IMP KLIMA
AN ORANGE CLIMATE COMPANY

TECHNICAL CATALOGUE

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# Floor convectors TKH-13 for cooling and heating

# Floor convector with forced convection – Cooling and heating – TKH-13

## TKH-13 floor convector with forced convection for cooling and heating

Forced convection floor convectors are designed for room cooling and heating with cooling capacities up to 4.6 kW and heating capacities up to 14 kW. They feature a low noise level during low fan speeds.

## Application

Cooling and heating floor convectors are designed for secondary cooling in the period of cooling demand, in some cases for primary room cooling. Their operation is the most efficient, when they are installed close to the heat source (solar radiation through windows…), to prevent room temperature rising. They are suitable for all rooms with large hot envelope surfaces (large windows, glazing, etc., …). They are applied in buildings in which, due to the construction characteristics, ceiling cooling is not feasible. During the heating season, the convectors can be applied for room heating, similar way to TKV-13 type. Recommended distance between floor convector and glass surface is 50-200 mm.

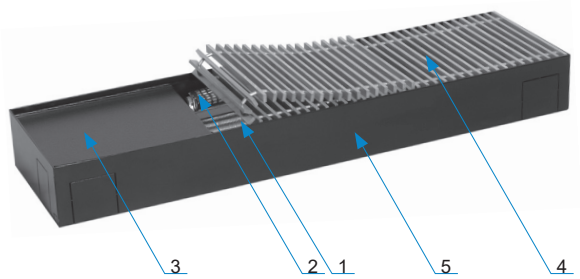
## Types

Three TKH-13 models for 2-pipe water systems and six TKH-13 models for 4-pipe water systems are available.

## Components

**Basic design:**

1. Heat exchanger
2. Tangential fan
3. Tread-on grille
4. Housing
5. Condensation collection tray (under heat exchanger).




## Dimensions

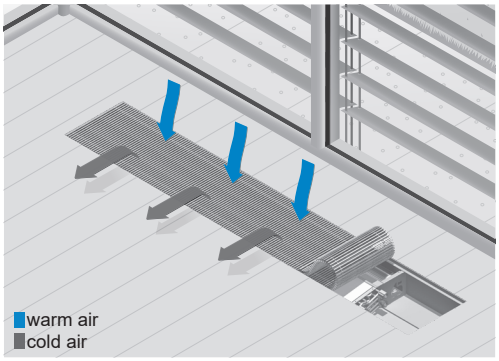
- Standard widths: 340 and 400 mm
- Standard height: 140 mm
- Available in 3 lengths: 1250, 2000 and 2750 mm, accordingly with one, two and three fan units.

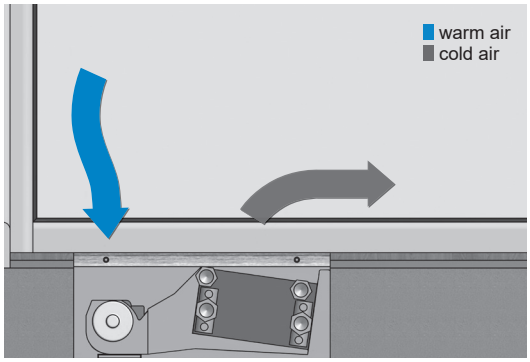
## Accessories

The basic version does not include regulation elements. For water side regulation, different types of valves are available, codes 01, …, VP2. For 3-step speed control of 230 V AC fan an autotransformer and, if necessary, a relay interface must be added. A broad range of thermostats is available to suit different customer ‘s needs.

## Selection

User friendly selection software makes it easy to select the optimum floor convector for individual projects.



# Technical data

## TKH-13 Lx34x14 / 2C / 60

Cooling

| Housing length L [mm] | Fan speed | | | EN 16430 | Temperature regime | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $T_w$ [°C] | | 7 °C / 19 °C | 7 °C / 12 °C | | | 14 °C / 18 °C | | |
| | AC | $T_a$ [°C] | | 28 °C | 24 °C | 26 °C | 27 °C | 24 °C | 26 °C | 27 °C |
| 1250 | MAX | $Q_{c,t}$ | [W] | 885 | 1457 | 1714 | 1845 | 659 | 843 | 956 |
| | | $Q_{c,s}$ | [W] | 885 | 1225 | 1407 | 1500 | 659 | 836 | 925 |
| | | $\dot{m}_w$ | [kg/h] | 379 | 250 | 294 | 316 | 141 | 181 | 205 |
| | | $\Delta p_w$ | [kPa] | 1,99 | 0,99 | 1,30 | 1,46 | 0,41 | 0,60 | 0,73 |
| | MED | $Q_{c,t}$ | [W] | 772 | 1352 | 1592 | 1713 | 575 | 740 | 850 |
| | | $Q_{c,s}$ | [W] | 772 | 1068 | 1227 | 1308 | 575 | 729 | 807 |
| | | $\dot{m}_w$ | [kg/h] | 331 | 232 | 273 | 294 | 123 | 159 | 182 |
| | | $\Delta p_w$ | [kPa] | 1,58 | 0,88 | 1,15 | 1,29 | 0,34 | 0,49 | 0,61 |
| | MIN | $Q_{c,t}$ | [W] | 594 | 1098 | 1292 | 1390 | 442 | 574 | 667 |
| | | $Q_{c,s}$ | [W] | 594 | 822 | 945 | 1007 | 442 | 561 | 621 |
| | | $\dot{m}_w$ | [kg/h] | 255 | 188 | 221 | 238 | 95 | 123 | 143 |
| | | $\Delta p_w$ | [kPa] | 1,02 | 0,64 | 0,82 | 0,92 | 0,23 | 0,34 | 0,42 |
| 2000 | MAX | $Q_{c,t}$ | [W] | 1749 | 2857 | 3361 | 3617 | 1303 | 1665 | 1885 |
| | | $Q_{c,s}$ | [W] | 1749 | 2420 | 2782 | 2965 | 1303 | 1652 | 1829 |
| | | $\dot{m}_w$ | [kg/h] | 750 | 490 | 576 | 620 | 279 | 357 | 404 |
| | | $\Delta p_w$ | [kPa] | 9,53 | 4,45 | 5,93 | 6,76 | 1,71 | 2,58 | 3,19 |
| | MED | $Q_{c,t}$ | [W] | 1451 | 2523 | 2971 | 3198 | 1081 | 1391 | 1595 |
| | | $Q_{c,s}$ | [W] | 1451 | 2008 | 2308 | 2460 | 1081 | 1370 | 1518 |
| | | $\dot{m}_w$ | [kg/h] | 622 | 433 | 509 | 548 | 232 | 298 | 342 |
| | | $\Delta p_w$ | [kPa] | 6,80 | 3,58 | 4,77 | 5,43 | 1,27 | 1,91 | 2,40 |
| | MIN | $Q_{c,t}$ | [W] | 1263 | 2317 | 2726 | 2933 | 941 | 1220 | 1415 |
| | | $Q_{c,s}$ | [W] | 1263 | 1748 | 2009 | 2141 | 941 | 1193 | 1321 |
| | | $\dot{m}_w$ | [kg/h] | 541 | 397 | 467 | 503 | 202 | 261 | 303 |
| | | $\Delta p_w$ | [kPa] | 5,31 | 3,09 | 4,10 | 4,66 | 1,02 | 1,54 | 1,96 |
| 2750 | MAX | Qc,t | [W] | 2203 | 3655 | 4302 | 4630 | 1641 | 2100 | 2385 |
| | | Qc,s | [W] | 2203 | 3048 | 3504 | 3734 | 1641 | 2080 | 2303 |
| | | ṁw | [kg/h] | 944 | 627 | 738 | 794 | 352 | 450 | 511 |
| | | Δpw | [kPa] | 19,21 | 9,08 | 12,19 | 13,95 | 3,31 | 5,06 | 6,32 |
| | MED | Qc,t | [W] | 1837 | 3195 | 3762 | 4050 | 1369 | 1761 | 2020 |
| | | Qc,s | [W] | 1837 | 2543 | 2923 | 3115 | 1369 | 1735 | 1922 |
| | | ṁw | [kg/h] | 787 | 548 | 645 | 694 | 293 | 377 | 433 |
| | | Δpw | [kPa] | 13,74 | 7,14 | 9,57 | 10,92 | 2,45 | 3,74 | 4,73 |
| | MIN | Qc,t | [W] | 1492 | 2736 | 3220 | 3465 | 1111 | 1441 | 1671 |
| | | Qc,s | [W] | 1492 | 2065 | 2373 | 2529 | 1111 | 1409 | 1560 |
| | | ṁw | [kg/h] | 639 | 469 | 552 | 594 | 238 | 309 | 358 |
| | | Δpw | [kPa] | 9,42 | 5,44 | 7,24 | 8,25 | 1,75 | 2,67 | 3,42 |

