0	1002	1002	16,6	831	831	16,4	661	661	16,6
		24	50	1036	1036	18,0	894	894	17,3	843	843	16,2	699	699	16,0	556	556	16,1
	LPCW 16/18 °C	30	45	1329	1329	22,1	1147	1147	21,3	1081	1081	19,8	897	897	19,5	713	713	19,7
		28	50	1134	1134	21,3	979	979	20,6	923	923	19,3	765	765	19,1	609	609	19,3
		27	50	1036	1036	20,9	894	894	20,3	843	843	19,1	699	699	18,9	556	556	19,0
		26	50	937	937	20,5	809	809	19,9	763	763	18,9	632	632	18,7	503	503	18,8
	24	50	738	738	19,7	637	637	19,3	601	601	18,4	498	498	18,3	396	396	18,4	

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

1.43 Katherm HK 340 - Heating or cooling with cross-flow fans

Technical data

Katherm HK 340, 2-pipe, duct height 132 mm

Heat outputs - Katherm HK 340, 2-pipe, duct height 132 mm, floor duct length 2750 mm												
Fan speed			max. fan speed		medium fan speed						min. fan speed	
Fan speed stage			5		4		3		2		1	
Air volume m³/h			765		600		480		390		315	
Sound pressure level ¹⁾ dB(A)			44		35		29		25		22	
Sound power level ²⁾ dB(A)			58		49		43		39		36	
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Heat outputs at room temperature t_L [W]									
			Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]
NP 2750	LPHW 90/70 °C	20	10489	60,3	8614	62,2	7933	68,6	7005	72,8	6077	76,7
		15	10741	55,7	8821	57,6	8123	64,1	7173	68,3	6222	72,3
	LPHW 82/71 °C	18	10237	57,1	8407	59,0	7742	65,2	6837	69,3	5931	73,1
		20	9901	58,1	8131	59,9	7488	65,9	6612	69,9	5736	73,6
		22	9564	59,0	7855	60,7	7233	66,6	6387	70,5	5541	74,0
		LPHW 75/65 °C	15	9649	51,6	7924	53,3	7297	59,1	6443	62,9	5590
	18		9143	52,9	7508	54,6	6915	60,1	6106	63,8	5297	67,2
	20		8805	53,9	7231	55,4	6659	60,8	5880	64,3	5101	67,6
	22		8467	54,7	6953	56,3	6403	61,5	5654	64,9	4905	68,1
	LPHW 70/55 °C	15	8382	46,8	6884	48,3	6339	53,3	5597	56,6	4856	59,7
		18	7873	48,1	6466	49,5	5954	54,3	5258	57,4	4561	60,3
		20	7533	49,0	6186	50,3	5697	54,9	5031	57,9	4364	60,7
		22	7192	49,8	5907	51,1	5439	55,5	4803	58,4	4167	61,1
	LPHW 55/45 °C	15	6252	38,7	5134	39,8	4728	43,6	4175	46,0	3622	48,3
		18	5737	39,9	4711	41,0	4339	44,4	3831	46,7	3323	48,8
		20	5392	40,7	4428	41,7	4078	45,0	3601	47,2	3124	49,2
		22	5046	41,5	4144	42,4	3817	45,5	3370	47,6	2924	49,5

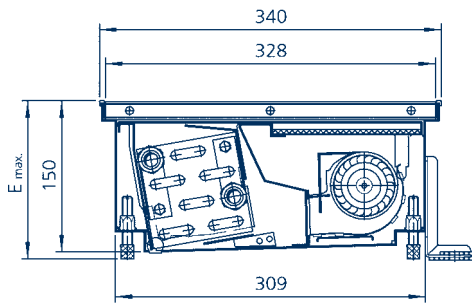
Cooling outputs - Katherm HK 340, 2-pipe, duct height 132 mm, floor duct length 2750 mm																					
Fan speed				max. fan speed			medium fan speed									min. fan speed					
Fan speed stage				5			4			3			2			1					
Air volume				m³/h			765			600			480			390			315		
Sound pressure level ¹⁾				dB(A)			44			35			29			25			22		
Sound power level ²⁾				dB(A)			58			49			43			39			36		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Rel. humid. [%]	 Cooling outputs at room temperature t _L [W]																	
				Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]			
NP 2750	LPCW 6/12 °C	30	45	4452	3107	17,7	3861	2680	16,5	3675	2528	14,0	3069	2095	13,7	2520	1667	14,0			
		28	50	4145	2825	16,9	3601	2437	15,8	3435	2299	13,6	2879	1905	13,3	2315	1516	13,5			
		26	50	3381	2542	16,1	2943	2193	15,1	2782	2069	13,1	2341	1715	12,8	1885	1364	13,0			
		24	50	2627	2257	15,2	2284	1947	14,3	2168	1837	12,6	1831	1522	12,4	1492	1211	12,6			
	LPCW 8/14 °C	30	45	3729	2825	18,8	3238	2437	17,7	3066	2299	15,5	2592	1905	15,2	2089	1516	15,4			
		28	50	3433	2542	18,0	3001	2193	17,0	2833	2069	15,0	2378	1715	14,8	1935	1364	15,0			
		26	50	2634	2257	17,2	2289	1947	16,3	2164	1837	14,5	1828	1522	14,3	1490	1211	14,5			
		24	50	1970	1970	16,3	1700	1700	15,6	1604	1604	14,1	1329	1329	13,9	1057	1057	14,0			
	LPCW 10/15 °C	30	45	3209	2613	19,6	2795	2254	18,6	2645	2126	16,6	2241	1762	16,3	1805	1402	16,5			
		28	50	2904	2329	18,8	2537	2009	17,9	2405	1895	16,1	2023	1571	15,9	1652	1249	16,1			
		26	50	2109	2042	18,0	1836	1762	17,2	1746	1662	15,6	1483	1378	15,4	1210	1096	15,6			
		24	50	1754	1754	17,2	1513	1513	16,5	1427	1427	15,1	1183	1183	15,0	941	941	15,1			
	LPCW 12/16 °C	30	45	2682	2400	20,5	2334	2070	19,5	2211	1953	17,7	1866	1619	17,4	1517	1287	17,6			
		28	50	2381	2114	19,7	2078	1824	18,8	1966	1720	17,2	1670	1426	17,0	1341	1134	17,2			
		26	50	1826	1826	18,9	1575	1575	18,1	1486	1486	16,7	1232	1232	16,5	980	980	16,7			
		24	50	1536	1536	18,0	1325	1325	17,4	1250	1250	16,2	1036	1036	16,1	824	824	16,2			
	LPCW 16/18 °C	30	45	1970	1970	22,2	1700	1700	21,4	1604	1604	19,9	1329	1329	19,7	1057	1057	19,8			
		28	50	1681	1681	21,4	1450	1450	20,7	1368	1368	19,4	1134	1134	19,2	902	902	19,4			
		27	50	1536	1536	21,0	1325	1325	20,4	1250	1250	19,2	1036	1036	19,0	824	824	19,1			
		26	50	1390	1390	20,6	1199	1199	20,0	1131	1131	18,9	937	937	18,8	746	746	18,9			
24		50	1095	1095	19,7	944	944	19,3	891	891	18,5	738	738	18,4	587	587	18,5				

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

Katherm HK 340, 2-pipe, duct height 150 mm



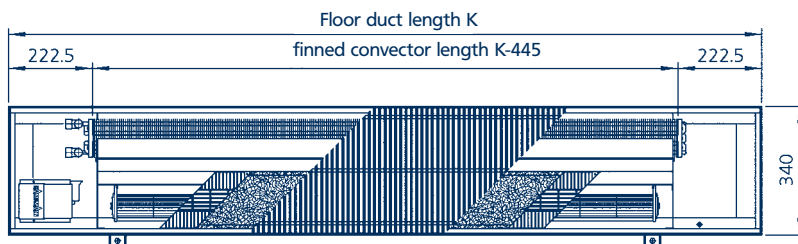
Cross-section through Katherm HK 340, 2-pipe, 150 mm deep unit, shown with roll-up grille

Katherm HK (2-pipe) units are available in standard (NP) lengths of 1250 mm, 2000 mm and 2750 mm. Katherm HK 340 (2-pipe), 150 mm deep units, can also be supplied in non-standard (MP) lengths if required.

Technical data/Dimensions

Katherm HK 340, 2-pipe, H=150 mm

Overall frame width	[mm]	340
Floor duct width	[mm]	309
Grille width	[mm]	328
Max adjustment height	E_{max} [mm]	150-175
Floor duct height	[mm]	150
Convactor height	[mm]	100
Convactor depth	[mm]	100
Connection female	1/2", same end, seen from room side	
Condensation connection	15 mm spigot	
Floor duct length	K [mm]	1250 2000 2750
Finned convactor length	[mm]	805 1555 2305
Number of impellers		2 4 6
Number of fan motors		1 2 3
Max. power uptake of cross-flow fan	[w]	30 60 90
Max. amperage	[A]	0,15 0,30 0,45



Plan view of Katherm HK 340, 2-pipe, duct height 150 mm

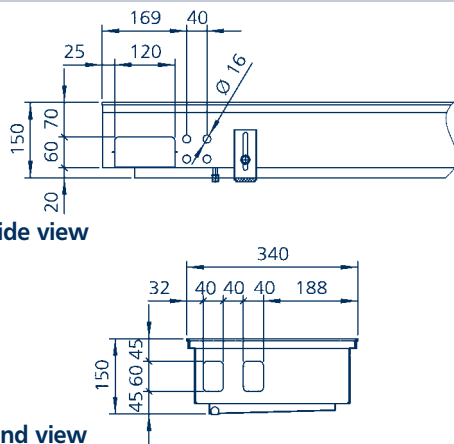
Important:

The flow and return connections are located on the left hand side, and the condensation connection on the right hand side, seen from the room side looking out.

Grille:

only roll-up grille is possible

↑
window side
room side
↓



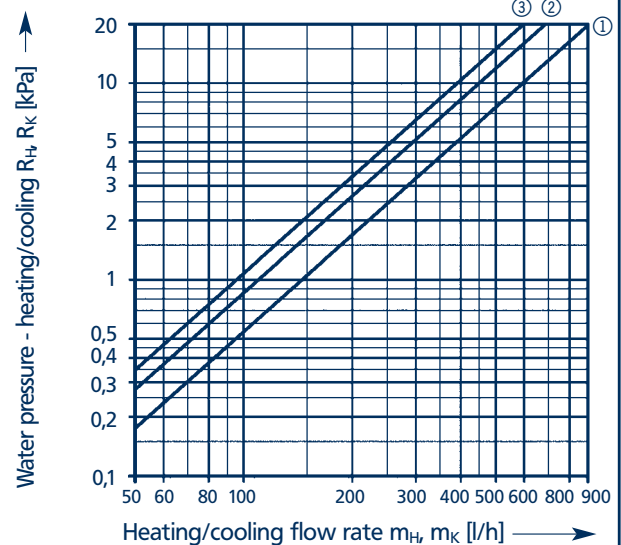
left hand side view

left hand end view

Water pressure rate graph

Duct length	mm	1250	2000	2750
Heating graph		1	2	3
Cooling graph		1	2	3

Katherm HK water pressure rate - heating and cooling



1.43 Katherm HK 340 - Heating or cooling with cross-flow fans

Technical data

Katherm HK 340, 2-pipe, duct height 150 mm

Heat outputs - Katherm HK 340, 2-pipe, duct height 150 mm, floor duct length 1250 mm												
Fan speed			max. fan speed		medium fan speed						min. fan speed	
Fan speed stage			5		4		3		2		1	
Air volume m³/h			330		245		205		180		150	
Sound pressure level ¹⁾ dB(A)			42		33		27		23		21	
Sound power level ²⁾ dB(A)			56		47		41		37		35	
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _l [°C]	Heat outputs at room temperature t_l [W]									
			Q _H [W]	t _{l2} [°C]	Q _H [W]	t _{l2} [°C]	Q _H [W]	t _{l2} [°C]	Q _H [W]	t _{l2} [°C]	Q _H [W]	t _{l2} [°C]
NP 1250	LPHW 90/70 °C	20	4714	62,0	3791	65,5	3407	68,9	2971	68,5	2674	72,4
		15	4831	57,4	3886	61,0	3492	64,4	3045	64,0	2740	68,0
	LPHW 82/71 °C	18	4596	58,7	3696	62,1	3322	65,4	2897	65,1	2607	68,8
		20	4439	59,6	3570	62,9	3208	66,0	2798	65,7	2518	69,4
		22	4282	60,4	3443	63,6	3095	66,7	2699	66,4	2429	69,9
		LPHW 75/65 °C	15	4321	53,0	3475	56,1	3123	59,2	2724	58,9	2451
	18		4085	54,2	3285	57,2	2953	60,1	2575	59,8	2317	63,2
	20		3928	55,0	3159	57,9	2839	60,7	2476	60,5	2228	63,7
	22		3771	55,8	3033	58,6	2725	61,3	2377	61,1	2139	64,2
	LPHW 70/55 °C	15	3732	47,8	3001	50,5	2697	53,1	2352	52,9	2117	55,9
		18	3496	49,0	2812	51,6	2527	54,0	2204	53,8	1983	56,7
		20	3339	49,8	2685	52,2	2413	54,6	2105	54,4	1894	57,1
		22	3182	50,5	2559	52,9	2300	55,2	2006	55,0	1805	57,6
	LPHW 55/45 °C	15	2750	39,2	2211	41,2	1987	43,1	1733	42,9	1560	45,1
		18	2514	40,3	2022	42,1	1817	43,9	1585	43,7	1426	45,8
		20	2357	41,0	1895	42,8	1703	44,4	1486	44,3	1337	46,2
		22	2200	41,7	1769	43,4	1590	44,9	1387	44,8	1248	46,6

