Performance diagrams –
Climate control
Rittal – The System.
Faster – better – everywhere.
### Performance diagrams

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Cooling with ambient air

TopTherm fan-and-filter units and EMC TopTherm fan-and-filter units

Air throughput 20/25 m³/h

50 Hz
SK 3237.100, .110, .124, .600

60 Hz
SK 3237.100, .110, .600

Air throughput 55/66 m³/h

50 Hz
SK 3238.100, .110, .124, .600

60 Hz
SK 3238.100, .110, .600

\( \dot{V} \) = Volumetric flow (m³/h)
\( \Delta P_{st} \) = Stat. pressure difference (Pa)

= with standard filter
= with hose-proof hood
= 1 x outlet filter with hose-proof hood
= 2 x outlet filter

Performance diagrams – Climate control
TopTherm fan-and-filter units and EMC TopTherm fan-and-filter units

Air throughput 105/120 m³/h

50 Hz
SK 3239.100, .110, .124, .600

60 Hz
SK 3239.100, .110, .600

Air throughput 180/160 m³/h

50 Hz
SK 3240.100, .110, .124, .600

60 Hz
SK 3240.100, .110, .600

Performance diagrams – Climate control
**Cooling with ambient air**

**TopTherm fan-and-filter units and EMC TopTherm fan-and-filter units**

Air throughput 230/250 m³/h

**50 Hz**
SK 3241.100, .110, .124, .600

![Graph](chart1)

- $\dot{V}$ = Volumetric flow (m³/h)
- $\Delta P_{st}$ = Stat. pressure difference (Pa)
- = with standard filter
- = with hose-proof hood
- = with standard and fine filter
- = 1 x outlet filter with hose-proof hood
- = 1 x outlet filter
dashed = 2 x outlet filter
- = 1 x outlet filter
- = 1 x roof vent
- = 1 x roof vent
- 3138.000 with filter

**60 Hz**
SK 3241.100, .110, .600

![Graph](chart2)

- $\dot{V}$ = Volumetric flow (m³/h)
- $\Delta P_{st}$ = Stat. pressure difference (Pa)
- = with standard filter
- = with hose-proof hood
- = with standard and fine filter
- = 1 x outlet filter with hose-proof hood
- = 1 x outlet filter
- dashed = 2 x outlet filter
- = 1 x outlet filter
- = 1 x roof vent
- = 1 x roof vent
- 3138.000 with filter

Air throughput 550/600 m³/h

**50 Hz**
SK 3243.100, .110, .600

![Graph](chart3)

- $\dot{V}$ = Volumetric flow (m³/h)
- $\Delta P_{st}$ = Stat. pressure difference (Pa)
- = with standard filter
- = with hose-proof hood
- = with standard and fine filter
- = 1 x outlet filter with hose-proof hood
- = 1 x outlet filter
dashed = 2 x outlet filter
- = 1 x outlet filter
- = 1 x roof vent
- = 1 x roof vent
- 3138.000 with filter

**60 Hz**
SK 3243.100, .110, .600

![Graph](chart4)

- $\dot{V}$ = Volumetric flow (m³/h)
- $\Delta P_{st}$ = Stat. pressure difference (Pa)
- = with standard filter
- = with hose-proof hood
- = with standard and fine filter
- = 1 x outlet filter with hose-proof hood
- = 1 x outlet filter
dashed = 2 x outlet filter
- = 1 x outlet filter
- = 1 x roof vent
- = 1 x roof vent
- 3138.000 with filter
Cooling with ambient air

TopTherm fan-and-filter units and EMC TopTherm fan-and-filter units
Air throughput 700/770 m³/h

50 Hz
SK 3244.100, .110, .140, .600

60 Hz
SK 3244.100, .110, .140, .600

Air throughput 900 m³/h

Shielding/attenuation diagram
Testing to EN 61587-3: 2006 – Electromagnetic shielding performance tests for cabinets, racks and sub-racks

TopTherm EMC fan-and-filter units/outlet filters
SK 3237.XXX – SK 3245.XXX

Performance diagrams – Climate control
Cooling with ambient air

TopTherm fan-and-filter units with EC technology

**Air throughput 55 m³/h**

- **50/60 Hz SK 3238.500**

  - ΔPst
  - Vdotabove
  - ΔPst = Stat. pressure difference (Pa)
  - = with standard filter
  - = with hose-proof hood
  - = with standard and fine filter