Heating

| Housing length L [mm] | Fan speed | Temperature regime | | | | |
|---|---|---|---|---|---|---|
| | | $T_w$ | [˚C] | 75 ˚C / 65 ˚C | 70 ˚C / 55 ˚C | 55 ˚C / 45 ˚C |
| | AC | $T_a$ | [˚C] | 20 ˚C | 20 ˚C | 20 ˚C |
| 1250 | MAX | $Q_h$ | [W] | 3159 | 2580 | 1827 |
| | | $\dot{m}_w$ | [kg/h] | 271 | 147 | 157 |
| | | $\Delta p_w$ | [kPa] | 1,01 | 0,39 | 0,43 |
| | MED | $Q_h$ | [W] | 2120 | 1731 | 1226 |
| | | $\dot{m}_w$ | [kg/h] | 182 | 99 | 105 |
| | | $\Delta p_w$ | [kPa] | 0,54 | 0,22 | 0,24 |
| | MIN | $Q_h$ | [W] | 1516 | 1238 | 877 |
| | | $\dot{m}_w$ | [kg/h] | 130 | 71 | 75 |
| | | $\Delta p_w$ | [kPa] | 0,33 | 0,14 | 0,15 |
| 2000 | MAX | $Q_h$ | [W] | 6266 | 5117 | 3624 |
| | | $\dot{m}_w$ | [kg/h] | 537 | 292 | 311 |
| | | $\Delta p_w$ | [kPa] | 4,66 | 1,65 | 1,82 |
| | MED | $Q_h$ | [W] | 4201 | 3430 | 2430 |
| | | $\dot{m}_w$ | [kg/h] | 360 | 196 | 208 |
| | | $\Delta p_w$ | [kPa] | 2,33 | 0,87 | 0,95 |
| | MIN | $Q_h$ | [W] | 3064 | 2502 | 1772 |
| | | $\dot{m}_w$ | [kg/h] | 263 | 143 | 152 |
| | | $\Delta p_w$ | [kPa] | 1,38 | 0,54 | 0,59 |
| 2750 | MAX | $Q_h$ | [W] | 9326 | 7616 | 5394 |
| | | $\dot{m}_w$ | [kg/h] | 799 | 435 | 462 |
| | | $\Delta p_w$ | [kPa] | 12,57 | 4,25 | 4,72 |
| | MED | $Q_h$ | [W] | 6260 | 5112 | 3621 |
| | | $\dot{m}_w$ | [kg/h] | 537 | 292 | 310 |
| | | $\Delta p_w$ | [kPa] | 6,13 | 2,17 | 2,39 |
| | MIN | $Q_h$ | [W] | 4467 | 3648 | 2584 |
| | | $\dot{m}_w$ | [kg/h] | 383 | 208 | 221 |
| | | $\Delta p_w$ | [kPa] | 3,41 | 1,26 | 1,38 |

## Definition of symbols

| | |
|---|---|
| **AC** | AC 230 V fan |
| **$Q_{c,t}$ [W]** | Total cooling capacity at 50 % relative air humidity |
| **$Q_{c,s}$ [W]** | Sensible cooling capacity |
| **$Q_h$ [W]** | Heating capacity |
| **$\dot{m}_w$ [kg/h]** | Water flow |
| **$\Delta p_w$ [kPa]** | Pressure drop on the waterside |
| **$T_w$ [°C]** | Water temperature |
| **$T_a$ [°C]** | Air temperature |

# Technical data

## TKH-13 Lx34x14 / 4C / 60

Cooling

| Housing length L [mm] | Fan speed | | | EN 16430 | Temperature regime | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $T_w$ [°C] | | 7 °C / 19 °C | 7 °C / 12 °C | | | 14 °C / 18 °C | | |
| | AC | $T_a$ [°C] | | 28 °C | 24 °C | 26 °C | 27 °C | 24 °C | 26 °C | 27 °C |
| 1250 | MAX | $Q_{c,t}$ | [W] | 752 | 1247 | 1468 | 1580 | 560 | 716 | 814 |
| | | $Q_{c,s}$ | [W] | 752 | 1040 | 1195 | 1274 | 560 | 710 | 786 |
| | | $\dot{m}_w$ | [kg/h] | 322 | 214 | 252 | 271 | 120 | 154 | 174 |
| | | $\Delta p_w$ | [kPa] | 1,29 | 0,64 | 0,85 | 0,96 | 0,26 | 0,38 | 0,46 |
| | MED | $Q_{c,t}$ | [W] | 605 | 1051 | 1238 | 1333 | 450 | 580 | 665 |
| | | $Q_{c,s}$ | [W] | 605 | 837 | 962 | 1025 | 450 | 571 | 632 |
| | | $\dot{m}_w$ | [kg/h] | 259 | 180 | 212 | 228 | 97 | 124 | 142 |
| | | $\Delta p_w$ | [kPa] | 0,89 | 0,49 | 0,64 | 0,72 | 0,19 | 0,27 | 0,34 |
| | MIN | $Q_{c,t}$ | [W] | 436 | 794 | 934 | 1005 | 325 | 421 | 487 |
| | | $Q_{c,s}$ | [W] | 436 | 603 | 693 | 739 | 325 | 412 | 456 |
| | | $\dot{m}_w$ | [kg/h] | 187 | 136 | 160 | 172 | 70 | 90 | 104 |
| | | $\Delta p_w$ | [kPa] | 0,52 | 0,31 | 0,40 | 0,45 | 0,12 | 0,17 | 0,21 |
| 2000 | MAX | $Q_{c,t}$ | [W] | 1440 | 2389 | 2812 | 3027 | 1073 | 1373 | 1559 |
| | | $Q_{c,s}$ | [W] | 1440 | 1993 | 2290 | 2441 | 1073 | 1360 | 1506 |
| | | $\dot{m}_w$ | [kg/h] | 617 | 410 | 482 | 519 | 230 | 294 | 334 |
| | | $\Delta p_w$ | [kPa] | 5,25 | 2,49 | 3,34 | 3,82 | 0,92 | 1,39 | 1,74 |
| | MED | $Q_{c,t}$ | [W] | 1140 | 1997 | 2352 | 2531 | 849 | 1093 | 1256 |
| | | $Q_{c,s}$ | [W] | 1140 | 1577 | 1813 | 1932 | 849 | 1076 | 1192 |
| | | $\dot{m}_w$ | [kg/h] | 489 | 342 | 403 | 434 | 182 | 234 | 269 |
| | | $\Delta p_w$ | [kPa] | 3,43 | 1,82 | 2,42 | 2,77 | 0,62 | 0,95 | 1,20 |
| | MIN | $Q_{c,t}$ | [W] | 873 | 1601 | 1885 | 2028 | 650 | 843 | 978 |
| | | $Q_{c,s}$ | [W] | 873 | 1208 | 1389 | 1480 | 650 | 824 | 913 |
| | | $\dot{m}_w$ | [kg/h] | 374 | 275 | 323 | 348 | 139 | 181 | 210 |
| | | $\Delta p_w$ | [kPa] | 2,12 | 1,24 | 1,64 | 1,87 | 0,41 | 0,62 | 0,79 |
| 2750 | MAX | $Q_{c,t}$ | [W] | 1978 | 3282 | 3863 | 4158 | 1473 | 1886 | 2142 |
| | | $Q_{c,s}$ | [W] | 1978 | 2737 | 3146 | 3353 | 1473 | 1868 | 2068 |
| | | $\dot{m}_w$ | [kg/h] | 848 | 563 | 662 | 713 | 316 | 404 | 459 |
| | | $\Delta p_w$ | [kPa] | 11,56 | 5,39 | 7,29 | 8,35 | 1,92 | 2,96 | 3,72 |
| | MED | $Q_{c,t}$ | [W] | 1405 | 2462 | 2899 | 3120 | 1047 | 1348 | 1549 |
| | | $Q_{c,s}$ | [W] | 1405 | 1945 | 2235 | 2382 | 1047 | 1327 | 1469 |
| | | $\dot{m}_w$ | [kg/h] | 602 | 422 | 497 | 535 | 224 | 289 | 332 |
| | | $\Delta p_w$ | [kPa] | 6,11 | 3,20 | 4,30 | 4,92 | 1,07 | 1,65 | 2,09 |
| | MIN | $Q_{c,t}$ | [W] | 1154 | 2116 | 2491 | 2680 | 859 | 1114 | 1293 |
| | | $Q_{c,s}$ | [W] | 1154 | 1597 | 1835 | 1956 | 859 | 1090 | 1207 |
| | | $\dot{m}_w$ | [kg/h] | 495 | 363 | 427 | 459 | 184 | 239 | 277 |
| | | $\Delta p_w$ | [kPa] | 4,26 | 2,45 | 3,27 | 3,73 | 0,78 | 1,19 | 1,53 |