Cooling outputs - Katherm HK 340, 2-pipe, duct height 150 mm, floor duct length 1250 mm																				
Fan speed				max. fan speed			medium fan speed										min. fan speed			
Fan speed stage				5			4			3			2			1				
Air volume				m³/h			330			245			205			180			150	
Sound pressure level ¹⁾				dB(A)			42			33			27			23			21	
Sound power level ²⁾				dB(A)			56			47			41			37			35	
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Rel. humid. [%]	 Cooling outputs at room temperature t_L [W]																
				Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]		
NP 1250	LPCW 6/12 °C	30	45	2050	1526	16,0	1619	1193	15,2	1464	1072	14,2	1138	785	16,8	854	603	17,8		
		28	50	1923	1388	15,3	1519	1092	14,6	1343	984	13,5	1038	723	15,9	834	557	16,8		
		26	50	1365	1248	14,7	1221	989	13,9	1106	894	12,9	838	660	15,0	672	510	15,8		
		24	50	1141	1108	14,0	924	885	13,2	834	803	12,3	633	595	14,2	510	462	14,8		
	LPCW 8/14 °C	30	45	1777	1388	17,3	1322	1092	16,5	1177	984	15,5	900	723	17,8	715	557	18,7		
		28	50	1646	1248	16,6	1237	989	15,8	1104	894	14,9	839	660	17,0	664	510	17,8		
		26	50	1108	1108	15,9	919	885	15,2	846	803	14,3	646	595	16,1	517	462	16,8		
		24	50	967	967	15,3	780	780	14,5	709	709	13,7	530	530	15,2	412	412	15,8		
	LPCW 10/15 °C	30	45	1404	1283	18,2	1140	1015	17,4	1035	916	16,5	783	676	18,6	634	522	19,5		
		28	50	1276	1143	17,6	1040	911	16,8	956	825	15,9	707	612	17,8	613	474	18,5		
		26	50	1002	1002	16,9	806	806	16,1	733	733	15,3	546	546	16,9	425	425	17,5		
		24	50	860	860	16,2	700	700	15,5	638	638	14,7	479	479	16,1	374	374	16,6		
	LPCW 12/16 °C	30	45	1203	1178	19,2	959	938	18,4	875	848	17,5	679	628	19,4	533	486	20,2		
		28	50	1037	1037	18,5	853	833	17,8	788	756	16,9	596	563	18,6	487	437	19,2		
		26	50	896	896	17,9	726	726	17,1	662	662	16,3	496	496	17,8	387	387	18,3		
		24	50	753	753	17,2	618	618	16,5	566	566	15,8	427	427	16,9	335	335	17,4		
	LPCW 16/18 °C	30	45	967	967	21,1	780	780	20,4	709	709	19,5	530	530	21,1	412	412	21,7		
		28	50	825	825	20,5	672	672	19,7	614	614	19,0	462	462	20,3	361	361	20,7		
		27	50	753	753	20,1	618	618	19,4	566	566	18,7	427	427	19,9	335	335	20,3		
		26	50	681	681	19,8	563	563	19,1	517	517	18,5	392	392	19,5	308	308	19,8		
	24	50	536	536	19,2	450	450	18,5	416	416	18,0	319	319	18,7	252	252	19,0			

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

Katherm HK 340, 2-pipe, duct height 150 mm

Heat outputs - Katherm HK 340, 2-pipe, duct height 150 mm, floor duct length 2000 mm

Fan speed			max. fan speed		medium fan speed						min. fan speed		
Fan speed stage			5		4		3		2		1		
Air volume m³/h			660		490		410		360		300		
Sound pressure level ¹⁾ dB(A)			44		35		29		26		23		
Sound power level ²⁾ dB(A)			58		49		43		40		37		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Heat outputs at room temperature t_L [W]										
			Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	
NP 2000	LPHW 90/70 °C	20	9104	60,6	7322	64,0	6581	67,2	5740	66,9	5165	70,6	
		15	9332	56,0	7505	59,4	6745	62,7	5883	62,4	5294	66,1	
	LPHW 82/71 °C	18	8877	57,3	7139	60,6	6416	63,8	5596	63,5	5036	67,1	
		20	8573	58,2	6895	61,4	6197	64,5	5405	64,2	4864	67,7	
		LPHW 75/65 °C	22	8270	59,1	6651	62,2	5978	65,1	5213	64,8	4691	68,3
			15	8346	51,7	6712	54,7	6032	57,6	5261	57,4	4734	60,7
	18		7890	53,0	6346	55,9	5703	58,7	4974	58,4	4476	61,6	
	20		7587	53,8	6102	56,6	5484	59,3	4783	59,1	4304	62,2	
	LPHW 70/55 °C	22	7284	54,6	5858	57,4	5265	60,0	4592	59,7	4132	62,7	
		15	7208	46,7	5797	49,3	5210	51,8	4544	51,6	4089	54,5	
		18	6752	47,9	5431	50,4	4881	52,8	4257	52,6	3831	55,3	
		20	6449	48,7	5187	51,1	4661	53,4	4066	53,2	3658	55,9	
	LPHW 55/45 °C	22	6145	49,5	4943	51,8	4442	54,1	3874	53,8	3486	56,4	
		15	5311	38,3	4271	40,3	3839	42,1	3348	42,0	3013	44,1	
		18	4856	39,5	3905	41,3	3510	43,0	3061	42,9	2755	44,8	
		20	4552	40,3	3661	42,0	3290	43,6	2870	43,4	2582	45,3	
		22	4249	41,0	3417	42,6	3071	44,2	2678	44,0	2410	45,8	

Cooling outputs - Katherm HK 340, 2-pipe, duct height 150 mm, floor duct length 2000 mm

Fan speed				max. fan speed			medium fan speed									min. fan speed		
Fan speed stage				5			4			3			2			1		
Air volume m³/h				660			490			410			360			300		
Sound pressure level ¹⁾ dB(A)				44			35			29			26			23		
Sound power level ²⁾ dB(A)				58			49			43			40			37		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _i [°C]	Rel. humid. [%]	 Cooling outputs at room temperature t _i [W]														
				Q _K [W]	Q _S [W]	t ₂ [°C]	Q _K [W]	Q _S [W]	t ₂ [°C]	Q _K [W]	Q _S [W]	t ₂ [°C]	Q _K [W]	Q _S [W]	t ₂ [°C]	Q _K [W]	Q _S [W]	t ₂ [°C]
NP 2000	LPCW 6/12 °C	30	45	4167	2947	16,5	3257	2303	15,8	2943	2072	14,7	2189	1514	17,3	1708	1165	18,2
		28	50	3880	2679	15,8	3079	2108	15,0	2773	1901	14,0	2075	1395	16,3	1616	1076	17,2
		26	50	3124	2410	15,1	2509	1910	14,3	2266	1728	13,4	1698	1273	15,4	1345	985	16,2
		24	50	2426	2139	14,4	1961	1709	13,6	1779	1551	12,7	1359	1149	14,5	1061	892	15,1
	LPCW 8/14 °C	30	45	3456	2679	17,7	2735	2108	17,0	2477	1901	15,9	1855	1395	18,3	1465	1076	19,1
		28	50	3161	2410	17,0	2533	1910	16,3	2302	1728	15,3	1747	1273	17,3	1373	985	18,1
		26	50	2403	2139	16,3	1934	1709	15,6	1776	1551	14,7	1349	1149	16,4	1073	892	17,1
		24	50	1867	1867	15,6	1505	1505	14,9	1371	1371	14,0	1022	1022	15,6	797	797	16,1
	LPCW 10/15 °C	30	45	2967	2478	18,6	2353	1959	17,9	2161	1771	16,9	1615	1304	19,0	1277	1008	19,8
		28	50	2671	2207	17,9	2157	1760	17,2	1959	1596	16,3	1479	1180	18,1	1187	916	18,8
		26	50	1935	1935	17,2	1557	1557	16,5	1435	1417	15,7	1086	1054	17,2	869	821	17,8
		24	50	1661	1661	16,5	1350	1350	15,8	1234	1234	15,0	924	924	16,4	723	723	16,8
	LPCW 12/16 °C	30	45	2467	2275	19,6	1978	1810	18,8	1804	1640	17,9	1360	1212	19,8	1097	939	20,5
		28	50	2183	2003	18,9	1779	1608	18,1	1623	1462	17,3	1233	1086	18,9	975	845	19,5
		26	50	1730	1730	18,2	1402	1402	17,4	1280	1280	16,7	957	957	18,0	748	748	18,5
		24	50	1454	1454	17,4	1193	1193	16,8	1094	1094	16,1	824	824	17,2	647	647	17,6
	LPCW 16/18 °C	30	45	1867	1867	21,4	1505	1505	20,7	1371	1371	19,9	1022	1022	21,4	797	797	22,0
		28	50	1592	1592	20,7	1298	1298	20,0	1188	1188	19,3	891	891	20,5	698	698	21,0
		27	50	1454	1454	20,4	1193	1193	19,7	1094	1094	19,0	824	824	20,1	647	647	20,5
		26	50	1315	1315	20,0	1087	1087	19,4	999	999	18,7	756	756	19,7	595	595	20,1
	24	50	1035	1035	19,3	870	870	18,7	805	805	18,2	615	615	18,9	488	488	19,2	

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

1.43 Katherm HK 340 - Heating or cooling with cross-flow fans

Technical data

Katherm HK 340, 2-pipe, duct height 150 mm

Heat outputs - Katherm HK 340, 2-pipe, duct height 150 mm, floor duct length 2750 mm												
Fan speed			max. fan speed		medium fan speed						min. fan speed	
Fan speed stage			5		4		3		2		1	
Air volume m³/h			990		735		615		540		450	
Sound pressure level ¹⁾ dB(A)			45		36		30		27		24	
Sound power level ²⁾ dB(A)			59		50		44		41		38	
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Heat outputs at room temperature t_L [W]									
			Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]
NP 2750	LPHW 90/70 °C	20	13495	60,1	10854	63,4	9756	66,7	8508	66,3	7656	70,0
		15	13833	55,5	11125	58,9	10000	62,1	8721	61,8	7847	65,5
	LPHW 82/71 °C	18	13158	56,9	10583	60,1	9512	63,2	8295	62,9	7465	66,5
		20	12708	57,8	10221	60,9	9187	63,9	8012	63,6	7209	67,1
		22	12258	58,6	9859	61,7	8862	64,6	7728	64,3	6954	67,7
		LPHW 75/65 °C	15	12371	51,2	9950	54,2	8943	57,1	7799	56,9	7018
	18		11696	52,5	9407	55,4	8455	58,2	7374	57,9	6635	61,1
	20		11246	53,4	9045	56,2	8130	58,9	7090	58,6	6380	61,7
	22		10796	54,3	8683	57,0	7805	59,5	6806	59,3	6125	62,3
	LPHW 70/55 °C	15	10684	46,3	8593	48,9	7724	51,4	6736	51,2	6061	54,0
		18	10009	47,6	8050	50,0	7236	52,4	6310	52,2	5678	54,9
		20	9559	48,4	7688	50,8	6911	53,0	6027	52,8	5423	55,4
		22	9109	49,2	7326	51,5	6585	53,7	5743	53,5	5168	56,0
	LPHW 55/45 °C	15	7872	38,0	6332	40,0	5691	41,8	4963	41,6	4466	43,8
		18	7197	39,3	5789	41,0	5203	42,7	4538	42,6	4083	44,5
		20	6748	40,0	5427	41,7	4878	43,3	4254	43,2	3828	45,0
		22	6298	40,8	5065	42,4	4553	43,9	3970	43,8	3573	45,5