- **50/60 Hz SK 3239.500**

  - ΔPst
  - Vdotabove
  - ΔPst = Stat. pressure difference (Pa)
  - = with standard filter
  - = with hose-proof hood
  - = with standard and fine filter

**Air throughput 105 m³/h**

- **50/60 Hz SK 3240.500**

  - ΔPst
  - Vdotabove
  - ΔPst = Stat. pressure difference (Pa)
  - = with standard filter
  - = with hose-proof hood
  - = with standard and fine filter

- **50/60 Hz SK 3241.500**

  - ΔPst
  - Vdotabove
  - ΔPst = Stat. pressure difference (Pa)
  - = with standard filter
  - = with hose-proof hood
  - = with standard and fine filter

**Air throughput 180 m³/h**

**Air throughput 230 m³/h**

---

Performance diagrams – Climate control
Cooling with ambient air

TopTherm fan-and-filter units with EC technology

Air throughput 550 m³/h

Air throughput 700 m³/h

Air throughput 900 m³/h

Performance diagrams – Climate control
Cooling with ambient air

Roof-mounted fans

Using the base/plinth:
If the vented base/plinth is used as an air inlet instead of the outlet filter 3243.200, the resistance curves as indicated in the performance diagrams will apply as follows:

- 1 x vented base/plinth with filter
- 2 x vented base/plinth with filter
- 1 x vented base/plinth without filter

Roof-mounted fans
Air throughput 500/525 m³/h

Performance diagrams – Climate control
Cooling with ambient air

**Roof-mounted fans**

Air throughput 873/965 m³/h

### 50 Hz

SK 3140.100/.110

![Graph](image1)

**V** = Volumetric flow (m³/h)  
**ΔPₜₘ** = Stat. pressure difference (Pa)

- Blue line: without filter mat (IP 22)  
- Red line: with filter mat (IP 55)  
- Black line: 1 x outlet filter 3243.200 with standard and fine filter (IP 55)

### 60 Hz

SK 3140.100/.110

![Graph](image2)

**V** = Volumetric flow (m³/h)  
**ΔPₜₘ** = Stat. pressure difference (Pa)

- Blue line: without filter mat (IP 22)  
- Red line: with filter mat (IP 55)  
- Black line: 1 x outlet filter 3243.200 with standard and fine filter (IP 55)

---

**Air throughput 863/942 m³/h**

### 400 V, 50 Hz

SK 3140.140

![Graph](image3)

**V** = Volumetric flow (m³/h)  
**ΔPₜₘ** = Stat. pressure difference (Pa)

- Blue line: without filter mat (IP 22)  
- Red line: with filter mat (IP 55)  
- Black line: 1 x outlet filter 3243.200 with standard and fine filter (IP 55)

### 400 V, 60 Hz

SK 3140.140

![Graph](image4)

**V** = Volumetric flow (m³/h)  
**ΔPₜₘ** = Stat. pressure difference (Pa)

- Blue line: without filter mat (IP 22)  
- Red line: with filter mat (IP 55)  
- Black line: 1 x outlet filter 3243.200 with standard and fine filter (IP 55)
Cooling with ambient air

Roof-mounted fans
Air throughput 963 m³/h

Roof-mounted fans with EC technology
Air throughput 1069 m³/h

Rack-mounted fans for 482.6 mm (19")
Air throughput 320/480 m³/h

Tangential fans for 482.6 mm (19")
Air throughput 320 m³/h

ΔPst = Stat. pressure difference (Pa)

50/60 Hz
SK 3344.000, 3145.000

50/60 Hz
SK 3140.500/.510

50/60 Hz
SK 3140.140

50/60 Hz
SK 3340.230, 3341.024, .115, .230, 3342.024, .230, .500, 3350.115, .230, 3351.230, 3352.230, .500

50/60 Hz
SK 3410.024, .115, .230, 3342.024, .230, .500, 3350.115, .230, 3351.230, 3352.230, .500

50/60 Hz
SK 3140.140

ΔPst = Stat. pressure difference (Pa)

V = Volumetric flow (m³/h)

= without filter mat (IP 22)
= with filter mat (IP 55)
= 1 x outlet filter 3243.200 with standard and fine filter (IP 55)
= 2 x outlet filter 3243.200 with standard and fine filter (IP 54)
= 1 x outlet filter 3243.200 with standard filter (IP 54)
= 1 x outlet filter 3243.200 with standard and filter (IP 55)
= 2 x outlet filter 3243.200 with standard filter (IP 54)

= 50 Hz
= 60 Hz
Cooling with ambient air

Selection diagram
for fans

TopTherm air/air heat exchangers
Specific thermal output 17.5 – 90 W/K,
wall-mounted with controller