Heating

| Housing length L [mm] | Fan speed | Temperature regime | | | | |
|---|---|---|---|---|---|---|
| | | $T_w$ | [˚C] | 75 ˚C / 65 ˚C | 70 ˚C / 55 ˚C | 55 ˚C / 45 ˚C |
| | AC | $T_a$ | [˚C] | 20 ˚C | 20 ˚C | 20 ˚C |
| 1250 | MAX | $Q_h$ | [W] | 2249 | 1837 | 1301 |
| | | $\dot{m}_w$ | [kg/h] | 193 | 105 | 112 |
| | | $\Delta p_w$ | [kPa] | 1,82 | 0,67 | 0,74 |
| | MED | $Q_h$ | [W] | 1570 | 1282 | 908 |
| | | $\dot{m}_w$ | [kg/h] | 135 | 73 | 78 |
| | | $\Delta p_w$ | [kPa] | 1,00 | 0,39 | 0,43 |
| | MIN | $Q_h$ | [W] | 1013 | 827 | 586 |
| | | $\dot{m}_w$ | [kg/h] | 87 | 47 | 50 |
| | | $\Delta p_w$ | [kPa] | 0,50 | 0,21 | 0,23 |
| 2000 | MAX | $Q_h$ | [W] | 4829 | 3943 | 2793 |
| | | $\dot{m}_w$ | [kg/h] | 414 | 225 | 239 |
| | | $\Delta p_w$ | [kPa] | 12,31 | 4,14 | 4,60 |
| | MED | $Q_h$ | [W] | 3084 | 2518 | 1784 |
| | | $\dot{m}_w$ | [kg/h] | 264 | 144 | 153 |
| | | $\Delta p_w$ | [kPa] | 5,48 | 1,94 | 2,14 |
| | MIN | $Q_h$ | [W] | 2229 | 1820 | 1289 |
| | | $\dot{m}_w$ | [kg/h] | 191 | 104 | 111 |
| | | $\Delta p_w$ | [kPa] | 3,12 | 1,15 | 1,27 |
| 2750 | MAX | $Q_h$ | [W] | 7469 | 6099 | 4320 |
| | | $\dot{m}_w$ | [kg/h] | 640 | 349 | 370 |
| | | $\Delta p_w$ | [kPa] | 39,98 | 12,95 | 14,45 |
| | MED | $Q_h$ | [W] | 4596 | 3753 | 2658 |
| | | $\dot{m}_w$ | [kg/h] | 394 | 215 | 228 |
| | | $\Delta p_w$ | [kPa] | 16,19 | 5,47 | 6,08 |
| | MIN | $Q_h$ | [W] | 3282 | 2680 | 1898 |
| | | $\dot{m}_w$ | [kg/h] | 281 | 153 | 163 |
| | | $\Delta p_w$ | [kPa] | 8,81 | 3,10 | 3,42 |

## Definition of symbols

| | |
|---|---|
| **AC** | AC 230 V fan |
| **$Q_{c,t}$ [W]** | Total cooling capacity at 50 % relative air humidity |
| **$Q_{c,s}$ [W]** | Sensible cooling capacity |
| **$Q_h$ [W]** | Heating capacity |
| **$\dot{m}_w$ [kg/h]** | Water flow |
| **$\Delta p_w$ [kPa]** | Pressure drop on the waterside |
| **$T_w$ [°C]** | Water temperature |
| **$T_a$ [°C]** | Air temperature |