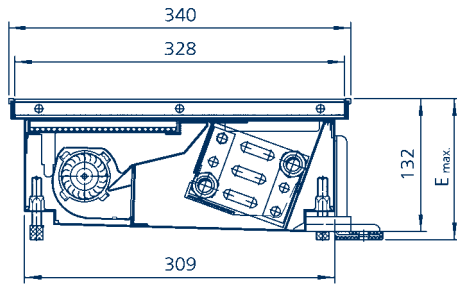
Cooling outputs - Katherm HK 340, 2-pipe, duct height 150 mm, floor duct length 2750 mm																					
Fan speed				max. fan speed			medium fan speed									min. fan speed					
Fan speed stage				5			4			3			2			1					
Air volume				m³/h			990			735			615			540			450		
Sound pressure level ¹⁾				dB(A)			45			36			30			27			24		
Sound power level ²⁾				dB(A)			59			50			44			41			38		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Rel. humid. [%]	Cooling outputs at room temperature t_L [W]																	
				Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]			
NP 2750	LPCW 6/12 °C	30	45	6260	4368	16,6	4917	3413	15,9	4467	3073	14,9	3286	2244	17,4	2612	1727	18,4			
		28	50	5827	3971	15,9	4615	3124	15,2	4212	2819	14,2	3123	2067	16,5	2437	1595	17,3			
		26	50	4751	3572	15,2	3799	2830	14,5	3444	2561	13,5	2576	1887	15,5	2019	1461	16,3			
		24	50	3690	3171	14,5	2971	2533	13,7	2714	2300	12,9	2048	1703	14,6	1629	1323	15,3			
	LPCW 8/14 °C	30	45	5242	3971	17,8	4150	3124	17,1	3759	2819	16,1	2812	2067	18,4	2199	1595	19,3			
		28	50	4824	3572	17,1	3874	2830	16,4	3508	2561	15,5	2617	1887	17,5	2072	1461	18,2			
		26	50	3700	3171	16,4	2977	2533	15,7	2709	2300	14,8	2045	1703	16,6	1627	1323	17,2			
		24	50	2767	2767	15,7	2231	2231	15,0	2033	2033	14,2	1514	1514	15,7	1181	1181	16,2			
	LPCW 10/15 °C	30	45	4510	3672	18,8	3601	2904	18,0	3267	2626	17,1	2457	1932	19,2	1924	1495	19,9			
		28	50	4080	3271	18,0	3294	2608	17,3	3002	2366	16,4	2254	1749	18,2	1795	1358	18,9			
		26	50	2961	2868	17,3	2404	2307	16,6	2207	2100	15,8	1681	1562	17,3	1343	1217	17,9			
		24	50	2462	2462	16,6	2001	2001	15,9	1829	1829	15,1	1369	1369	16,5	1071	1071	16,9			
	LPCW 12/16 °C	30	45	3768	3372	19,7	3024	2682	18,9	2752	2431	18,0	2070	1795	19,9	1640	1392	20,6			
		28	50	3343	2969	19,0	2715	2383	18,2	2476	2167	17,4	1885	1609	19,0	1481	1252	19,6			
		26	50	2564	2564	18,2	2078	2078	17,5	1898	1898	16,8	1418	1418	18,1	1108	1108	18,6			
		24	50	2155	2155	17,5	1768	1768	16,8	1622	1622	16,2	1221	1221	17,3	959	959	17,7			
	LPCW 16/18 °C	30	45	2767	2767	21,5	2231	2231	20,8	2033	2033	20,0	1514	1514	21,5	1181	1181	22,0			
		28	50	2360	2360	20,8	1924	1924	20,1	1761	1761	19,4	1320	1320	20,6	1034	1034	21,1			
		27	50	2155	2155	20,5	1768	1768	19,8	1622	1622	19,1	1221	1221	20,2	959	959	20,6			
		26	50	1949	1949	20,1	1610	1610	19,4	1481	1481	18,8	1120	1120	19,8	882	882	20,1			
	24	50	1534	1534	19,4	1289	1289	18,8	1193	1193	18,2	911	911	19,0	723	723	19,2				

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

Katherm HK 340, 4-pipe, duct height 132 mm



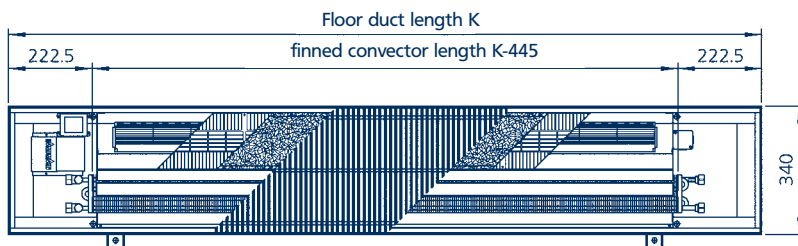
Cross-section through Katherm HK 340, 4-pipe, 132 mm deep, shown with roll-up grille

Katherm HK (4-pipe) units are available in standard (NP) lengths of 1250 mm, 2000 mm and 2750 mm. Katherm HK 340 (4-pipe), 132 mm deep units, can also be supplied in non-standard (MP) lengths if required.

Technical data/Dimensions

Katherm HK 340, 4-pipe, H=132 mm

Overall frame width	[mm]	340
Floor duct width	[mm]	309
Grille width	[mm]	328
Max. adjustment height	E_{max} [mm]	132-157
Floor duct height	[mm]	132
Convactor height	[mm]	75
Convactor depth	[mm]	100
Connection, female		opposite end
Condensation connection		15 mm spigot
Floor duct length	K [mm]	1250 2000 2750
Finned convactor length	[mm]	805 1555 2305
Number of impellers		2 4 6
Number of fan motors		1 2 3
Max. power uptake of cross-flow fan	[W]	20 40 60
Max. amperage	[A]	0,11 0,22 0,33



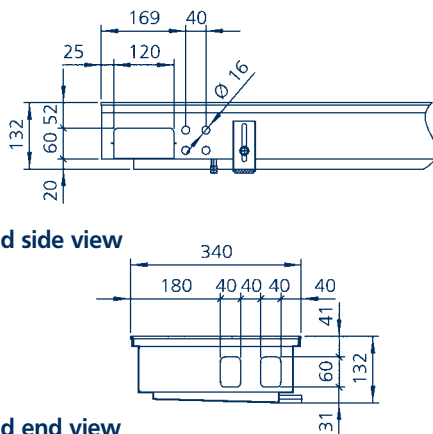
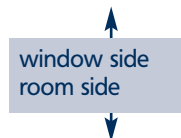
Plan view of Katherm HK 340, 4-pipe, duct height 132 mm

Important:

The cooling flow and return connections are located on the left hand side, and the heating connections and condensate connection on the right hand side, seen from the room side looking out.

Grille:

only roll-up grille is possible



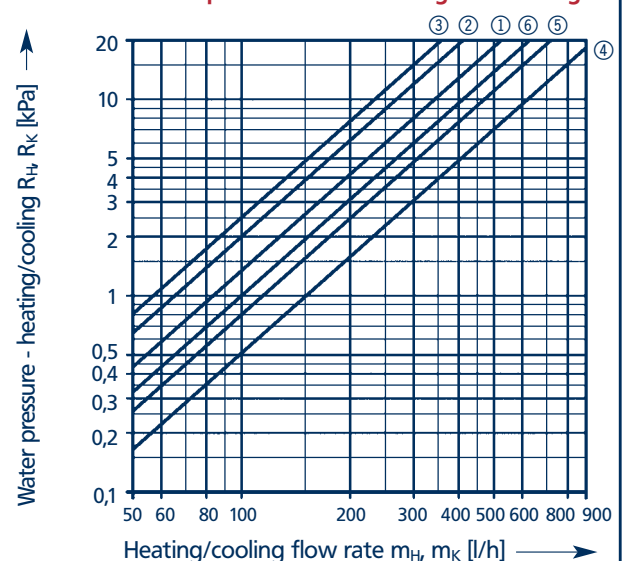
left hand side view

left hand end view

Water pressure rate graph

Duct length	mm	1250	2000	2750
Heating graph		1	2	3
Cooling graph		4	5	6

Katherm HK water pressure rate - heating and cooling



1.43 Katherm HK 340 - Heating or cooling with cross-flow fans

Technical data

Katherm HK 340, 4-pipe, floor duct height 132 mm

Heat outputs - Katherm HK 340, 4-pipe, duct height 132 mm, floor duct length 1250 mm												
Fan speed			max. fan speed		medium fan speed						min. fan speed	
Fan speed stage			5		4		3		2		1	
Air volume m³/h			255		200		160		130		105	
Sound pressure level ¹⁾ dB(A)			41		31		25		22		20	
Sound power level ²⁾ dB(A)			55		45		39		36		34	
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _r [°C]	Heat outputs at room temperature t_r [W]									
			Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]
NP 1250	LPHW 90/70 °C	20	2109	44,3	1766	46,0	1598	49,4	1419	52,1	1254	55,1
		15	2163	39,6	1811	41,2	1639	44,7	1455	47,4	1286	50,5
	LPHW 82/71 °C	18	2055	41,6	1721	43,2	1557	46,5	1383	49,1	1222	52,0
		20	1983	42,9	1661	44,4	1503	47,6	1334	50,2	1179	53,0
		22	1912	44,2	1601	45,7	1449	48,8	1286	51,3	1137	54,0
		LPHW 75/65 °C	15	1930	36,9	1616	38,4	1462	41,5	1298	43,9	1147
	18		1822	38,9	1526	40,3	1381	43,2	1226	45,6	1083	48,2
	20		1751	40,2	1466	41,6	1327	44,4	1178	46,7	1041	49,2
	22		1680	41,5	1406	42,8	1273	45,5	1130	47,7	999	50,1
	LPHW 70/55 °C	15	1662	33,9	1391	35,2	1259	37,8	1118	39,9	988	42,3
		18	1555	35,8	1302	37,0	1178	39,5	1046	41,5	924	43,7
		20	1484	37,1	1242	38,3	1124	40,7	998	42,6	882	44,7
		22	1412	38,4	1182	39,5	1070	41,8	950	43,6	840	45,7
	LPHW 55/45 °C	15	1217	28,8	1019	29,8	922	31,7	819	33,3	724	35,0
		18	1111	30,7	930	31,6	842	33,4	747	34,8	660	36,4
		20	1040	32,0	871	32,8	788	34,5	700	35,8	618	37,3
		22	969	33,2	811	34,0	735	35,6	652	36,8	576	38,2

Cooling outputs - Katherm HK 340, 4-pipe, duct height 132 mm, floor duct length 1250 mm																		
Fan speed				max. fan speed			medium fan speed										min. fan speed	
Fan speed stage				5			4			3			2			1		
Air volume m³/h				255			200			160			130			105		
Sound pressure level ¹⁾ dB(A)				41			31			25			22			20		
Sound power level ²⁾ dB(A)				55			45			39			36			34		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Rel. humid. [%]	Cooling outputs at room temperature t_L [W]														
				Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]
NP 1250	LPCW 6/12 °C	30	45	1140	878	19,6	1104	843	17,2	1049	801	14,8	904	669	14,4	729	539	14,4
		28	50	1059	804	18,5	1035	763	16,5	966	725	14,4	821	605	14,0	701	488	14,0
		26	50	851	729	17,4	797	683	15,8	790	649	13,9	638	542	13,5	536	436	13,6
		24	50	653	653	16,4	603	603	15,0	573	573	13,4	478	478	13,1	385	385	13,1
	LPCW 8/14 °C	30	45	926	804	20,4	880	763	18,4	838	725	16,3	736	605	15,9	607	488	15,9
		28	50	842	729	19,4	810	683	17,7	770	649	15,8	668	542	15,4	547	436	15,5
		26	50	653	653	18,3	603	603	17,0	573	573	15,3	478	478	15,0	385	385	15,0
		24	50	576	576	17,3	522	522	16,2	496	496	14,8	414	414	14,5	334	334	14,5
	LPCW 10/15 °C	30	45	800	748	21,1	751	703	19,4	720	668	17,4	615	558	17,0	517	449	17,0
		28	50	702	672	20,1	681	623	18,6	662	592	16,9	550	494	16,6	453	398	16,6
		26	50	595	595	19,0	542	542	17,9	515	515	16,4	430	430	16,1	347	347	16,1
		24	50	517	517	18,0	462	462	17,1	439	439	15,8	367	367	15,6	295	295	15,6
	LPCW 12/16 °C	30	45	691	691	21,8	643	643	20,3	611	611	18,4	510	510	18,1	411	411	18,1
		28	50	614	614	20,7	562	562	19,5	534	534	17,9	446	446	17,7	360	360	17,7
		26	50	537	537	19,7	482	482	18,8	458	458	17,4	383	383	17,2	308	308	17,2
		24	50	457	457	18,7	402	402	18,0	382	382	16,9	319	319	16,7	257	257	16,7
	LPCW 16/18 °C	30	45	576	576	23,2	522	522	22,1	496	496	20,6	414	414	20,3	334	334	20,4
		28	50	497	497	22,1	442	442	21,3	420	420	20,1	351	351	19,9	283	283	19,9
		27	50	457	457	21,6	402	402	21,0	382	382	19,8	319	319	19,6	257	257	19,6
		26	50	417	417	21,1	362	362	20,6	344	344	19,6	287	287	19,4	231	231	19,4
24		50	334	334	20,1	282	282	19,8	268	268	19,0	223	223	18,9	180	180	18,9	