Selection diagram
for air/air heat exchangers

\[ \hat{V} = \text{Volumetric flow (m}^3\text{/h)} \]
\[ Q_v = \text{Heat loss (W)} \]

\[ \Delta T = \text{Temperature difference (K)} \]
\[ \dot{Q}_v = \text{Heat loss (W)} \]
\[ q_w = \text{Specific thermal output (W/K)} \]
\[ A = \text{Enclosure surface area to IEC 890 (m}^2\text{)} \]
\[ k = \text{Heat transfer coefficient (W/m}^2\text{K)} \]

for sheet steel \( k = 5.5 \text{ W/m}^2\text{K) \} \]
VX25 Blue e+ integration solution
Output class 1300 W (110 – 240 V, 1 ~, 50 – 60 Hz / 380 – 480 V, 3 ~, 50 – 60 Hz)

Enclosure internal temperature $T_i$
- 45 °C
- 40 °C
- 35 °C
- 30 °C
- 25 °C

$P_c$ = Total cooling output [W]
$T_u$ = Ambient temperature [°C]
Thermoelectric coolers

Cooling output

50/60 Hz
SK 3201.200, .300

Heating output

50/60 Hz
SK 3201.200, .300

TopTherm wall-mounted cooling units

Output class 300 W (115/230 V, 1-)

50 Hz
SK 3302.300, .310, .100, .110, .200

60 Hz
SK 3302.300, .310, .100, .110, .200

Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)
Cooling units

TopTherm wall-mounted cooling units Blue e
Output class 500 W (115/230 V, 1~)

**50 Hz**
SK 3303.500, .510, .600, .504, .514

**60 Hz**
SK 3303.500, .510, .600, .504, .514

Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

Output class 750 W (115/230 V, 1~, 400 V, 2~)

**50 Hz**
SK 3361.500, .510, .540, .600

**60 Hz**
SK 3361.500, .510, .540, .600

Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)
TopTherm wall-mounted cooling units Blue e
Output class 1000 W (115/230 V, 1~)

50 Hz
SK 3304.500, .510, .600, .504

60 Hz
SK 3304.500, .510, .600, .504

Output class 1500 W (115/230 V, 1~)

50 Hz
SK 3305.500, .510, .600, .504

60 Hz
SK 3305.500, .510, .600, .504

Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)
TopTherm wall-mounted cooling units Blue e
Output class 2000 W (115/230 V, 1~)

Output class 2500 W (115/230 V, 1~)
Cooling units

TopTherm wall-mounted cooling units Blue e, slimline
Output class 1500 W (230 V, 1–)

50 Hz
SK 3366.500

60 Hz
SK 3366.500

Output class 1500 W (400/460 V, 3–)

50 Hz
SK 3366.540

60 Hz
SK 3366.540

Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)
Cooling units

TopTherm wall-mounted cooling units Blue e

Output class 1000 W (400/460 V, 3–)

50 Hz
SK 3304.540, .640, .544

60 Hz
SK 3304.540, .640, .544

Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

Output class 1500 W (400/460 V, 3–)

50 Hz
SK 3305.540, .640, .544

60 Hz
SK 3305.540, .640, .544

Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)
Cooling units

TopTherm wall-mounted cooling units Blue e
Output class 2000 W (400/460 V, 3~)

50 Hz
SK 3328.540, 640, 544

Output class 2500 W (400/460 V, 3~)

50 Hz
SK 3329.540, 640, 544

60 Hz
SK 3328.540, 640, 544

60 Hz
SK 3329.540, 640, 544
Cooling units

TopTherm wall-mounted cooling units Blue e
Output class 4000 W (400/460 V, 3~)

50 Hz
SK 3332.540, .640

Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

60 Hz
SK 3332.540, .640

Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)
Wall-mounted cooling units Blue e+

1.6 kW
SK 3185.530, .830

Output class 2600/4200 W (110 – 240 V, 1~, 50 – 60 Hz / 380 – 480 V, 3~, 50 – 60 Hz)

2.6 kW
SK 3187.630, .930

4.2 kW
SK 3188.640, .940
Cooling units

Wall-mounted cooling units Blue e+
Output class 5800 W (380 – 480 V, 3~, 50 – 60 Hz)

5.8 kW
SK 3189.640, .940

Enclosure internal temperature $T_i$
- 45 °C
- 40 °C
- 35 °C
- 30 °C
- 25 °C

$P_c$ = Total cooling output [kW]
$T_u$ = Ambient temperature [°C]
TopTherm roof-mounted cooling units Blue e
Output class 500 W (115/230 V, 1~)