# Technical data

## TKH-13 Lx40x14 / 4C / 60

Cooling

| Housing length L [mm] | Fan speed | | | EN 16430 | Temperature regime | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $T_w$ [°C] | | 7 °C / 19 °C | 7 °C / 12 °C | | | 14 °C / 18 °C | | |
| | AC | $T_a$ [°C] | | 28 °C | 24 °C | 26 °C | 27 °C | 24 °C | 26 °C | 27 °C |
| 1250 | MAX | $Q_{c,t}$ | [W] | 854 | 1417 | 1668 | 1796 | 636 | 814 | 925 |
| | | $Q_{c,s}$ | [W] | 854 | 1182 | 1359 | 1448 | 636 | 807 | 893 |
| | | $\dot{m}_w$ | [kg/h] | 366 | 243 | 286 | 308 | 136 | 175 | 198 |
| | | $\Delta p_w$ | [kPa] | 1,87 | 0,92 | 1,22 | 1,38 | 0,36 | 0,54 | 0,66 |
| | MED | $Q_{c,t}$ | [W] | 687 | 1195 | 1407 | 1515 | 512 | 659 | 755 |
| | | $Q_{c,s}$ | [W] | 687 | 951 | 1093 | 1165 | 512 | 649 | 719 |
| | | $\dot{m}_w$ | [kg/h] | 294 | 205 | 241 | 260 | 110 | 141 | 162 |
| | | $\Delta p_w$ | [kPa] | 1,28 | 0,70 | 0,91 | 1,03 | 0,26 | 0,38 | 0,47 |
| | MIN | $Q_{c,t}$ | [W] | 496 | 902 | 1062 | 1142 | 369 | 478 | 554 |
| | | $Q_{c,s}$ | [W] | 496 | 686 | 788 | 840 | 369 | 468 | 518 |
| | | $\dot{m}_w$ | [kg/h] | 213 | 155 | 182 | 196 | 79 | 102 | 119 |
| | | $\Delta p_w$ | [kPa] | 0,74 | 0,44 | 0,57 | 0,65 | 0,16 | 0,24 | 0,29 |
| 2000 | MAX | $Q_{c,t}$ | [W] | 1655 | 2747 | 3233 | 3479 | 1233 | 1578 | 1792 |
| | | $Q_{c,s}$ | [W] | 1655 | 2291 | 2633 | 2806 | 1233 | 1563 | 1731 |
| | | $\dot{m}_w$ | [kg/h] | 709 | 471 | 554 | 597 | 264 | 338 | 384 |
| | | $\Delta p_w$ | [kPa] | 7,88 | 3,71 | 5,00 | 5,72 | 1,34 | 2,06 | 2,58 |
| | MED | $Q_{c,t}$ | [W] | 1295 | 2270 | 2673 | 2877 | 965 | 1243 | 1428 |
| | | $Q_{c,s}$ | [W] | 1295 | 1793 | 2061 | 2196 | 965 | 1223 | 1355 |
| | | $\dot{m}_w$ | [kg/h] | 555 | 389 | 458 | 493 | 207 | 266 | 306 |
| | | $\Delta p_w$ | [kPa] | 5,01 | 2,64 | 3,54 | 4,04 | 0,89 | 1,36 | 1,73 |
| | MIN | $Q_{c,t}$ | [W] | 1003 | 1841 | 2166 | 2330 | 747 | 969 | 1124 |
| | | $Q_{c,s}$ | [W] | 1003 | 1389 | 1596 | 1701 | 747 | 948 | 1049 |
| | | $\dot{m}_w$ | [kg/h] | 430 | 316 | 371 | 400 | 160 | 208 | 241 |
| | | $\Delta p_w$ | [kPa] | 3,15 | 1,83 | 2,43 | 2,76 | 0,59 | 0,90 | 1,15 |
| 2750 | MAX | $Q_{c,t}$ | [W] | 2183 | 3623 | 4264 | 4589 | 1626 | 2081 | 2364 |
| | | $Q_{c,s}$ | [W] | 2183 | 3021 | 3473 | 3701 | 1626 | 2062 | 2283 |
| | | $\dot{m}_w$ | [kg/h] | 936 | 621 | 731 | 787 | 349 | 446 | 507 |
| | | $\Delta p_w$ | [kPa] | 16,12 | 7,49 | 10,13 | 11,63 | 2,64 | 4,09 | 5,15 |
| | MED | $Q_{c,t}$ | [W] | 1551 | 2697 | 3175 | 3418 | 1155 | 1486 | 1705 |
| | | $Q_{c,s}$ | [W] | 1551 | 2146 | 2467 | 2629 | 1155 | 1464 | 1622 |
| | | $\dot{m}_w$ | [kg/h] | 665 | 462 | 544 | 586 | 248 | 319 | 365 |
| | | $\Delta p_w$ | [kPa] | 8,49 | 4,37 | 5,88 | 6,72 | 1,46 | 2,26 | 2,87 |
| | MIN | $Q_{c,t}$ | [W] | 1274 | 2318 | 2729 | 2936 | 949 | 1229 | 1423 |
| | | $Q_{c,s}$ | [W] | 1274 | 1762 | 2026 | 2159 | 949 | 1203 | 1332 |
| | | $\dot{m}_w$ | [kg/h] | 546 | 398 | 468 | 503 | 203 | 263 | 305 |
| | | $\Delta p_w$ | [kPa] | 5,91 | 3,33 | 4,46 | 5,09 | 1,05 | 1,62 | 2,09 |

Heating

| Housing length L [mm] | Fan speed | Temperature regime | | | | |
|---|---|---|---|---|---|---|
| | | $T_w$ | [˚C] | 75 ˚C / 65 ˚C | 70 ˚C / 55 ˚C | 55 ˚C / 45 ˚C |
| | AC | $T_a$ | [˚C] | 20 ˚C | 20 ˚C | 20 ˚C |
| 1250 | MAX | $Q_h$ | [W] | 3490 | 2850 | 2019 |
| | | $\dot{m}_w$ | [kg/h] | 299 | 163 | 173 |
| | | $\Delta p_w$ | [kPa] | 4,44 | 1,55 | 1,71 |
| | MED | $Q_h$ | [W] | 2359 | 1926 | 1364 |
| | | $\dot{m}_w$ | [kg/h] | 202 | 110 | 117 |
| | | $\Delta p_w$ | [kPa] | 2,23 | 0,82 | 0,90 |
| | MIN | $Q_h$ | [W] | 1628 | 1329 | 942 |
| | | $\dot{m}_w$ | [kg/h] | 140 | 76 | 81 |
| | | $\Delta p_w$ | [kPa] | 1,20 | 0,46 | 0,51 |
| 2000 | MAX | $Q_h$ | [W] | 7161 | 5848 | 4142 |
| | | $\dot{m}_w$ | [kg/h] | 614 | 334 | 355 |
| | | $\Delta p_w$ | [kPa] | 28,93 | 9,40 | 10,49 |
| | MED | $Q_h$ | [W] | 4842 | 3954 | 2800 |
| | | $\dot{m}_w$ | [kg/h] | 415 | 226 | 240 |
| | | $\Delta p_w$ | [kPa] | 13,96 | 4,70 | 5,22 |
| | MIN | $Q_h$ | [W] | 3530 | 2883 | 2042 |
| | | $\dot{m}_w$ | [kg/h] | 303 | 165 | 175 |
| | | $\Delta p_w$ | [kPa] | 7,86 | 2,74 | 3,03 |
| 2750 | MAX | $Q_h$ | [W] | 10373 | 8470 | 5999 |
| | | $\dot{m}_w$ | [kg/h] | 889 | 484 | 514 |
| | | $\Delta p_w$ | [kPa] | 84,33 | 26,72 | 29,91 |
| | MED | $Q_h$ | [W] | 6963 | 5686 | 4027 |
| | | $\dot{m}_w$ | [kg/h] | 597 | 325 | 345 |
| | | $\Delta p_w$ | [kPa] | 39,53 | 12,87 | 14,36 |
| | MIN | $Q_h$ | [W] | 4972 | 4060 | 2876 |
| | | $\dot{m}_w$ | [kg/h] | 426 | 232 | 247 |
| | | $\Delta p_w$ | [kPa] | 21,11 | 7,08 | 7,88 |

## Definition of symbols

| | |
|---|---|
| **AC** | AC 230 V fan |
| **$Q_{c,t}$ [W]** | Total cooling capacity at 50 % relative air humidity |
| **$Q_{c,s}$ [W]** | Sensible cooling capacity |
| **$Q_h$ [W]** | Heating capacity |
| **$\dot{m}_w$ [kg/h]** | Water flow |
| **$\Delta p_w$ [kPa]** | Pressure drop on the waterside |
| **$T_w$ [°C]** | Water temperature |
| **$T_a$ [°C]** | Air temperature |

## TKH-13 Lx34x14/.../2C/60

| Housing length L [mm] | No. of fans | Water connector dimension ["] | Water content in the heat exchanger [l] | Sound power $L_{wA}$ [dB(A)] | Sound pressure $L_{pA}$ [dB(A)] | Max. input power [W] | Max. input current [A] |
|---|---|---|---|---|---|---|---|
| | | | | | | AC | AC |
| **1250** | 1 | 1/2 | 1,2 | 46 | 38 | 24 | 0,20 |
| | | | | 37 | 29 | | |
| | | | | 31 | 23 | | |
| **2000** | 2 | 3/4 | 2,2 | 48 | 39 | 48 | 0,40 |
| | | | | 40 | 31 | | |
| | | | | 34 | 25 | | |
| **2750** | 3 | 3/4 | 3,2 | 50 | 40 | 72 | 0,60 |
| | | | | 41 | 31 | | |
| | | | | 36 | 26 | | |

## TKH-13 Lx34x14/.../4C/60

| Housing length L [mm] | No. of fans | Water connector dimension ["] | Water content in the heat exchanger, cooling [l] | Water content in the heat exchanger, heating [l] | Sound power $L_{wA}$ [dB(A)] | Sound pressure $L_{pA}$ [dB(A)] | Max. input power [W] | Max. input current [A] |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | AC | AC |
| **1250** | 1 | 1/2 | 1,1 | 0,4 | 52 | 44 | 20 | 0,12 |
| | | | | | 44 | 36 | | |
| | | | | | 36 | 28 | | |
| **2000** | 2 | 1/2 | 2,0 | 0,7 | 54 | 45 | 40 | 0,24 |
| | | | | | 47 | 38 | | |
| | | | | | 39 | 30 | | |
| **2750** | 3 | 1/2 | 2,9 | 1,0 | 56 | 46 | 60 | 0,36 |
| | | | | | 49 | 39 | | |
| | | | | | 41 | 31 | | |