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

Katherm HK 340, 4-pipe, duct height 132 mm

Heat outputs - Katherm HK 340, 4-pipe, duct height 132 mm, floor duct length 2000 mm												
Fan speed			max. fan speed		medium fan speed						min. fan speed	
Fan speed stage			5		4		3		2		1	
Air volume			m³/h		510		400		320		260	
Sound pressure level ¹⁾			dB(A)		43		34		27		24	
Sound power level ²⁾			dB(A)		57		48		41		38	
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _r [°C]	Heat outputs at room temperature t_r [W]									
			Q _H [W]	t _{l,2} [°C]	Q _H [W]	t _{l,2} [°C]	Q _H [W]	t _{l,2} [°C]	Q _H [W]	t _{l,2} [°C]	Q _H [W]	t _{l,2} [°C]
NP 2000	LPHW 90/70 °C	20	4073	43,5	3411	45,1	3088	48,4	2740	51,0	2422	53,9
		15	4177	38,7	3498	40,3	3167	43,7	2810	46,3	2484	49,3
	LPHW 82/71 °C	18	3969	40,8	3324	42,3	3009	45,5	2670	48,0	2360	50,9
		20	3831	42,1	3208	43,6	2904	46,7	2577	49,2	2278	51,9
		22	3693	43,4	3092	44,9	2800	47,9	2484	50,3	2196	52,9
		LPHW 75/65 °C	15	3727	36,2	3121	37,6	2826	40,6	2507	43,0	2216
	18		3520	38,2	2948	39,5	2669	42,4	2368	44,6	2093	47,1
	20		3382	39,5	2832	40,8	2564	43,6	2275	45,7	2011	48,2
	22		3244	40,8	2717	42,1	2459	44,7	2182	46,8	1929	49,2
	LPHW 70/55 °C	15	3210	33,2	2688	34,5	2433	37,0	2159	39,1	1908	41,3
		18	3003	35,2	2515	36,4	2277	38,8	2020	40,7	1786	42,9
		20	2865	36,5	2399	37,6	2172	40,0	1927	41,8	1704	43,9
		22	2728	37,8	2284	38,9	2068	41,1	1835	42,9	1622	44,9
	LPHW 55/45 °C	15	2351	28,4	1968	29,3	1782	31,1	1581	32,6	1398	34,3
		18	2145	30,3	1796	31,1	1626	32,9	1443	34,2	1276	35,8
		20	2009	31,6	1682	32,4	1523	34,0	1351	35,3	1194	36,7
		22	1872	32,9	1568	33,6	1419	35,1	1259	36,3	1113	37,7

Cooling outputs - Katherm HK 340, 4-pipe, duct height 132 mm, floor duct length 2000 mm																		
Fan speed				max. fan speed			medium fan speed									min. fan speed		
Fan speed stage				5			4			3			2			1		
Air volume m³/h				510			400			320			260			210		
Sound pressure level ¹⁾ dB(A)				43			34			27			24			22		
Sound power level ²⁾ dB(A)				57			48			41			38			36		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _r [°C]	Rel. humid. [%]	 Cooling outputs at room temperature t _r [W]														
				Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]
NP 2000	LPCW 6/12 °C	30	45	2335	1696	19,9	2275	1629	17,7	2159	1548	15,3	1832	1294	14,9	1477	1040	15,0
		28	50	2214	1553	18,8	2106	1474	16,9	2019	1400	14,8	1710	1171	14,4	1391	941	14,5
		26	50	1785	1408	17,7	1686	1319	16,1	1619	1253	14,3	1374	1048	13,9	1131	842	14,0
		24	50	1385	1262	16,6	1283	1165	15,3	1242	1106	13,7	1056	925	13,4	862	743	13,5
	LPCW 8/14 °C	30	45	1948	1553	20,8	1866	1474	18,8	1789	1400	16,7	1500	1171	16,4	1240	941	16,4
		28	50	1809	1408	19,7	1719	1319	18,1	1651	1253	16,2	1391	1048	15,9	1152	842	15,9
		26	50	1384	1262	18,6	1275	1165	17,3	1233	1106	15,7	1052	925	15,4	874	743	15,4
		24	50	1112	1112	17,5	1010	1010	16,5	959	959	15,1	802	802	14,8	644	644	14,9
	LPCW 10/15 °C	30	45	1679	1445	21,4	1584	1358	19,7	1519	1290	17,8	1304	1079	17,4	1056	867	17,5
		28	50	1537	1298	20,3	1438	1203	18,9	1372	1143	17,2	1164	956	16,9	958	768	17,0
		26	50	1150	1150	19,2	1048	1048	18,2	996	996	16,7	832	832	16,4	698	669	16,5
		24	50	999	999	18,2	893	893	17,4	848	848	16,1	709	709	15,9	570	570	15,9
	LPCW 12/16 °C	30	45	1398	1335	22,1	1318	1242	20,6	1256	1180	18,8	1083	986	18,5	875	793	18,6
		28	50	1261	1187	21,0	1155	1087	19,8	1106	1033	18,3	946	863	18,0	783	694	18,0
		26	50	1037	1037	19,9	932	932	19,0	885	885	17,7	740	740	17,5	595	595	17,5
		24	50	883	883	18,8	777	777	18,2	738	738	17,1	617	617	16,9	496	496	17,0
	LPCW 16/18 °C	30	45	1112	1112	23,4	1010	1010	22,4	959	959	20,9	802	802	20,7	644	644	20,7
		28	50	960	960	22,3	855	855	21,6	812	812	20,4	679	679	20,1	545	545	20,2
		27	50	883	883	21,8	777	777	21,2	738	738	20,1	617	617	19,9	496	496	19,9
		26	50	805	805	21,3	699	699	20,8	664	664	19,8	555	555	19,6	446	446	19,6
24		50	645	645	20,2	544	544	20,0	517	517	19,2	432	432	19,1	347	347	19,1	

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

1.43 Katherm HK 340 - Heating or cooling with cross-flow fans

Technical data

Katherm HK 340, 4-pipe, duct height 132 mm

Heat outputs - Katherm HK 340, 4-pipe, duct height 132 mm, floor duct length 2750 mm												
Fan speed			max. fan speed		medium fan speed						min. fan speed	
Fan speed stage			5		4		3		2		1	
Air volume m³/h			765		600		480		390		315	
Sound pressure level ¹⁾ dB(A)			44		35		29		25		22	
Sound power level ²⁾ dB(A)			58		49		43		39		36	
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Heat outputs at room temperature t_L [W]									
			Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]
NP 2750	LPHW 90/70 °C	20	6038	43,2	5055	44,8	4578	48,1	4061	50,6	3589	53,5
		15	6192	38,5	5184	40,0	4695	43,3	4165	46,0	3681	48,9
	LPHW 82/71 °C	18	5884	40,5	4926	42,0	4461	45,2	3958	47,7	3498	50,5
		20	5679	41,8	4754	43,3	4306	46,4	3820	48,8	3376	51,5
		22	5474	43,2	4583	44,6	4150	47,6	3682	49,9	3254	52,6
		LPHW 75/65 °C	15	5525	35,9	4626	37,3	4189	40,3	3716	42,6	3284
	18		5218	37,9	4368	39,3	3956	42,1	3510	44,3	3102	46,8
	20		5013	39,3	4197	40,6	3801	43,3	3372	45,4	2980	47,8
	22		4809	40,6	4026	41,9	3646	44,5	3234	46,5	2858	48,8
	LPHW 70/55 °C	15	4757	33,0	3983	34,2	3607	36,8	3200	38,8	2828	41,0
		18	4451	35,0	3727	36,2	3375	38,6	2994	40,4	2646	42,6
		20	4247	36,3	3556	37,4	3220	39,7	2857	41,5	2525	43,6
		22	4043	37,6	3385	38,7	3066	40,9	2720	42,6	2404	44,6
	LPHW 55/45 °C	15	3484	28,2	2917	29,1	2642	31,0	2344	32,4	2071	34,1
		18	3180	30,2	2662	31,0	2411	32,7	2139	34,0	1890	35,5
		20	2977	31,4	2493	32,2	2257	33,8	2003	35,1	1770	36,5
		22	2775	32,7	2323	33,5	2104	35,0	1867	36,2	1650	37,5

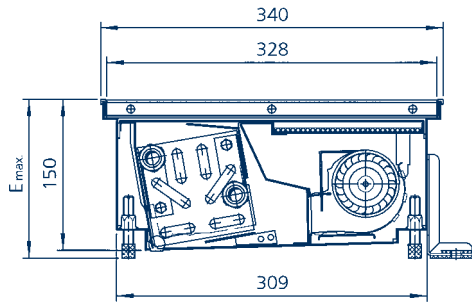
Cooling outputs - Katherm HK 340, 4-pipe, duct height 132 mm, floor duct length 2750 mm																					
Fan speed				max. fan speed			medium fan speed									min. fan speed					
Fan speed stage				5			4			3			2			1					
Air volume				m³/h			765			600			480			390			315		
Sound pressure level ¹⁾				dB(A)			44			35			29			25			22		
Sound power level ²⁾				dB(A)			58			49			43			39			36		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Rel. humid. [%]	 Cooling outputs at room temperature t_L [W]																	
				Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]			
NP 2750	LPCW 6/12 °C	30	45	3551	2515	20,0	3428	2416	17,8	3269	2294	15,5	2762	1919	15,1	2246	1541	15,2			
		28	50	3331	2303	18,9	3193	2186	17,0	3050	2076	15,0	2567	1736	14,6	2117	1395	14,7			
		26	50	2723	2088	17,8	2578	1956	16,2	2439	1858	14,4	2069	1554	14,1	1698	1248	14,1			
		24	50	2115	1870	16,7	1980	1727	15,4	1893	1640	13,8	1625	1371	13,5	1308	1102	13,6			
	LPCW 8/14 °C	30	45	2987	2303	20,9	2839	2186	19,0	2707	2076	16,9	2313	1736	16,5	1898	1395	16,6			
		28	50	2757	2088	19,8	2601	1956	18,2	2495	1858	16,3	2103	1554	16,0	1718	1248	16,1			
		26	50	2117	1870	18,7	1981	1727	17,4	1894	1640	15,8	1621	1371	15,5	1325	1102	15,5			
		24	50	1649	1649	17,6	1497	1497	16,6	1421	1421	15,2	1189	1189	14,9	955	955	15,0			
	LPCW 10/15 °C	30	45	2570	2142	21,5	2420	2014	19,8	2333	1912	17,9	1975	1599	17,6	1641	1285	17,6			
		28	50	2353	1925	20,4	2195	1784	19,0	2102	1694	17,4	1781	1417	17,1	1470	1138	17,1			
		26	50	1705	1705	19,3	1579	1554	18,2	1510	1476	16,8	1288	1235	16,5	1052	992	16,6			
		24	50	1480	1480	18,2	1324	1324	17,4	1258	1258	16,2	1052	1052	16,0	845	845	16,0			
	LPCW 12/16 °C	30	45	2143	1979	22,2	2019	1841	20,7	1926	1749	19,0	1658	1463	18,6	1343	1175	18,7			
		28	50	1909	1760	21,1	1769	1612	19,9	1703	1531	18,4	1456	1280	18,1	1183	1028	18,2			
		26	50	1537	1537	20,0	1382	1382	19,1	1312	1312	17,8	1098	1098	17,6	882	882	17,6			
		24	50	1309	1309	18,9	1152	1152	18,3	1094	1094	17,2	915	915	17,0	735	735	17,1			
	LPCW 16/18 °C	30	45	1649	1649	23,5	1497	1497	22,4	1421	1421	21,0	1189	1189	20,8	955	955	20,8			
		28	50	1424	1424	22,4	1267	1267	21,6	1203	1203	20,4	1006	1006	20,2	808	808	20,3			
		27	50	1309	1309	21,9	1152	1152	21,2	1094	1094	20,2	915	915	20,0	735	735	20,0			
		26	50	1193	1193	21,3	1037	1037	20,8	985	985	19,9	824	824	19,7	662	662	19,7			
	24	50	956	956	20,3	807	807	20,0	766	766	19,2	641	641	19,1	515	515	19,1				

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

Katherm HK 340, 4-pipe, duct height 150 mm



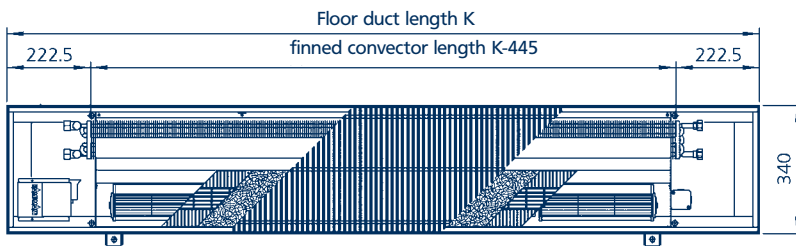
Cross-section through Katherm HK 340, 4-pipe, 150 mm deep, shown with roll-up grille

Katherm HK (4-pipe) units are available in standard (NP) lengths of 1250 mm, 2000 mm and 2750 mm. Katherm HK 340 (4-pipe), 150 mm deep units, can also be supplied in non-standard (MP) lengths if required.