50 Hz
SK 3382.500, .510, .600

60 Hz
SK 3382.500, .510, .600

Output class 750 W (115/230 V, 1~, 400 V, 2~)

50 Hz
SK 3359.500, .510, .540, .600

60 Hz
SK 3359.500, .510, .540, .600

Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)
TopTherm roof-mounted cooling units Blue e
Output class 1000 W (115/230 V, 1~, 400 V, 2~)

50 Hz

Output class 1100 W (115/230 V, 1~)
TopTherm roof-mounted cooling units Blue e
Output class 1500 W (115/230 V, 1~, 400 V, 2~)

50 Hz
SK 3384.500, .510, .540, .600

60 Hz
SK 3384.500, .510, .540, .600

Output class 2000 W (115/230 V, 1~, 400 V, 2~)

50 Hz
SK 3385.500, .510, .540, .600, .640

60 Hz
SK 3385.500, .510, .540, .600, .640

Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)
Cooling units

TopTherm roof-mounted cooling units Blue e
Output class 3000 W (400/460 V, 3-)

50 Hz
3386.540, .640

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Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

60 Hz
3386.540, .640

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Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

Output class 4000 W (400/460 V, 3-)

50 Hz
3387.540, .640

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Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

60 Hz
3387.540, .640

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Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)
Roof-mounted cooling unit Blue e+
Output class 1300 W (110 – 240 V, 1 ~, 50 – 60 Hz / 380 – 480 V, 3 ~, 50 – 60 Hz)

1.30 kW
SK 3185.730

Enclosure internal temperature $T_i$
- 45 °C
- 40 °C
- 35 °C
- 30 °C
- 25 °C

$P_c =$ Total cooling output [W]
$T_u =$ Ambient temperature [°C]
Cooling units

Modular climate control concept – Cooling module Blue e
Output class 1500 W (230 V, 1–)

50 Hz
SK 3307.700

60 Hz
SK 3307.700

Output class 1500 W (400/460 V, 3–)

50 Hz
SK 3307.740

60 Hz
SK 3307.740

Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)
Cooling units

Modular climate control concept – Cooling module Blue e
Output class 2500 W (230 V, 1–)

50 Hz
SK 3310.700

60 Hz
SK 3310.700

Output class 2500 W (400/460 V, 3–)

50 Hz
SK 3310.740

60 Hz
SK 3310.740

Tu = Ambient temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)
Cooling with water

Wall-mounted air/water heat exchangers
Output class 300 W
Water-carrying parts: Copper/brass (Cu/CuZn)

50/60 Hz
SK 3212.024, .115, .230

Water resistance diagram
SK 3212.024, .115, .230

Output class 600 W
Water-carrying parts: Copper/brass (Cu/CuZn)

50/60 Hz
SK 3214.100

Water resistance diagram
SK 3214.100

Tw = Water inlet temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

\[ \text{ΔP} = \text{Water resistance (mbar)} \]

\[ \dot{V} = \text{Volumetric flow (l/h)} \]

\[ V = \text{Volumetric flow (l/h)} \]
Wall-mounted air/water heat exchangers
Output class 1250 W
Water-carrying parts: Copper/brass (Cu/CuZn)

50/60 Hz
SK 3215.100

\[ V = 400 \text{l/h} \]
\[ V = 200 \text{l/h} \]

\[ \Delta P \]

\[ \dot{V} = \text{Volumetric flow (l/h)} \]
\[ \Delta P = \text{Water resistance (mbar)} \]

\( T_w = \) Water inlet temperature (°C)
\( P_c = \) Total cooling output (W)
\( T_i = \) Enclosure internal temperature (°C)

Water resistance diagram
SK 3215.100

Output class 7000 W
Water-carrying parts: Copper/brass (Cu/CuZn)

50/60 Hz
SK 3216.480

\[ V = 500 \text{l/h} \]
\[ V = 200 \text{l/h} \]

\[ \Delta P \]

\[ \dot{V} = \text{Volumetric flow (l/h)} \]
\[ \Delta P = \text{Water resistance (mbar)} \]

\( T_w = \) Water inlet temperature (°C)
\( P_c = \) Total cooling output (W)
\( T_i = \) Enclosure internal temperature (°C)
Cooling with water

Wall-mounted air/water heat exchangers
Output class 500 W
Water-carrying parts: Copper/brass (Cu/CuZn)