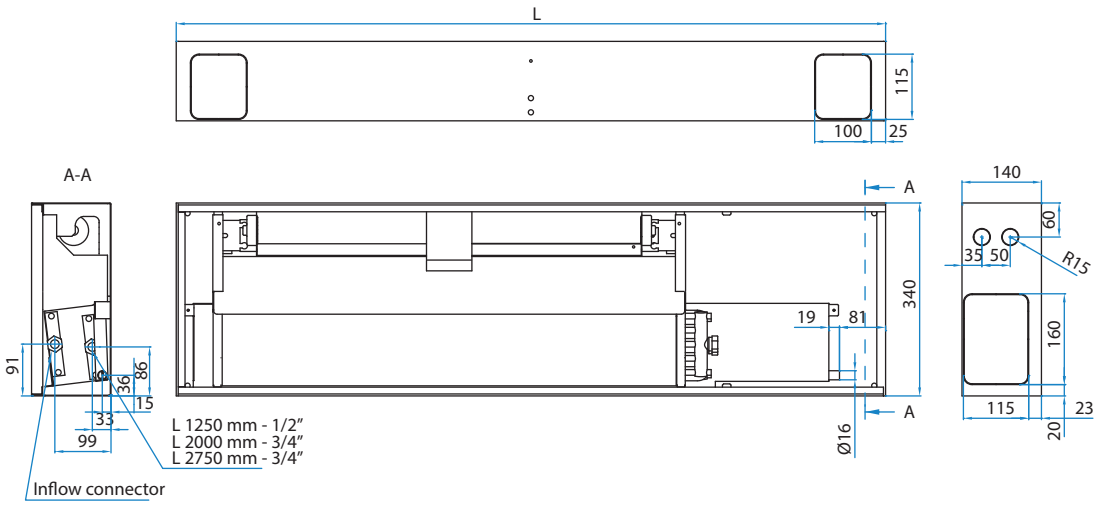
## TKH-13 Lx40x14/.../4C/60

| Housing length L [mm] | No. of fans | Water connector dimension ["] | Water content in the heat exchanger, cooling [l] | Water content in the heat exchanger, heating [l] | Sound power $L_{wA}$ [dB(A)] | Sound pressure $L_{pA}$ [dB(A)] | Max. input power [W] | Max. input current [A] |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | AC | AC |
| **1250** | 1 | 1/2 | 0,5 | 1,4 | 50 | 42 | 20 | 0,12 |
| | | | | | 43 | 35 | | |
| | | | | | 36 | 28 | | |
| **2000** | 2 | 1/2 | 0,9 | 2,6 | 52 | 43 | 40 | 0,24 |
| | | | | | 45 | 36 | | |
| | | | | | 38 | 29 | | |
| **2750** | 3 | 1/2 | 1,3 | 3,9 | 54 | 44 | 60 | 0,36 |
| | | | | | 47 | 37 | | |
| | | | | | 40 | 30 | | |

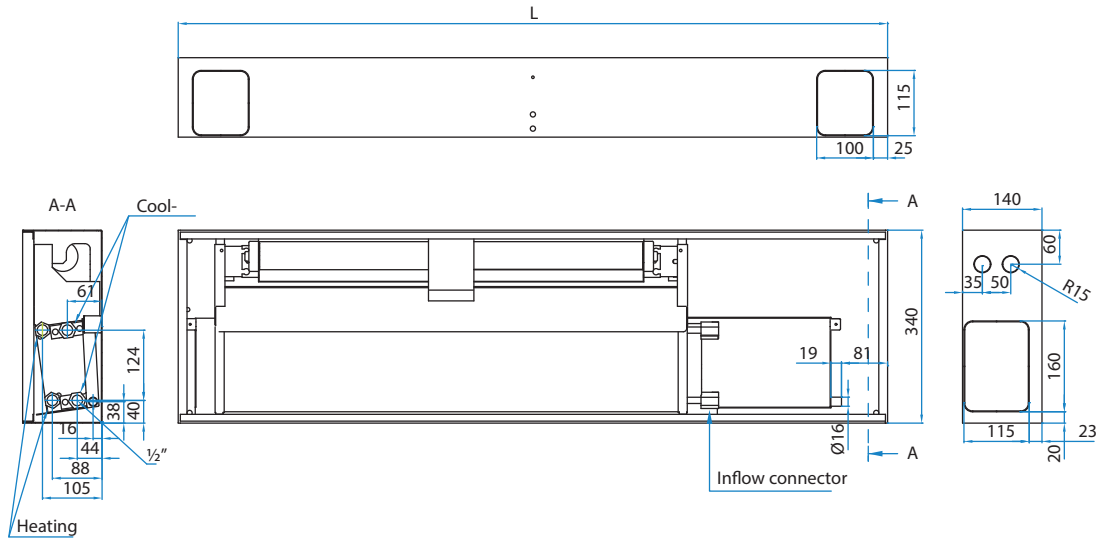
Note: The level of sound pressure $L_{pA}$ is calculated based on the level of sound power $L_{WA}$ emitted by the noise source at a certain distance (1 m) and depends on the installation type (free space or next to a wall).