Technical data/Dimensions

Katherm HK 340, 4-pipe, H=150 mm

Overall frame width	[mm]	340
Floor duct width	[mm]	309
Grille width	[mm]	328
Max. adjustment height	E_{max} [mm]	150-175
Floor duct height	[mm]	150
Convactor height	[mm]	100
Convactor depth	[mm]	100
Connection, female		1/2", opposite end
Condensation connection		15 mm spigot
Floor duct length	K [mm]	1250 2000 2750
Finned convactor length	[mm]	805 1555 2305
Number of impellers		2 4 6
Number of fan motors		1 2 3
Max. power uptake of cross-flow fan	[w]	30 60 90
Max. amperage	[A]	0,15 0,30 0,45



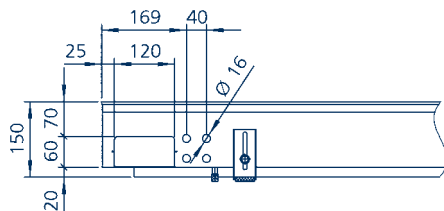
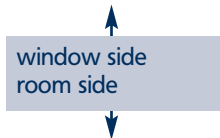
Plan view of Katherm HK 340, 4-pipe, duct height 150 mm

Important:

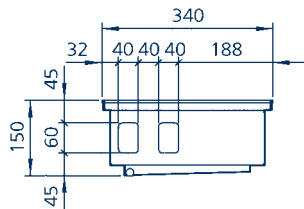
The cooling flow and return connections are located on the left hand side, and the heating connections and condensate connection on the right hand side, seen from the room side looking out.

Grille:

only roll-up grille is possible



left hand side view

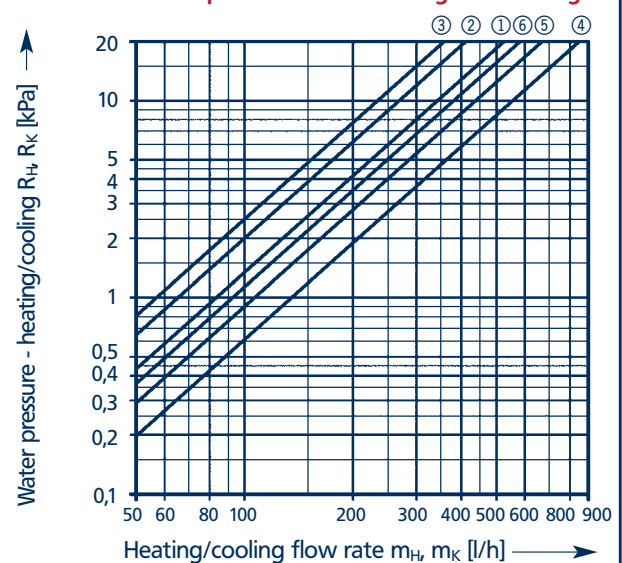


left hand end view

Water pressure rate graph

Duct length	mm	1250	2000	2750
Heating graph		1	2	3
Cooling graph		4	5	6

Katherm HK water pressure rate - heating and cooling



1.43 Katherm HK 340 - Heating or cooling with cross-flow fans

Technical data

Katherm HK 340, 4-pipe, duct height 150 mm

Heat outputs - Katherm HK 340, 4-pipe, duct height 150 mm, floor duct length 1250 mm												
Fan speed			max. fan speed		medium fan speed						min. fan speed	
Fan speed stage			5		4		3		2		1	
Air volume m³/h			330		245		205		180		150	
Sound pressure level ¹⁾ dB(A)			42		33		27		23		21	
Sound power level ²⁾ dB(A)			56		47		41		37		35	
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _r [°C]	Heat outputs at room temperature t_r [W]									
			Q _H [W]	t _{l2} [°C]	Q _H [W]	t _{l2} [°C]	Q _H [W]	t _{l2} [°C]	Q _H [W]	t _{l2} [°C]	Q _H [W]	t _{l2} [°C]
NP 1250	LPHW 90/70 °C	20	2739	44,4	2426	49,1	2264	52,5	2059	53,7	1907	57,4
		15	2809	39,7	2487	44,4	2322	47,8	2112	49,0	1955	52,8
	LPHW 82/71 °C	18	2669	41,6	2364	46,2	2207	49,5	2007	50,6	1858	54,2
		20	2576	43,0	2281	47,4	2130	50,6	1937	51,7	1793	55,2
		22	2483	44,3	2199	48,6	2053	51,6	1867	52,7	1728	56,1
		LPHW 75/65 °C	15	2506	37,0	2220	41,3	2072	44,3	1885	45,3	1745
	18		2367	39,0	2096	43,0	1957	45,9	1780	46,9	1648	50,1
	20		2274	40,3	2014	44,2	1880	47,0	1710	47,9	1583	51,0
	22		2181	41,6	1932	45,3	1803	48,0	1640	49,0	1518	51,9
	LPHW 70/55 °C	15	2158	34,0	1911	37,6	1784	40,2	1623	41,1	1502	44,0
		18	2019	35,9	1788	39,3	1669	41,8	1518	42,7	1406	45,4
		20	1927	37,2	1706	40,5	1593	42,9	1449	43,7	1341	46,3
		22	1834	38,4	1624	41,6	1516	43,9	1379	44,7	1277	47,2
	LPHW 55/45 °C	15	1580	28,9	1400	31,6	1307	33,5	1188	34,1	1100	36,3
		18	1442	30,8	1278	33,2	1193	35,0	1085	35,6	1004	37,6
		20	1351	32,0	1196	34,4	1117	36,0	1016	36,6	940	38,4
		22	1259	33,3	1115	35,5	1041	37,0	947	37,6	876	39,3

Cooling outputs - Katherm HK 340, 4-pipe, duct height 150 mm, floor duct length 1250 mm																					
Fan speed				max. fan speed			medium fan speed									min. fan speed					
Fan speed stage				5			4			3			2			1					
Air volume				m³/h			330			245			205			180			150		
Sound pressure level ¹⁾				dB(A)			42			33			27			23			21		
Sound power level ²⁾				dB(A)			56			47			41			37			35		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Rel. humid. [%]	 Cooling outputs at room temperature t_L [W]																	
				Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]			
NP 1250	LPCW 6/12 °C	30	45	1859	1349	17,6	1538	1105	16,3	1415	1007	15,1	1141	805	16,4	965	674	16,4			
		28	50	1765	1238	16,7	1440	1012	15,6	1328	922	14,4	1073	740	15,6	913	620	15,5			
		26	50	1408	1124	15,8	1160	918	14,8	1064	836	13,8	871	673	14,8	747	566	14,7			
		24	50	1084	1009	14,9	892	823	14,0	817	749	13,1	676	605	14,0	584	510	13,9			
	LPCW 8/14 °C	30	45	1546	1238	18,6	1266	1012	17,5	1161	922	16,4	950	740	17,6	813	620	17,5			
		28	50	1424	1124	17,7	1171	918	16,7	1075	836	15,7	884	673	16,7	757	566	16,6			
		26	50	1076	1009	16,8	886	823	15,9	815	749	15,1	674	605	15,9	584	510	15,8			
		24	50	892	892	16,0	726	726	15,2	660	660	14,4	536	536	15,1	453	453	15,0			
	LPCW 10/15 °C	30	45	1323	1153	19,4	1091	942	18,3	1002	858	17,3	824	690	18,4	707	580	18,3			
		28	50	1207	1038	18,5	995	847	17,6	912	771	16,7	753	622	17,6	649	524	17,5			
		26	50	921	921	17,6	751	751	16,8	683	683	16,0	553	553	16,8	471	468	16,7			
		24	50	802	802	16,8	652	652	16,1	593	593	15,4	483	483	16,0	410	410	15,9			
	LPCW 12/16 °C	30	45	1104	1067	20,2	911	871	19,2	837	793	18,3	692	639	19,2	597	538	19,1			
		28	50	984	951	19,3	809	775	18,5	744	705	17,6	617	571	18,4	537	482	18,3			
		26	50	832	832	18,4	677	677	17,7	615	615	17,0	501	501	17,7	424	424	17,5			
		24	50	711	711	17,6	577	577	17,0	524	524	16,4	429	429	16,9	365	365	16,8			
	LPCW 16/18 °C	30	45	892	892	21,8	726	726	21,0	660	660	20,2	536	536	21,0	453	453	20,8			
		28	50	772	772	21,0	627	627	20,3	570	570	19,6	465	465	20,2	395	395	20,1			
		27	50	711	711	20,5	577	577	19,9	524	524	19,3	429	429	19,8	365	365	19,7			
		26	50	649	649	20,1	526	526	19,6	478	478	19,0	392	392	19,5	335	335	19,3			
	24	50	523	523	19,3	422	422	18,9	383	383	18,4	317	317	18,8	272	272	18,6				

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

Katherm HK 340, 4-pipe, duct height 150 mm

Heat outputs - Katherm HK 340, 4-pipe, duct height 150 mm, floor duct length 2000 mm

Fan speed			max. fan speed		medium fan speed						min. fan speed	
Fan speed stage			5		4		3		2		1	
Air volume m³/h			660		490		410		360		300	
Sound pressure level ¹⁾ dB(A)			44		35		29		26		23	
Sound power level ²⁾ dB(A)			58		49		43		40		37	
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Heat outputs at room temperature t_L [W]									
			Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]
NP 2000	LPHW 90/70 °C	20	5291	43,6	4686	48,1	4373	51,4	3978	52,5	3682	56,1
		15	5426	38,8	4806	43,4	4485	46,7	4080	47,8	3776	51,5
	LPHW 82/71 °C	18	5156	40,8	4567	45,3	4262	48,4	3877	49,5	3588	53,0
		20	4976	42,2	4408	46,5	4113	49,5	3742	50,6	3463	53,9
		22	4797	43,5	4249	47,7	3965	50,6	3606	51,6	3338	54,9
		LPHW 75/65 °C	15	4842	36,3	4288	40,4	4002	43,3	3640	44,3	3369
	18		4572	38,3	4050	42,2	3779	45,0	3438	45,9	3182	49,0
	20		4393	39,6	3891	43,4	3631	46,0	3303	47,0	3057	50,0
	22		4214	40,9	3732	44,5	3483	47,1	3168	48,0	2932	50,9
	LPHW 70/55 °C	15	4169	33,3	3693	36,8	3446	39,4	3135	40,2	2901	43,0
		18	3901	35,3	3455	38,6	3224	41,0	2933	41,8	2714	44,5
		20	3722	36,6	3297	39,8	3076	42,1	2798	42,9	2590	45,4
		22	3543	37,9	3138	40,9	2929	43,1	2664	43,9	2466	46,3
	LPHW 55/45 °C	15	3053	28,4	2704	31,0	2524	32,8	2296	33,5	2125	35,5
		18	2787	30,3	2468	32,7	2303	34,4	2095	35,0	1939	36,9
		20	2609	31,6	2311	33,9	2156	35,5	1962	36,0	1816	37,8
		22	2432	32,9	2154	35,0	2010	36,5	1828	37,0	1692	38,7

Cooling outputs - Katherm HK 340, 4-pipe, duct height 150 mm, floor duct length 2000 mm

Fan speed				max. fan speed			medium fan speed									min. fan speed		
Fan speed stage				5			4			3			2			1		
Air volume m³/h				660			490			410			360			300		
Sound pressure level ¹⁾ dB(A)				44			35			29			26			23		
Sound power level ²⁾ dB(A)				58			49			43			40			37		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _r [°C]	Rel. humid. [%]	 Cooling outputs at room temperature t_L [W]														
				Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]
NP 2000	LPCW 6/12 °C	30	45	3726	2607	18,0	3075	2134	16,8	2817	1948	15,6	2258	1554	16,9	1942	1304	16,8
		28	50	3528	2391	17,1	2877	1955	16,0	2642	1783	14,9	2144	1427	16,1	1835	1200	16,0
		26	50	2869	2172	16,1	2361	1773	15,2	2161	1617	14,2	1777	1299	15,2	1509	1095	15,1
		24	50	2248	1950	15,2	1860	1589	14,3	1715	1448	13,5	1389	1168	14,3	1199	987	14,2
	LPCW 8/14 °C	30	45	3139	2391	19,0	2592	1955	17,9	2375	1783	16,8	1909	1427	18,0	1651	1200	17,9
		28	50	2892	2172	18,1	2416	1773	17,1	2212	1617	16,1	1795	1299	17,1	1552	1095	17,0
		26	50	2267	1950	17,2	1855	1589	16,3	1714	1448	15,4	1393	1168	16,3	1208	987	16,1
		24	50	1723	1723	16,2	1402	1402	15,5	1276	1276	14,7	1034	1034	15,4	877	877	15,3
	LPCW 10/15 °C	30	45	2723	2228	19,8	2232	1819	18,8	2045	1659	17,7	1671	1331	18,8	1440	1121	18,7
		28	50	2489	2006	18,8	2047	1635	17,9	1871	1490	17,1	1540	1201	18,0	1324	1014	17,8
		26	50	1820	1780	17,9	1513	1449	17,1	1372	1320	16,4	1131	1068	17,1	984	905	17,0
		24	50	1550	1550	17,0	1259	1259	16,4	1146	1146	15,7	932	932	16,3	792	792	16,1
	LPCW 12/16 °C	30	45	2262	2062	20,5	1877	1682	19,6	1716	1533	18,7	1411	1234	19,6	1213	1041	19,5
		28	50	2047	1837	19,6	1685	1496	18,8	1548	1363	18,0	1266	1102	18,8	1090	932	18,6
		26	50	1608	1608	18,7	1307	1307	18,0	1190	1190	17,3	967	967	18,0	821	821	17,8
		24	50	1374	1374	17,8	1114	1114	17,2	1013	1013	16,6	828	828	17,2	706	706	17,0
	LPCW 16/18 °C	30	45	1723	1723	22,1	1402	1402	21,3	1276	1276	20,6	1034	1034	21,3	877	877	21,1
		28	50	1492	1492	21,2	1211	1211	20,6	1102	1102	19,9	898	898	20,5	764	764	20,3
		27	50	1374	1374	20,7	1114	1114	20,2	1013	1013	19,6	828	828	20,1	706	706	19,9
		26	50	1255	1255	20,3	1016	1016	19,8	923	923	19,3	757	757	19,7	647	647	19,5
	24	50	1010	1010	19,4	815	815	19,0	740	740	18,6	612	612	18,9	526	526	18,8	