50 Hz
SK 3363.100, .500

Water resistance diagram
SK 3363.100, .500

60 Hz
SK 3363.100, .500

Tw = Water inlet temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

V = Volumetric flow (l/h)
ΔP = Water resistance (mbar)

Vc = Water-carrying parts: Copper/brass (Cu/CuZn)

Performance diagrams – Climate control
Wall-mounted air/water heat exchangers
Output class 1000 W
Water-carrying parts: Copper/brass (Cu/CuZn)

Tw = Water inlet temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

Water resistance diagram
SK 3364.100, .500

V = Volumetric flow (l/h)
ΔP = Water resistance (mbar)
Wall-mounted air/water heat exchangers
Output class 1000 W
Water-carrying parts: Stainless steel (1.4571)

50 Hz
SK 3364.504

60 Hz
SK 3364.504

$T_w$ = Water inlet temperature (°C)
$P_c$ = Total cooling output (W)
$T_i$ = Enclosure internal temperature (°C)

Water resistance diagram
SK 3364.504

$\dot{V}$ = Volumetric flow (l/h)
$\Delta P$ = Water resistance (mbar)
Wall-mounted air/water heat exchangers
Output class 2000 W
Water-carrying parts: Copper/brass (Cu/CuZn)

**50 Hz**
SK 3373.100, .500

**60 Hz**
SK 3373.100, .500

**Water resistance diagram**
SK 3373.100, .500

Tw = Water inlet temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

\[ \Delta P = \text{Water resistance (mbar)} \]

\[ \dot{V} = \text{Volumetric flow (l/h)} \]
Wall-mounted air/water heat exchangers
Output class 3000 W
Water-carrying parts: Copper/brass (Cu/CuZn)

50 Hz
SK 3374.100, .500

60 Hz
SK 3374.100, .500

Tw = Water inlet temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

Water resistance diagram
SK 3374.100, .500

\( \dot{V} \) = Volumetric flow (l/h)
\( \Delta P \) = Water resistance (mbar)
Wall-mounted air/water heat exchangers
Output class 2500 W
Water-carrying parts: Stainless steel (1.4571)

50 Hz
SK 3374.504

60 Hz
SK 3374.504

Water resistance diagram
SK 3374.504

Tw = Water inlet temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

V = Volumetric flow (l/h)
ΔP = Water resistance (mbar)

Performance diagrams – Climate control
Cooling with water

Wall-mounted air/water heat exchangers
Output class 5000 W
Water-carrying parts: Copper/brass (Cu/CuZn)

50 Hz
SK 3375.100, .500

60 Hz
SK 3375.100, .500

Water resistance diagram
SK 3375.100, .500

Tw = Water inlet temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

$\dot{V} = \text{Volumetric flow (l/h)}$
$\Delta P = \text{Water resistance (mbar)}$
Wall-mounted air/water heat exchangers HD
Output class 600/1200 W
Water-carrying parts: Copper/brass (Cu/CuZn)

**50 Hz**
SK 3214.700

- $T_w$ = Water inlet temperature (°C)
- $P_c$ = Total cooling output (W)
- $T_i$ = Enclosure internal temperature (°C)

**60 Hz**
SK 3274.600

- $T_w$ = Water inlet temperature (°C)
- $P_c$ = Total cooling output (W)
- $T_i$ = Enclosure internal temperature (°C)

**50 Hz**
SK 3217.500

- $T_w$ = Water inlet temperature (°C)
- $P_c$ = Total cooling output (W)
- $T_i$ = Enclosure internal temperature (°C)

**60 Hz**
SK 3217.600

- $T_w$ = Water inlet temperature (°C)
- $P_c$ = Total cooling output (W)
- $T_i$ = Enclosure internal temperature (°C)
Cooling with water

Wall-mounted air/water heat exchangers
Output class 4000 W
Water-carrying parts: Stainless steel (1.4571)

50 Hz
SK 3375.504

60 Hz
SK 3375.504

Tw = Water inlet temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

Water resistance diagram
SK 3375.504

V = Volumetric flow (l/h)
ΔP = Water resistance (mbar)
Cooling with water

Roof-mounted air/water heat exchangers
Output class 2500 W
Water-carrying parts: Copper/brass (Cu/CuZn)