# Dimensions

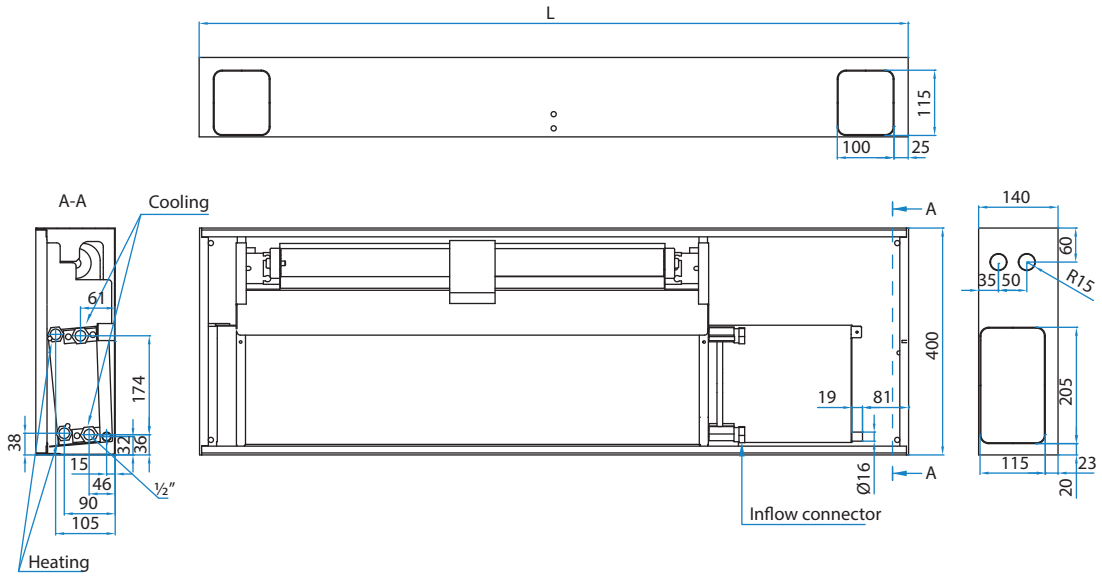
**TKH-13 Lx34x14/.../2C**




**TKH-13 Lx34x14/.../4C**

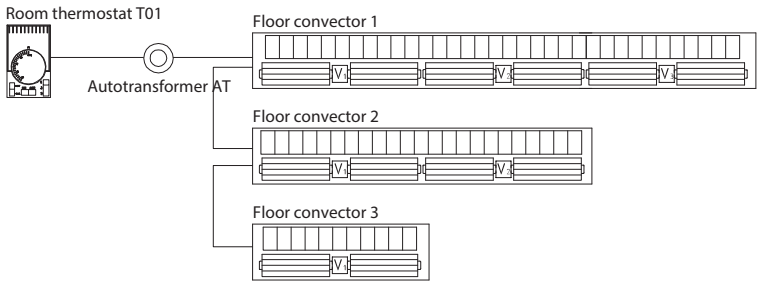



**TKH-13 Lx40x14/.../4C**

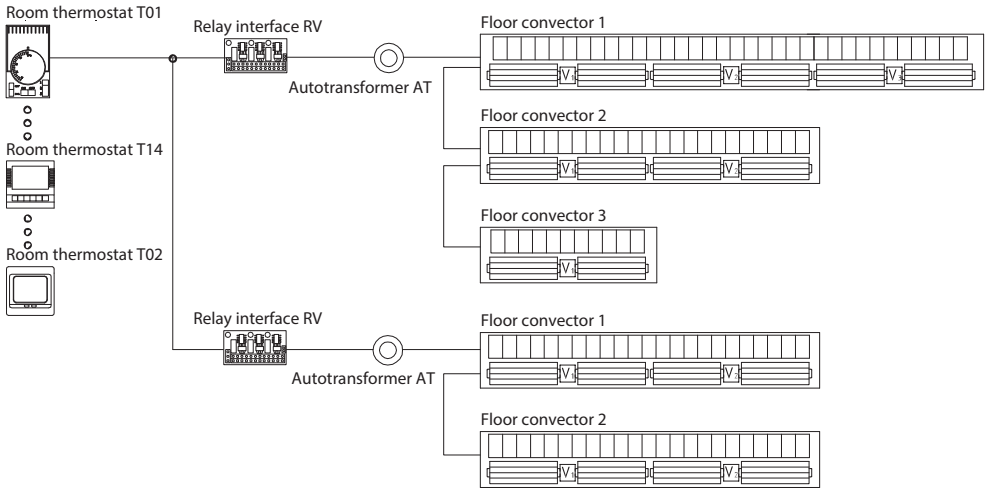


# Examples of floor convectors connections into groups

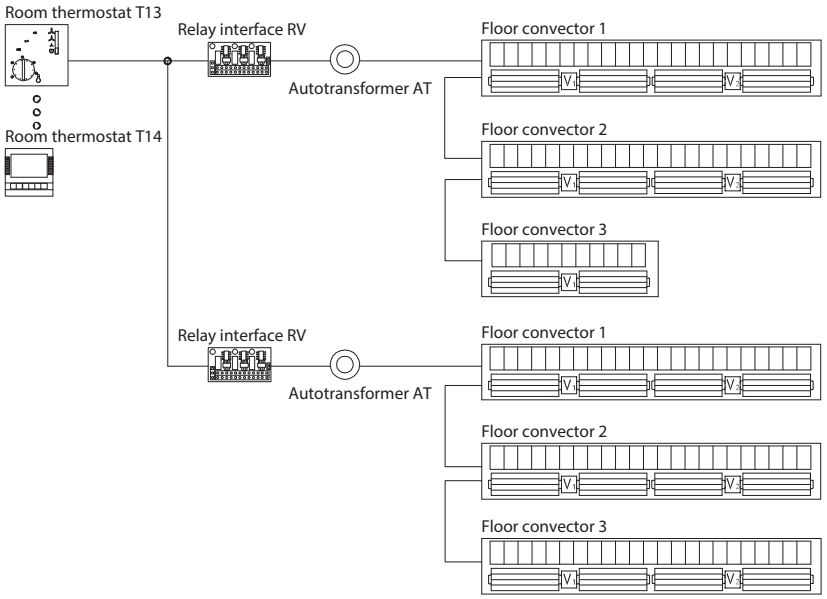
**Example 1: 2-pipe system, room thermostat, up to 6 fans**




**Example 2: 2-pipe system, room thermostat, more than 6 fans**




**Example 3: 4-pipe system, room thermostat, more than 6 fans**



# Accessories

| Code | Tread-on grile | |
|---|---|---|
| **111** | **Standard tread-on grille design:**<br>**Longitudinal fixed aluminium grille** | **Anodised**<br>Standard: natural aluminium colour, black, brass colour<br>On request: chocolate, bronze |
| **114** | **Roll-up aluminium grille** | **Anodised**<br>Standard: natural aluminium colour, black, brass colour<br>On request: chocolate (114E), bronze (114F) |
| **114W** | **Roll-up wooden grille** | **Wood type**<br>Standard: oak, ash, wallnut, mahogany,<br>On request: wenge (114W5), cherry (114W6) |
| **114SS** | **Roll-up grille** | **Stainless steel** |

| Code | Control accessories |
|---|---|
| | **Water side control (control of the warm water flow rate into the convector)** |
| **01** | Manual valve R1/2”, R3/4”, straight |
| **02** | Manual valve R1/2”, R3/4”, angular |
| **03** | Radiator shut-off cock R1/2”, R3/4”, straight |
| **04** | Radiator shut-off cock R1/2”, R3/4”, angular |
| **VP2** | Two-way valve with ET actuators ON-OF (2-pipe set) |
| **VP4** | Two-way valve with ET actuators ON-OF (4-pipe set) |
| **VT2** | Three way valve with ET actuator ON-OF (2-pipe set) |
| **VT4** | Three way valve with ET actuator ON-OF (4-pipe set) |

| | **Air side control (fan operation control)** |
|---|---|
| **T01** | Room thermostat for 2-pipe systems, surface installation |
| **T02** | LCD room thermostat for 2-pipe systems, semi-flush installation |
| **T14** | LCD room thermostat for 2- and 4-pipe systems, semi-flush installation |
| **T13** | Room thermostat for 4-pipe systems, surface installation |
| **AT60** | Autotransformer for AC fans control TKH-13/60 |
| **RV** | Relay interface for 2- and 4-pipe systems |

| Code | Other accessories |
|---|---|
| **010(xx°)** | Corner design of convector and grille |
| **017** | Housing thermal insulation |
| **018** | Wooden protection cover (protection of the convector during the installation) |
| **021** | Aluminium frame, fixed to the housing |
| **028** | Level adjusting legs, leveling height 20 – 70 mm |
| **029** | Level adjusting and support legs, with reinforced housing (upon request) |
| **032** | Connection for fresh air supply, without damper (upon request) |
| **033** | Connection for fresh air supply, with damper (upon request) |

*For TKH floor convectors the use of roll-up grilles is recommended in general.

# Types and colours of tread-on grilles

## Longitudinal aluminium tread-on grilles

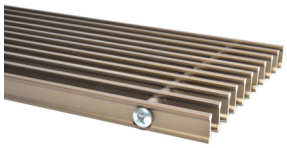
**111D** longitudinal fixed grille, anodised in natural aluminium colour

**111B** longitudinal fixed grille, anodised in black colour

**111C** longitudinal fixed grille, anodised in brass colour

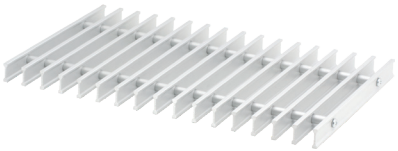
**111E** longitudinal fixed grille, anodised in chocolate colour

**111F** longitudinal fixed grille, anodised in bronze colour

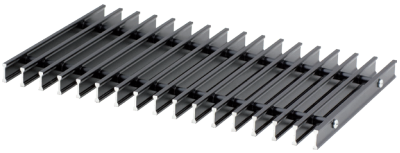


## Aluminium and stainless steel roll-up grilles

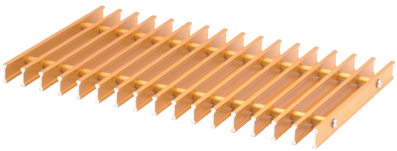
**114D** roll-up grille, anodised in natural aluminium colour