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

1.43 Katherm HK 340 - Heating or cooling with cross-flow fans

Technical data

Katherm HK 340, 4-pipe, duct height 150 mm

Heat outputs - Katherm HK 340, 4-pipe, duct height 150 mm, floor duct length 2750 mm													
Fan speed			max. fan speed		medium fan speed						min. fan speed		
Fan speed stage			5		4		3		2		1		
Air volume m³/h			990		735		615		540		450		
Sound pressure level ¹⁾ dB(A)			45		36		30		27		24		
Sound power level ²⁾ dB(A)			59		50		44		41		38		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Heat outputs at room temperature t_L [W]										
			Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	
NP 2750	LPHW 90/70 °C	20	7843	43,3	6946	47,8	6482	51,0	5897	52,1	5458	55,7	
		LPHW 82/71 °C	15	8043	38,5	7123	43,1	6647	46,3	6047	47,5	5597	51,1
			18	7643	40,6	6769	44,9	6317	48,0	5746	49,1	5319	52,6
			20	7377	41,9	6533	46,1	6097	49,2	5546	50,2	5134	53,6
	22		7110	43,2	6297	47,3	5876	50,3	5346	51,3	4948	54,5	
	LPHW 75/65 °C	15	7177	36,0	6356	40,1	5931	43,0	5396	44,0	4995	47,2	
		18	6778	38,0	6002	41,9	5602	44,6	5096	45,6	4717	48,6	
		20	6512	39,3	5767	43,1	5382	45,7	4896	46,7	4532	49,6	
		22	6246	40,7	5532	44,3	5163	46,8	4696	47,7	4347	50,6	
	LPHW 70/55 °C	15	6180	33,1	5473	36,6	5108	39,1	4646	39,9	4301	42,7	
		18	5782	35,1	5121	38,4	4779	40,7	4347	41,5	4024	44,1	
		20	5517	36,4	4886	39,6	4560	41,8	4148	42,6	3840	45,1	
		22	5253	37,7	4652	40,7	4341	42,9	3949	43,6	3655	46,0	
	LPHW 55/45 °C	15	4526	28,3	4008	30,8	3741	32,6	3403	33,3	3150	35,3	
		18	4131	30,2	3658	32,6	3414	34,2	3106	34,8	2875	36,7	
		20	3867	31,5	3425	33,7	3196	35,3	2908	35,8	2692	37,6	
		22	3605	32,8	3192	34,8	2979	36,3	2710	36,8	2509	38,5	

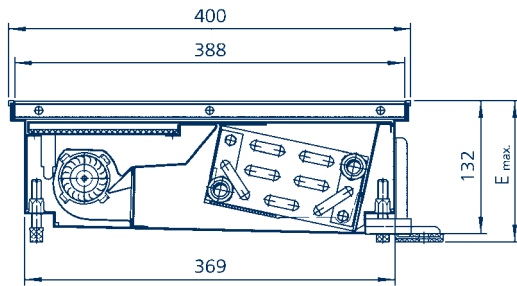
Cooling outputs - Katherm HK 340, 4-pipe, duct height 150 mm, floor duct length 2750 mm																					
Fan speed				max. fan speed			medium fan speed									min. fan speed					
Fan speed stage				5			4			3			2			1					
Air volume				m³/h			990			735			615			540			450		
Sound pressure level ¹⁾				dB(A)			45			36			30			27			24		
Sound power level ²⁾				dB(A)			59			50			44			41			38		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Rel. humid. [%]	Cooling outputs at room temperature t_L [W]																	
				Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]			
NP 2750	LPCW 6/12 °C	30	45	5609	3865	18,2	4606	3163	17,0	4217	2888	15,8	3392	2303	17,1	2866	1933	17,0			
		28	50	5275	3545	17,2	4314	2897	16,1	3963	2644	15,1	3211	2115	16,2	2750	1780	16,1			
		26	50	4311	3221	16,3	3548	2628	15,3	3254	2397	14,3	2655	1925	15,3	2273	1623	15,2			
		24	50	3422	2891	15,3	2815	2355	14,5	2585	2147	13,6	2099	1731	14,5	1817	1464	14,3			
	LPCW 8/14 °C	30	45	4714	3545	19,1	3868	2897	18,1	3567	2644	17,0	2887	2115	18,1	2464	1780	18,0			
		28	50	4414	3221	18,2	3592	2628	17,2	3310	2397	16,3	2700	1925	17,3	2299	1623	17,1			
		26	50	3427	2891	17,3	2803	2355	16,4	2577	2147	15,5	2128	1731	16,4	1839	1464	16,3			
		24	50	2555	2555	16,3	2078	2078	15,6	1893	1893	14,8	1533	1533	15,6	1336	1301	15,4			
	LPCW 10/15 °C	30	45	4096	3302	19,9	3366	2696	18,9	3097	2459	17,9	2512	1973	18,9	2157	1663	18,8			
		28	50	3767	2974	19,0	3087	2424	18,1	2836	2210	17,2	2303	1780	18,1	2008	1504	17,9			
		26	50	2790	2639	18,0	2283	2147	17,3	2103	1957	16,5	1703	1583	17,2	1496	1342	17,1			
		24	50	2298	2298	17,1	1866	1866	16,4	1699	1699	15,8	1381	1381	16,4	1175	1175	16,2			
	LPCW 12/16 °C	30	45	3434	3057	20,6	2825	2492	19,7	2601	2272	18,8	2125	1828	19,7	1836	1544	19,6			
		28	50	3087	2724	19,7	2544	2217	18,9	2329	2020	18,1	1928	1632	18,9	1669	1383	18,7			
		26	50	2384	2384	18,8	1937	1937	18,1	1764	1764	17,4	1432	1432	18,1	1217	1217	17,9			
		24	50	2037	2037	17,9	1651	1651	17,3	1502	1502	16,7	1227	1227	17,2	1047	1047	17,1			
	LPCW 16/18 °C	30	45	2555	2555	22,2	2078	2078	21,4	1893	1893	20,7	1533	1533	21,4	1301	1301	21,2			
		28	50	2212	2212	21,3	1795	1795	20,6	1634	1634	20,0	1330	1330	20,6	1133	1133	20,4			
		27	50	2037	2037	20,8	1651	1651	20,3	1502	1502	19,7	1227	1227	20,2	1047	1047	20,0			
		26	50	1860	1860	20,4	1505	1505	19,9	1369	1369	19,3	1122	1122	19,8	960	960	19,6			
24		50	1497	1497	19,5	1208	1208	19,1	1097	1097	18,7	907	907	19,0	780	780	18,8				

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

Katherm HK 400, 4-pipe, duct height 132 mm



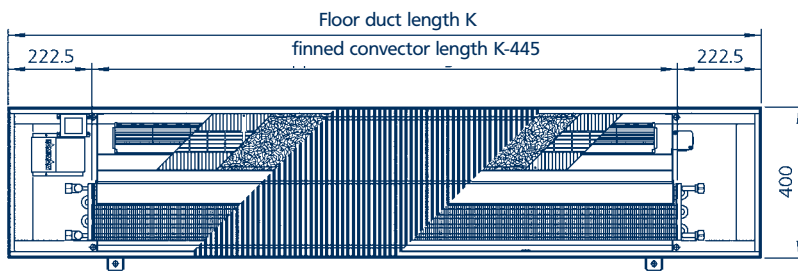
Cross-section through Katherm HK 400, 4-pipe, duct height 132 mm, shown with roll-up grille

Katherm HK (4-pipe) units are available in standard (NP) lengths of 1250 mm, 2000 mm and 2750 mm. Katherm HK 400 (4-pipe), 132 mm deep units, can also be supplied in non-standard (MP) lengths if required.

Technical data/Dimensions

Katherm HK 400, 4-pipe, H=132 mm

Overall frame width	[mm]	400
Floor duct width	[mm]	369
Grille width	[mm]	388
Max. adjustment height	E_{max} [mm]	132-157
Floor duct height	[mm]	132
Convactor height	[mm]	75
Convactor depth	[mm]	150
Connection, female		1/2", opposite end
Condensation connection		15 mm spigot
Floor duct length	K [mm]	1250 2000 2750
Finned convactor length	[mm]	805 1555 2305
Number of impellers		2 4 6
Number of fan motors		1 2 3
Max. power uptake of cross-flow fan	[w]	20 40 60
Max. amperage	[A]	0,11 0,22 0,33



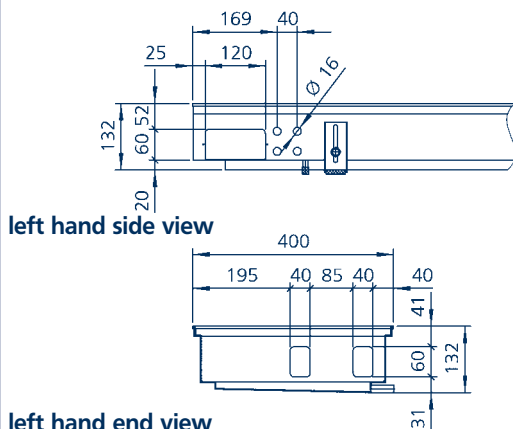
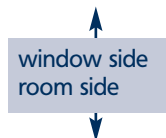
Plan view of Katherm HK 400, 4-pipe, duct height 132 mm

Important:

The cooling flow and return connections are located on the left hand side, and the heating connections and condensate connection on the right hand side, seen from the room side looking out.

Grille:

only roll-up grille is possible



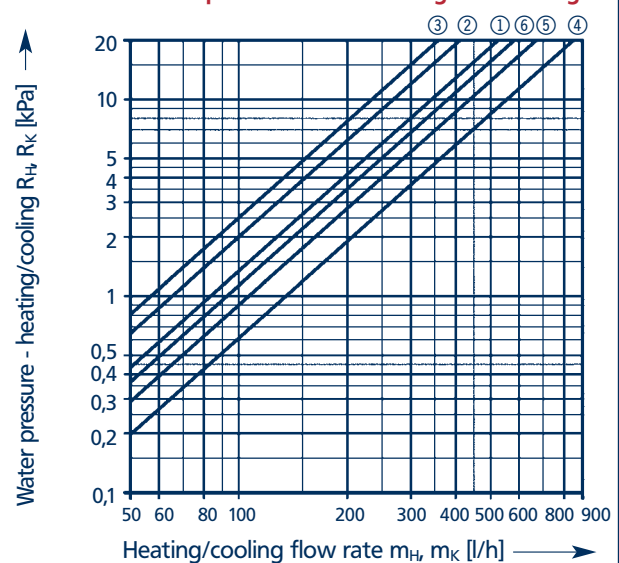
left hand side view

left hand end view

Water pressure rate graph

Duct length	mm	1250	2000	2750
Heating graph		1	2	3
Cooling graph		4	5	6

Katherm HK water pressure rate - heating and cooling



1.43 Katherm HK 400 - Heating or cooling with cross-flow fans

Technical data

Katherm HK 400, 4-pipe, duct height 132 mm

Heat outputs - Katherm HK 400, 4-pipe, duct height 132 mm, floor duct length 1250 mm												
Fan speed			max. fan speed		medium fan speed						min. fan speed	
Fan speed stage			5		4		3		2		1	
Air volume m³/h			255		200		160		130		105	
Sound pressure level ¹⁾ dB(A)			41		31		25		22		20	
Sound power level ²⁾ dB(A)			55		45		39		36		34	
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Heat outputs at room temperature t_L [W]									
			Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]
NP 1250	LPHW 90/70 °C	20	2559	49,5	2110	51,0	1908	55,1	1666	57,7	1505	62,2
		15	2625	44,8	2164	46,4	1956	50,4	1708	53,1	1544	57,6
	LPHW 82/71 °C	18	2494	46,6	2056	48,1	1859	52,0	1623	54,5	1467	58,9
		20	2407	47,8	1985	49,2	1794	53,0	1567	55,4	1416	59,7
		22	2320	48,9	1913	50,3	1730	54,0	1510	56,4	1365	60,5
		LPHW 75/65 °C	15	2342	41,6	1931	43,0	1746	46,6	1524	49,0	1378
	18		2212	43,4	1824	44,7	1649	48,1	1439	50,4	1301	54,2
	20		2125	44,5	1752	45,8	1584	49,1	1383	51,3	1250	55,0
	22		2038	45,6	1681	46,9	1519	50,1	1327	52,2	1199	55,8
	LPHW 70/55 °C	15	2017	37,9	1663	39,1	1503	42,2	1313	44,3	1186	47,7
		18	1887	39,6	1556	40,7	1406	43,7	1228	45,6	1110	48,9
		20	1800	40,8	1484	41,8	1342	44,7	1172	46,5	1059	49,7
		22	1714	41,9	1413	42,9	1278	45,6	1116	47,4	1008	50,4
	LPHW 55/45 °C	15	1477	31,8	1218	32,6	1101	34,9	961	36,4	869	39,0
		18	1348	33,5	1111	34,2	1005	36,4	877	37,7	793	40,1
		20	1262	34,6	1041	35,3	941	37,3	821	38,6	742	40,8
		22	1176	35,6	970	36,3	877	38,2	766	39,4	692	41,5