50 Hz
SK 3209.100, .500

60 Hz
SK 3209.100, .500

Water resistance diagram
SK 3209.100, .500

Tw = Water inlet temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

V = Volumetric flow (l/h)
ΔP = Water resistance (mbar)
Cooling with water

**Roof-mounted air/water heat exchangers**
*Output class 1875 W*
*Water-carrying parts: Stainless steel (1.4571)*

**50 Hz**
SK 3209.504

**60 Hz**
SK 3209.504

- $T_w$ = Water inlet temperature (°C)
- $P_c$ = Total cooling output (W)
- $T_i$ = Enclosure internal temperature (°C)

**Water resistance diagram**
SK 3209.504

- $\dot{V}$ = Volumetric flow (l/h)
- $\Delta P$ = Water resistance (mbar)
Roof-mounted air/water heat exchangers
Output class 4000 W
Water-carrying parts: Copper/brass (Cu/CuZn)

50 Hz
SK 3210.100, .500

60 Hz
SK 3210.100, .500

Tw = Water inlet temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)

Water resistance diagram
SK 3210.100, .500

\( \dot{V} \) = Volumetric flow (l/h)
\( \Delta P \) = Water resistance (mbar)
Roof-mounted air/water heat exchangers
Output class 3000 W
Water-carrying parts: Stainless steel (1.4571)

**50 Hz**
SK 3210.504

**60 Hz**
SK 3210.504

\[ T_w = \text{Water inlet temperature (°C)} \]
\[ P_c = \text{Total cooling output (W)} \]
\[ T_i = \text{Enclosure internal temperature (°C)} \]

Water resistance diagram
SK 3210.504

\[ \dot{V} = \text{Volumetric flow (l/h)} \]
\[ \Delta P = \text{Water resistance (mbar)} \]
Cooling with water

Liquid Cooling Package
Output class 10 kW, LCP Rack Industry
Water-carrying parts: Copper/brass (Cu/CuZn)

50/60 Hz
SK 3378.200, .280

Tw = Water inlet temperature (°C)
Pc = Total cooling output (W)
Ti = Enclosure internal temperature (°C)
Cooling with water

TopTherm chillers
Output class 1 – 6 kW

50 Hz at $T_u = 32\, ^\circ C$
SK 3318.600, .610, 3319.600, .610, 3320.600, 3334.600, .660

Characteristic curves of pump
SK 3318.600/SK 3318.610/SK 3319.600/SK 3319.610

Output class 1 – 2.5 kW, wall-mounted

50 Hz at $T_u = 32\, ^\circ C$
SK 3360.100, .250

Characteristic curves of pump
SK 3360.100/SK 3360.250

Tw = Water inlet temperature (°C)
Tu = Ambient temperature (°C)
Pc = Total cooling output (kW)
P = External static pressure [bar]
Q = Delivery flow Q [l/min]
TopTherm chillers
Output class 8 – 40 kW

50 Hz at Tu = 32 °C
SK 3335.790, 830, 840, 850, 860, 870, 880, 890

Characteristic curves of pump
SK 3335.850

60 Hz

Characteristic curves of pump
SK 3335.860

60 Hz

Characteristic curves of pump
SK 3335.870

60 Hz

Characteristic curves of pump
SK 3335.880

60 Hz

Characteristic curves of pump
SK 3335.890

60 Hz

Tw = Water inlet temperature (°C)
Tu = Ambient temperature (°C)
Pc = Total cooling output (kW)

P = External static pressure [bar]
Q = Delivery flow Q [l/min]
Blue e+ chillers
Output class 2.5 kW

**50 Hz**
SK 3320.200

**60 Hz**
SK 3320.200

Output class 4.0 kW

**50 Hz**
SK 3334.300

**60 Hz**
SK 3334.300

$T_w$ = Water inlet temperature [°C]
$P_c$ = Total cooling output [W]
$T_o$ = Ambient temperature [°C]
Blue e+ chillers
Output class 5.5 kW

50 Hz
SK 3334.400

60 Hz
SK 3334.400

Tw = Water inlet temperature [°C]
Pc = Total cooling output [W]
Tu = Ambient temperature [°C]
Enclosure heaters

Enclosure heaters without fan
Heating output 230 V

Tu = Ambient temperature (°C)
Ph = Heating output (W)

Heating output 110 V

Tu = Ambient temperature (°C)
Ph = Heating output (W)

Maximum surface temperature

Tu = Ambient temperature (°C)
To = Surface temperature (°C)
Enclosure heaters

Enclosure heaters with fan
Heating output 230 V, 50/60 Hz

Heating output 115 V, 50/60 Hz

Maximum surface temperature

Tu = Ambient temperature (°C)
Ph = Heating output (W)
To = Surface temperature (°C)
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