**114B** roll-up grille, anodised in black colour

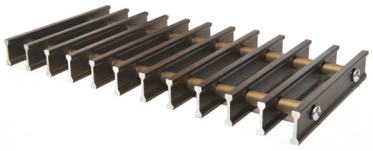


**114C** roll-up grille, anodised in brass colour

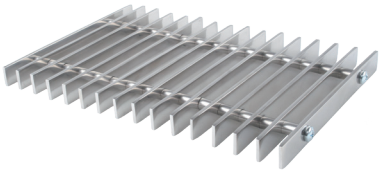


**114E** roll-up grille, anodised in chocolate colour

**114F** roll-up grille, anodised in bronze colour

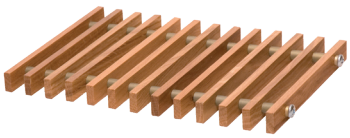


**114SS** roll-up grille, stainless steel

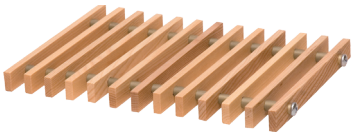


## Wooden roll-up grilles

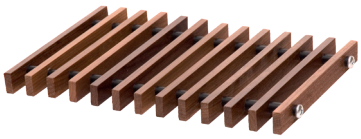
**114W1** oak wood



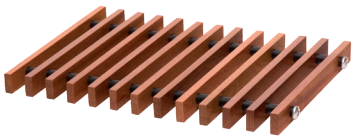
**114W2** ash wood



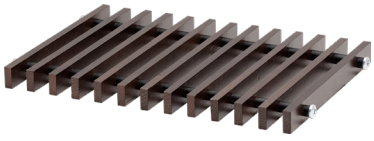
**114W3** walnut wood



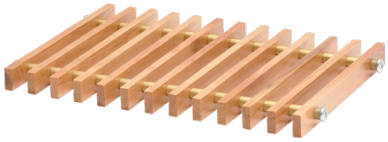
**114W4** mahogany wood



**114W5** wenge wood



**114W6** cherry wood



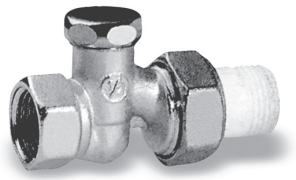
Note: Longitudinal tread-on grilles are designed to withstand the weight of an individual person, while in case of larger loads roll-up grilles are recommended.
*For TKH floor convectors the use of roll-up grilles is recomended in general.

# Water side control accessories

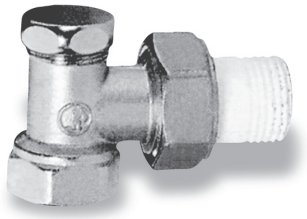
**01** Manual valve R1/2” ali R3/4”, straight

**02** Manual valve R1/2” or R3/4”, angular

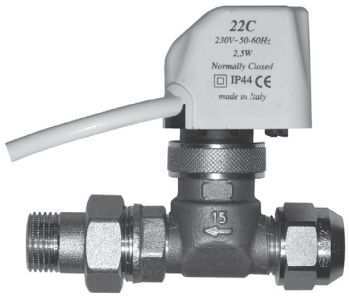
**03** Radiator shut-off cock R1/2”ali R3/4”, straight



**04** Radiator shut-off cock R1/2”or R3/4”, angular



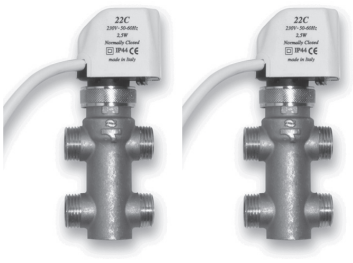
**VP2** Two-way valve with ET actuators ON-OFF (2-pipe set)




**VP4** Two-way valve with ET actuators ON-OF (4-pipe set)


**VT2** Three way valve with ET actuator ON-OFF (2-pipe set)


**VT4** Three way valve with ET actuator ON-OF (4-pipe set)




Notes:

- Valve size (R1/2”, R3/4”) depends on the size of heat exchanger connector size (not necessary to state).
- Manual valves 01-04 are only supplied with the convector but not installed, sets of two- and three-way valves are installed,
- Sets of three-way valves VT and VT require more space for installation, possibility of installation should be confirmed by the producer before an order.
- In case of cooling valves VP2, VP4, VT2, VT4 with ET actuator are recommended.

# Air side control

## T01 Room thermostat

- for 2-pipe systems
- wall installation
- room temperature setup
- manual speed selection
- manual regime (heating – cooling) selection


## T02 Electronic LCD room thermostat (touch screen)

- for 2-pipe systems
- semi-flush installation into the enclosed electrical socket
- setup and display of room temperature
- manual or auto speed selection
- manual regime (heating – cooling) selection


## T13 Room thermostat

- for 4-pipe systems
- wall installation
- room temperature setup
- manual speed selection
- manual regime (heating – cooling) selection


## T14 Electronic LCD room thermostat

- for 2-pipe and 4-pipe systems
- semi-flush installation into the enclosed electrical socket
- setup and display of room temperature
- manual or auto speed selection
- manual regime (heating – cooling) selection

# Air side control accessories

## AT60

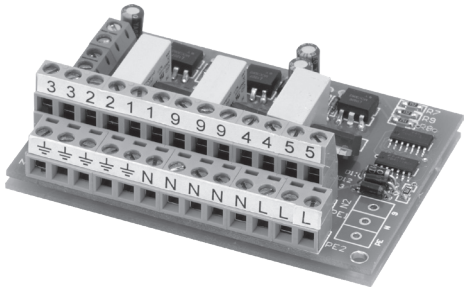
Avtotransformer AT60 is designed for 3-step speed control of 1 to max. 6 fans type 60 installed in TKH-13 floor convectors.


## RV

Relay interface is designed to attach autotransformer AT60 in 2- or 4-pipe models of TKH-13 floor convectors:

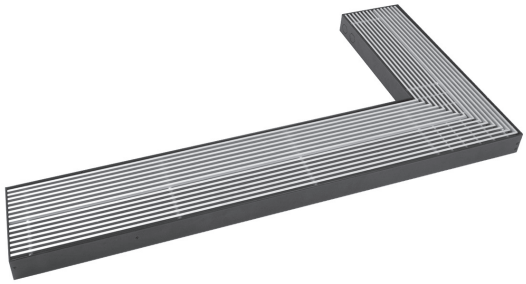
- connection to a room thermostat to control several groups of floor convectors connected to one room thermostat (more than 6 fans in a group)
- connection to a room thermostat or BMS with 3-step (MIN-MED-MAX) outputs 230 Vac output for fan speed

In case when 6 or less fans are controlled with a single T01 room thermostat, RV is not needed.



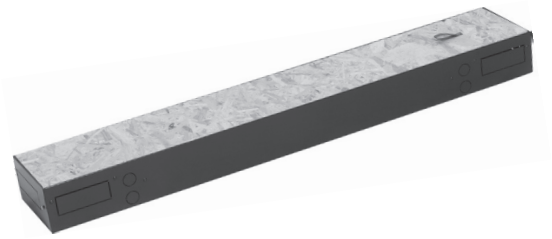
# Other accessories

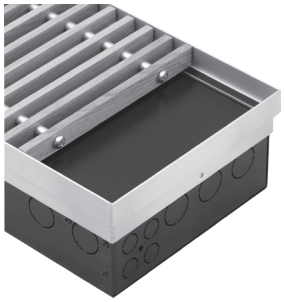
## 010(xx°) Corner design of convector and grille



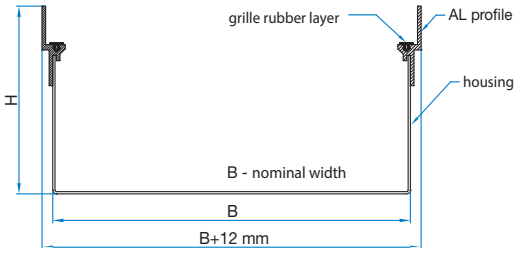
## 017 Housing thermal insulation

## 018 Wooden protection cover





## 021 Aluminium frame




Note:
when ordering accessory 021, lenght and width of housing increase for 12 mm.
The length and width of the grille also change accordingly.