Cooling outputs - Katherm HK 400, 4-pipe, duct height 132 mm, floor duct length 1250 mm																		
Fan speed				max. fan speed			medium fan speed								min. fan speed			
Fan speed stage				5			4			3			2			1		
Air volume m³/h				255			200			160			130			105		
Sound pressure level ¹⁾ dB(A)				41			31			25			22			20		
Sound power level ²⁾ dB(A)				55			45			39			36			34		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Rel. humid. [%]	 Cooling outputs at room temperature t _L [W]														
				Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]
NP 1250	LPCW 6/12 °C	30	45	1452	1081	17,2	1180	870	16,8	1049	769	15,4	864	651	14,8	758	536	14,5
		28	50	1370	989	16,3	1097	789	16,1	952	697	14,9	848	591	14,3	727	486	14,1
		26	50	1096	895	15,5	873	708	15,4	774	626	14,3	673	530	13,8	574	436	13,6
		24	50	825	800	14,7	654	626	14,7	575	554	13,7	499	469	13,3	426	386	13,1
	LPCW 8/14 °C	30	45	1187	989	18,3	955	789	18,0	834	697	16,8	735	591	16,2	623	486	16,0
		28	50	1103	895	17,4	885	708	17,3	772	626	16,2	674	530	15,7	567	436	15,5
		26	50	800	800	16,6	650	626	16,6	584	554	15,6	509	469	15,2	432	386	15,0
		24	50	704	704	15,8	545	545	15,9	482	482	15,0	408	408	14,7	336	336	14,5
	LPCW 10/15 °C	30	45	1005	919	19,1	817	728	19,0	727	644	17,8	632	545	17,3	545	449	17,1
		28	50	920	824	18,3	738	647	18,3	662	572	17,2	559	484	16,8	608	399	16,6
		26	50	728	728	17,4	565	565	17,5	500	500	16,6	423	423	16,2	348	348	16,1
		24	50	631	631	16,6	484	484	16,8	427	427	16,0	362	362	15,7	298	298	15,6
	LPCW 12/16 °C	30	45	866	848	19,9	683	667	19,9	608	590	18,8	540	500	18,4	451	411	18,1
		28	50	752	752	19,1	600	586	19,2	540	518	18,3	465	439	17,8	401	361	17,6
		26	50	656	656	18,3	504	504	18,5	446	446	17,7	377	377	17,3	311	311	17,1
		24	50	557	557	17,5	422	422	17,7	373	373	17,1	316	316	16,8	260	260	16,6
	LPCW 16/18 °C	30	45	704	704	21,6	545	545	21,7	482	482	20,9	408	408	20,5	336	336	20,3
		28	50	607	607	20,8	463	463	21,0	409	409	20,3	347	347	20,0	285	285	19,8
		27	50	557	557	20,4	422	422	20,7	373	373	20,0	316	316	19,7	260	260	19,6
		26	50	507	507	20,0	381	381	20,3	337	337	19,7	285	285	19,4	235	235	19,3
	24	50	405	405	19,3	298	298	19,6	263	263	19,1	223	223	18,9	184	184	18,8	

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

Katherm HK 400, 4-pipe, duct height 132 mm

Heat outputs - Katherm HK 400, 4-pipe, duct height 132 mm, floor duct length 2000 mm

Fan speed			max. fan speed		medium fan speed						min. fan speed	
Fan speed stage			5		4		3		2		1	
Air volume m³/h			510		400		320		260		210	
Sound pressure level ¹⁾			dB(A)		34		27		24		22	
Sound power level ²⁾			dB(A)		48		41		38		36	
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Heat outputs at room temperature t_L [W]									
			Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]
NP 2000	LPHW 90/70 °C	20	4944	48,5	4077	50,0	3685	53,9	3217	56,4	2909	60,7
		LPHW 82/71 °C	15	5070	43,8	4181	45,3	3779	49,2	3299	51,8	2983
	18		4818	45,6	3973	47,0	3591	50,8	3135	53,3	2834	57,5
	20		4650	46,8	3834	48,2	3466	51,9	3026	54,2	2736	58,3
	22		4482	48,0	3696	49,3	3341	52,9	2916	55,2	2637	59,1
	LPHW 75/65 °C	15	4524	40,7	3731	42,0	3372	45,5	2944	47,8	2662	51,7
		18	4273	42,5	3523	43,8	3185	47,1	2780	49,3	2514	53,0
		20	4105	43,7	3385	44,9	3060	48,1	2671	50,2	2415	53,8
		22	3938	44,8	3247	46,0	2935	49,1	2562	51,2	2317	54,6
	LPHW 70/55 °C	15	3896	37,1	3212	38,3	2904	41,3	2535	43,3	2292	46,6
		18	3645	38,9	3006	40,0	2717	42,8	2372	44,7	2144	47,9
		20	3478	40,1	2868	41,1	2593	43,8	2263	45,6	2046	48,7
		22	3311	41,2	2730	42,2	2468	44,8	2154	46,5	1948	49,4
	LPHW 55/45 °C	15	2853	31,2	2353	32,0	2127	34,3	1856	35,7	1678	38,2
		18	2604	32,9	2147	33,7	1941	35,7	1694	37,1	1532	39,3
		20	2438	34,1	2010	34,8	1817	36,7	1586	37,9	1434	40,1
		22	2272	35,2	1874	35,9	1694	37,7	1479	38,8	1337	40,8

Cooling outputs - Katherm HK 400, 4-pipe, duct height 132 mm, floor duct length 2000 mm

Fan speed				max. fan speed			medium fan speed									min. fan speed		
Fan speed stage				5			4			3			2			1		
Air volume m³/h				510			400			320			260			210		
Sound pressure level ¹⁾ dB(A)				43			34			27			24			22		
Sound power level ²⁾ dB(A)				57			48			41			38			36		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _r [°C]	Rel. humid. [%]	 Cooling outputs at room temperature t _r [W]														
				Q _K [W]	Q _S [W]	t ₂ [°C]	Q _K [W]	Q _S [W]	t ₂ [°C]	Q _K [W]	Q _S [W]	t ₂ [°C]	Q _K [W]	Q _S [W]	t ₂ [°C]	Q _K [W]	Q _S [W]	t ₂ [°C]
NP 2000	LPCW 6/12 °C	30	45	2950	2087	17,6	2375	1679	17,3	2107	1484	16,0	1820	1259	15,3	1516	1034	15,1
		28	50	2763	1908	16,7	2226	1523	16,5	1963	1346	15,3	1699	1142	14,8	1409	938	14,5
		26	50	2239	1727	15,9	1796	1367	15,8	1584	1208	14,7	1367	1025	14,2	1149	842	14,0
		24	50	1751	1545	15,0	1388	1210	15,0	1226	1069	14,1	1073	907	13,6	886	745	13,4
	LPCW 8/14 °C	30	45	2461	1908	18,7	1977	1523	18,5	1753	1346	17,3	1518	1142	16,7	1277	938	16,5
		28	50	2266	1727	17,8	1813	1367	17,7	1609	1208	16,6	1406	1025	16,1	1173	842	15,9
		26	50	1735	1545	16,9	1369	1210	16,9	1224	1069	16,0	1065	907	15,6	896	745	15,4
		24	50	1359	1359	16,1	1052	1052	16,2	930	930	15,4	789	789	15,0	648	648	14,8
	LPCW 10/15 °C	30	45	2123	1773	19,5	1689	1406	19,3	1516	1242	18,2	1305	1054	17,7	1097	866	17,5
		28	50	1925	1591	18,6	1532	1249	18,6	1355	1104	17,6	1173	937	17,2	997	769	17,0
		26	50	1406	1406	17,7	1092	1092	17,8	977	965	17,0	844	819	16,6	712	673	16,4
		24	50	1218	1218	16,9	934	934	17,1	825	825	16,3	700	700	16,0	575	575	15,8
	LPCW 12/16 °C	30	45	1774	1636	20,3	1408	1288	20,2	1252	1138	19,2	1084	966	18,7	927	794	18,5
		28	50	1583	1452	19,4	1252	1131	19,5	1110	999	18,6	963	848	18,2	804	697	18,0
		26	50	1265	1265	18,6	973	973	18,7	860	860	18,0	730	730	17,6	600	600	17,5
		24	50	1075	1075	17,7	815	815	17,9	720	720	17,3	611	611	17,0	502	502	16,9
	LPCW 16/18 °C	30	45	1359	1359	21,9	1052	1052	22,0	930	930	21,2	789	789	20,8	648	648	20,6
		28	50	1171	1171	21,1	894	894	21,3	790	790	20,6	670	670	20,2	551	551	20,1
		27	50	1075	1075	20,7	815	815	20,9	720	720	20,2	611	611	19,9	502	502	19,8
		26	50	978	978	20,3	735	735	20,5	650	650	19,9	551	551	19,7	453	453	19,5
	24	50	782	782	19,4	576	576	19,7	509	509	19,3	432	432	19,1	355	355	19,0	

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

1.43 Katherm HK 400 - Heating or cooling with cross-flow fans

Technical data

Katherm HK 400, 4-pipe, duct height 132 mm

Heat outputs - Katherm HK 400, 4-pipe, duct height 132 mm, floor duct length 2750 mm													
Fan speed			max. fan speed		medium fan speed						min. fan speed		
Fan speed stage			5		4		3		2		1		
Air volume m³/h			765		600		480		390		315		
Sound pressure level ¹⁾ dB(A)			44		35		29		25		22		
Sound power level ²⁾ dB(A)			58		49		43		39		36		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Heat outputs at room temperature t_L [W]										
			Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	Q _H [W]	t _{L2} [°C]	
NP 2750	LPHW 90/70 °C	20	7329	48,2	6044	49,6	5463	53,5	4769	56,0	4312	60,3	
		LPHW 82/71 °C	15	7516	43,5	6198	44,9	5602	48,8	4891	51,4	4422	55,7
			18	7142	45,3	5890	46,7	5324	50,4	4648	52,8	4202	57,0
			20	6893	46,5	5684	47,9	5138	51,5	4486	53,8	4055	57,9
	LPHW 75/65 °C	22	6644	47,7	5479	49,0	4953	52,5	4324	54,8	3909	58,7	
		15	6706	40,4	5530	41,7	4999	45,2	4364	47,4	3946	51,3	
		18	6333	42,2	5223	43,5	4721	46,8	4122	48,9	3726	52,6	
		20	6085	43,4	5018	44,6	4536	47,8	3960	49,9	3580	53,4	
	LPHW 70/55 °C	22	5837	44,6	4813	45,7	4351	48,8	3798	50,8	3434	54,3	
		15	5775	36,9	4762	38,0	4305	41,0	3758	42,9	3398	46,3	
		18	5403	38,7	4456	39,7	4028	42,5	3516	44,4	3179	47,5	
		20	5155	39,8	4251	40,8	3843	43,5	3355	45,3	3033	48,3	
	LPHW 55/45 °C	22	4908	41,0	4047	42,0	3659	44,6	3194	46,2	2888	49,1	
		15	4229	31,0	3488	31,8	3153	34,0	2752	35,5	2488	37,9	
		18	3860	32,8	3183	33,5	2877	35,5	2512	36,8	2271	39,1	
		20	3614	33,9	2980	34,6	2694	36,5	2352	37,7	2126	39,9	
	LPHW 55/45 °C	22	3368	35,0	2778	35,7	2511	37,5	2192	38,6	1982	40,6	