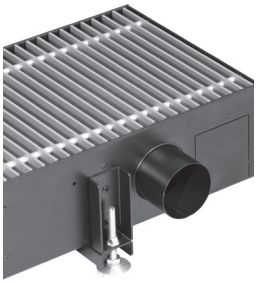
## 028 Level adjusting legs

- Levelling height (distance to the bottom of floor convector) is 20–70 mm.
- Installation possible in models of 105 and 140 mm height only.
- Different project solutions upon request.

## 029 Level adjusting and support legs

- Recommended for installation into false floor.
- Set with reinforced housing bracket.
- Available upon request.

# Connector for fresh air supply



## 032 Connection for fresh air supply without damper

- The connection for fresh air supply is available as a tailored solution, installation details, connection placement and size are to be clarified with the producer for each project individually.

## 033 Connection for fresh air supply with damper

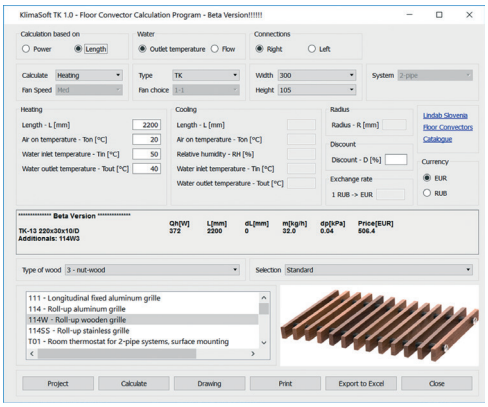
- The connection for fresh air supply is available as a tailored solution, installation details, connection placement and size are to be clarified with the producer for each project individually.

## 040 Lowered side

- For connecting two or more floor convectors in line. The grille is from one piece limited with maximum grille length.
- Possible lowered side on the right 040R, lowered side on the left 040L, both lowered sides 040R, 040L.

## Custom-made convectors

Custom-made floor convectors with non-standard dimensions and technical characteristics can be produced on customer's request and according project specifications.




For selection of floor convectors user friendly software is available on request.

## Ordering key

| TKH-13 | / | 125 X 35 X 14 | / | R | / | 2C | / | 60 | / | T14, AT60, RV,...VP2, ... | / | | / | 111D | / | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2a x 2b x 2c | | 3 | | 4 | | 5 | | 6a, 6b | | 7 | | 8 | | 9 |

1 Type

| | |
|---|---|
| **TKH-13** | Floor convector with forced convection forheating and cooling |

2a Length

| | |
|---|---|
| **125** | 1250 mm |
| **200** | 2000 mm |
| **275** | 2750 mm |

2b Width

| | |
|---|---|
| **34** | 340 mm |
| **40** | 400 mm |

2c Height

| | |
|---|---|
| **14** | 140 mm |

3 Water connection side

| | |
|---|---|
| **R** | Right (convector seen from the room towards the window) |
| **L** | Left (convector seen from the room towards the window) |

4 Saystem

| | |
|---|---|
| **2C** | 2-pipe-system |
| **4C** | 2-pipe-system |

5 Fan designation

| | |
|---|---|
| **60** | |

6a Termostats & air side control accessories

| | |
|---|---|
| **T01** | Room thermostats - basic |
| **T02** | Room thermostats with touch screen |
| **T13** | Room thermostats for 4-pipe systems |
| **T14** | Electronic LCD room thermostat |
| **AT60** | Autotransformer |
| **RV** | Relay interface |

6b Valve type

| | |
|---|---|
| **01** | Thermostat valve, straight |
| **02** | Thermostat valve, angular |
| **03** | Shut-off cock, straight |
| **04** | Shut-off cock, angular |
| **VP2** | Autotransformer |
| **VP4** | Relay interface |
| **VT2** | Three way valve with ET actuator ON-OFF (2-pipe set) |
| **VT4** | Three way valve with ET actuator ON-OF (4-pipe set) |

7 Special housing designs

| | |
|---|---|
| **010(xx°)** | Room thermostats - basic |

8 Grille

| | |
|---|---|
| **111** | Longitudinal aluminium grille, anodised |
| **114** | Roll-up aluminium grille, anodised |
| **114W** | Wooden roll-up grille |
| **114SS** | Stainless steel roll-up grille |

9 Accessories

| | |
|---|---|
| **017** | Housing thermal insulation |
| **018** | Wooden protection cover for increased protection during installation |
| **021** | Aluminium decorative frame fixed to the housing |
| **028** | Level adjusting legs |
| **029** | Level adjusting and support legs, with reinforced housing |
| **032** | Fresh air connection without damper |
| **033** | Fresh air connection with damper |
| **040R** | Lowered side on the right |
| **040L** | Lowered side on the left |

# Product description, scope of delivery, dimensions

## Floor convectors with forced convection-cooling and heating-TKH-13

### Housing

- Housing suitable for false floor installation, installation into concrete floors or screed. Operation principle: forced convection.
- The durable, stable box is made of steel sheet powder painted in black colour (RAL 9005).
- The adjustable support screws are located inside the housing. Optionally, also support legs mounted outside of the housing are available to increase the housing stability (accessory 029). The support surfaces for the decorative grille in the housing are equipped with a special anti-slip seal that ensures good sound insulation and fit of the grille.
- The connections can be carried out on both side and front housing panel.

### Heat exchanger

- The heat exchanger consists of copper pipes and aluminum fins in natural aluminium color and is placed in the housing on steel support brackets.
- Features:
  - End connection;
    - inner thread 1/2 for
    - inner thread 3/4
  - Fitted with a de-airing valve;
  - Suitable for operation with a maximum working pressure of 11 bar (maximum allowed pressure 16 bar) and maximum operating temperature 110 °C.

### Fan

- Tangential fans which enhance convection are installed parallel to the heat exchanger. The fan in the housing must be located on the side of the room.
- The fan has a lightweight protective casing that prevents large and medium particles from reaching the fan impeller.
- The fan is mounted to the body of the convector by using rubber dampers, which eliminate background noise.
- Power is provided by an energy-efficient AC motor 220 V. The fans are energy efficient.

### Grille

- As standard, a longitudinal aluminium grille is delivered with the floor convector. The grille is placed on a anti vibration sealing tape for improved sound attenuation. The grille itself consist of 18 mm high profile rods, anodized in natural aluminum color. The effective cross-section is approx. 70 %. Since the grille is made of I-profiles it can be turned over and used equally on both sides.

### Standards

- Heating characteristics are measured acc. European standard EN 442 and EN 16430.
- Sound power level $L_{wA}$ (dB(A)), weighted according to IEC 61672 and calculated in accordance with the recommendation of the EN ISO 3741 standard.
- Quality management system according to catest standard EN ISO 9001.
- Environmental management system according to catest standard EN ISO 14001.

### Operation

- Forced convection floor convectors apply the principle of forced air circulation, maintained both by means of a tangential fan and by natural convection. Warm air enters into the floor convector, cools in the heat exchanger and rises into the room. In heating mode process is vice versa. Increased volume flow rate contributes to uniform distribution of heat in the room and improved indoor comfort. Floor convectors further prevent condensation build-up on glass and inlet of cold outside air in heating mode.

### Application

- Floor convectors are used as an efficient cooling and heating solution for premises with large glazing envelope surfaces such as residential homes, office, public or commercial buildings.

### Dimensions

- 2 convector widths: 340 mm, 400 mm;
- 1 convector heights: 140 mm;
- 3 convector lengths: 1250 mm, 2000 mm and 2750 mm.

### Control accessories

- See description on pages 14-16.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