Cooling outputs - Katherm HK 400, 4-pipe, duct height 132 mm, floor duct length 2750 mm																		
Fan speed				max. fan speed			medium fan speed									min. fan speed		
Fan speed stage				5			4			3			2			1		
Air volume m³/h				765			600			480			390			315		
Sound pressure level ¹⁾ dB(A)				44			35			29			25			22		
Sound power level ²⁾ dB(A)				58			49			43			39			36		
Duct length K NP=standard range* [mm]	Water temp.	Room temp. t _L [°C]	Rel. humid. [%]	Cooling outputs at room temperature t_L [W]														
				Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]	Q _K [W]	Q _S [W]	t _{L2} [°C]
NP 2750	LPCW 6/12 °C	30	45	4431	3092	17,8	3586	2489	17,4	3196	2199	16,1	2734	1867	15,5	2334	1533	15,3
		28	50	4149	2827	16,9	3336	2258	16,7	2980	1994	15,5	2558	1693	14,9	2124	1391	14,7
		26	50	3405	2560	16,0	2720	2026	15,9	2406	1790	14,8	2074	1519	14,3	1725	1248	14,1
		24	50	2664	2289	15,1	2104	1793	15,1	1870	1584	14,2	1618	1345	13,7	1361	1105	13,6
	LPCW 8/14 °C	30	45	3732	2827	18,8	3000	2258	18,6	2659	1994	17,4	2304	1693	16,8	1917	1391	16,6
		28	50	3457	2560	17,9	2773	2026	17,8	2451	1790	16,8	2107	1519	16,3	1770	1248	16,1
		26	50	2671	2289	17,0	2108	1793	17,1	1866	1584	16,1	1615	1345	15,7	1359	1105	15,5
		24	50	2014	2014	16,2	1560	1560	16,3	1378	1378	15,5	1170	1170	15,1	961	961	14,9
	LPCW 10/15 °C	30	45	3226	2627	19,6	2585	2084	19,5	2290	1841	18,4	1988	1563	17,9	1653	1284	17,7
		28	50	2939	2357	18,7	2339	1852	18,7	2076	1635	17,7	1789	1389	17,3	1508	1140	17,1
		26	50	2151	2083	17,8	1687	1618	17,9	1502	1429	17,1	1307	1214	16,7	1100	997	16,5
		24	50	1805	1805	17,0	1385	1384	17,1	1223	1223	16,4	1038	1038	16,1	853	853	15,9
	LPCW 12/16 °C	30	45	2709	2425	20,4	2153	1910	20,4	1909	1687	19,4	1651	1432	18,9	1386	1176	18,7
		28	50	2423	2152	19,5	1911	1677	19,6	1692	1481	18,7	1473	1258	18,3	1221	1033	18,1
		26	50	1875	1875	18,7	1442	1443	18,8	1274	1274	18,1	1082	1082	17,7	889	889	17,6
		24	50	1593	1593	17,8	1208	1208	18,0	1067	1067	17,4	906	906	17,1	744	744	17,0
	LPCW 16/18 °C	30	45	2014	2014	22,0	1560	1560	22,1	1378	1378	21,3	1170	1170	20,9	961	961	20,8
		28	50	1735	1735	21,2	1326	1326	21,3	1171	1171	20,7	994	994	20,3	816	816	20,2
		27	50	1593	1593	20,7	1208	1208	21,0	1067	1067	20,3	906	906	20,0	744	744	19,9
		26	50	1450	1450	20,3	1090	1090	20,6	963	963	20,0	818	818	19,7	671	671	19,6
24		50	1158	1158	19,5	853	853	19,8	754	754	19,3	640	640	19,1	526	526	19,0	

*Katherm HK are also available in non-standard (MP) lengths

¹⁾calculated according to the free-field method using a hemispherical model at a distance of 2 m; refer to page 11 for calculation for a half-hemispherical model

²⁾measured in accordance with DIN 23741 in an echo chamber with a volume of 200 m³

Katherm HK 340, Katherm HK 400

Qty.	Article no.	Description	Price/each	Total price
pc.	143 0 6 23 1 11 20	Katherm HK floor duct convectors ready-to-install floor duct convectors, for use within raised floors or screeded floors for heating or cooling using cross-flow fans, comprising: a sendzimir galvanized steel floor duct, painted graphite grey inside and out, complete with screed anchorings lugs; with insulated height adjustment feet along the side of the duct; the duct doubles as a condensation tray, with a 15mm outlet spigot on one side; with foam along its outside to provide heat insulation; water-tight sealed central recess to accommodate convector, cross-flow fan and filter frame; with filter frame with easily removable felt filter; convector - copper pipes with aluminium fins, painted graphite grey, suitable for a max. operating pressure of 10 bar and 120 °C, sitting on felt underlay; brackets to reinforce the duct and convector recess; cross-flow fan with robust, energy-saving external rotor motor, 230 V/50 Hz, factory-wired, with protective housing, on bearings; baffle with separating air stream to prevent mixing of the inlet air with the outlet air when operating in cooling mode; only for use with duct height 132 mm ITC-module incorporated within the floor duct, factory-wired. 5-stage, quietly-operating fan using voltage reduction via integral transformer. Control of 5 fan stages via external, active 0 - 10 VDC signal or changeable resistance 0 - 100 KOhm. Control of fan drive 230 VAC via external capacitor-free contact; frame profile to match double T-profile grille; with 3-sided flange, grille dimension 18 x 5 mm, 12mm bar spacing, linked on corrosion-proof steel spring with matching spacers; approx. 70% free area. Heat outputs tested in accordance with DIN 4704, cooling outputs tested in accordance with DIN EN 14518. Grille design: 1 roll-up grille 11 aluminium, natural anodized 12 aluminium, brass anodized 13 aluminium, bronze anodized 14 aluminium, black anodized 15 aluminium, bronze-effect 16 aluminium, painted basalt grey, DB 703 31 stainless steel 32 stainless steel, polished 33 natural brass CuZn 44 34 natural brass CuZn 44, polished, oxydation-proof 6 Katherm HK 340, width 340 mm, connection 1/2" 8 Katherm HK 400, width 400 mm, connection 1/2" Model: 23 2-pipe, duct height 132 mm 43 4-pipe, duct height 132 mm 25 2-pipe, duct height 150 mm 45 4-pipe, duct height 150 mm Length key: 20 NP 1250 mm 35 NP 2000 mm 50 NP 2750 mm Technical data: Max. electrical power uptake _____ W Water temp. (heating) LPHW _____ / _____ °C Room temperature _____ °C Heat output _____ W Water temp. (cooling) LPCW _____ / _____ °C Room temperature _____ °C Relative humidity _____ % Cooling output _____ W Sound pressure level _____ dB(A) Sound power level _____ dB(A) Type Kampmann, article no. 1430 _____, type _____		
		required to complete DataNorm/EDV article no.	150 mm depth only possible with Katherm HK 340	
			non-standard lengths on request	

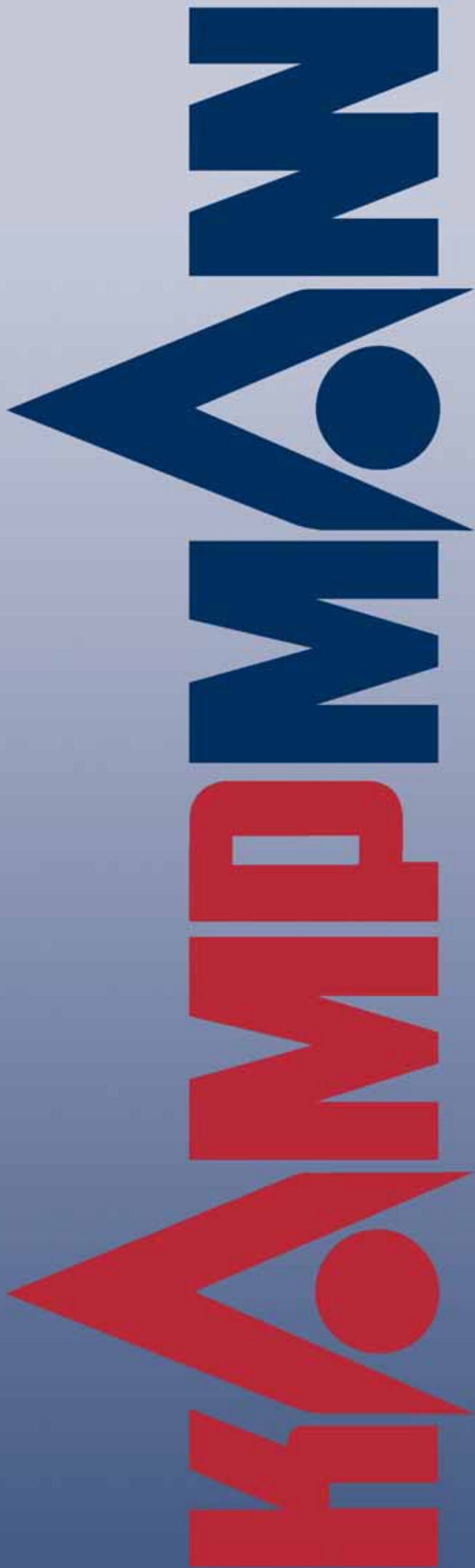
1.43 Katherm HK - Heating or cooling with cross-flow fans

Specifications

Accessories · Controls

Qty.	Article no.	Description	Price/each	Total price
pc.	194 000 146 909	1/2" Valve body, straight Type Kampmann, article no. 194000146909, type 146909		
pc.	194 000 100 970	1/2" Valve body, angled Type Kampmann, article no. 194000100970, type 100970		
pc.	194 000 145 952	1/2" Return shut-off valve, straight brass, nickel-plate housing, o-ring seal Type Kampmann, article no. 194000145952, type 145952		
pc.	194 000 145 953	1/2" Return shut-off valve, angled brass, nickel-plate housing, o-ring seal Type Kampmann, article no. 194000145953, type 145953		
pc.	194 000 146 905	Thermoelectric actuator 230 V, 50 Hz Type Kampmann, article no. 194000146905, type 146905		
pc.	194 000 143 921	Installation cover to protect the floor duct unit on site 1 floor duct length 1250 mm 2 floor duct length 2000 mm 3 floor duct length 2750 mm 2 overall frame width 340 mm 3 overall frame width 400 mm Type Kampmann, article no. 1940001439_ _ , type 1439_ _		
pc.	194 000 143 801	Condensate pump assembly kit for use with Katherm HK with condensate pump max. delivery height 8 m, max. delivery volume 3 l/h, supply voltage 230V/50 Hz (separate mains supply), power uptake 20 w, condensate discharge line DN 6 mm (hose connection) 1 for Katherm HK 340, duct height 132 mm 2 for Katherm HK 340, duct height 150 mm 3 for Katherm HK 400, duct height 132 mm		
pc.	194 000 146 936	Speed controller flush-mounted, manufactured by Jung, 5-stage (0-1-2-3-4-5); setting dial, white frame and cover; voltage 230 V/50 Hz, protection class IP 20 dimensions W x H x D: 65 x 65 x 42 mm Type Kampmann, article no. 194000146936, type 146936		
pc.	194 000 146 937	Room thermostat flush-mounted, manufactured by Jung, temperature setting dial, change-over contact for heating/cooling, thermal setback, switch between heating/cooling only possible using external change-over contact; white front plate and frame; max. amperage 2 A voltage 230 V/50 Hz, protection IP 20 temperature range: approx. 5-30 °C switching differential: 0.5 K dimensions W x H x D: 65 x 65 x 42 mm Type Kampmann, article no. 194000146937, type 146937		
pc.	194 000 146 929	Double frame Jung system, white; to mount speed controller type 146936 and room thermostat type 146937 Type Kampmann, article no. 194000146929, type 146929		
	required to complete DataNorm/EDV article no.			

Qty.	Article no.	Description	Price/each	Total price
pc.	194 000 146 934	Room thermostat 230 V, in flat surface-mounted housing, white, with heating/cooling switch, thermal setback, temperature range limiter, max. amperage 2 A temperature range approx. 5-30 °C protection IP 30 dimensions W x H x D 70 x 70 x 35 mm Type Kampmann, article no. 194000146934, type 146934		
pc.	194 000 146 910	Electronic clock thermostat 230 V/50 Hz, in attractive white surface-mounted housing, with electronic 2-point room temperature control and digital weekly clock, power reserve 15 mins, party function, automatic/day/night/off indicator, switching differential can be set; max. amperage 4 A temperature range 10-30 °C night setback 2-10 K protection IP 20 dimensions W x H x D 140 x 70 x 30 mm Type Kampmann, article no. 194000146910, type 146910		
pc.	194 000 146 932	Clock thermostat 230 V/50 Hz, flush-mounted, white cover and frame; large display with set and actual values, 4-buttons to set day/week programme, party function and frost protection temperature range 5-30 °C protection IP 40 power reserve approx. 1 hour contact change-over contact, single-ended max. amperage 2 A dimensions 84 x 84 mm, 18 mm high Type Kampmann, article no. 194000146932, type 146932		
required to complete DataNorm/EDV article no.				



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