

# Rittal – The System.

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## ► Performance Diagrams – Climate Control



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# Rittal – The System.

Faster – better – everywhere.



ENCLOSURE

POWER DISTRIBUTION

CLIMATE CONTROL



# Performance diagrams

## Air Cooling

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## Enclosure Heaters

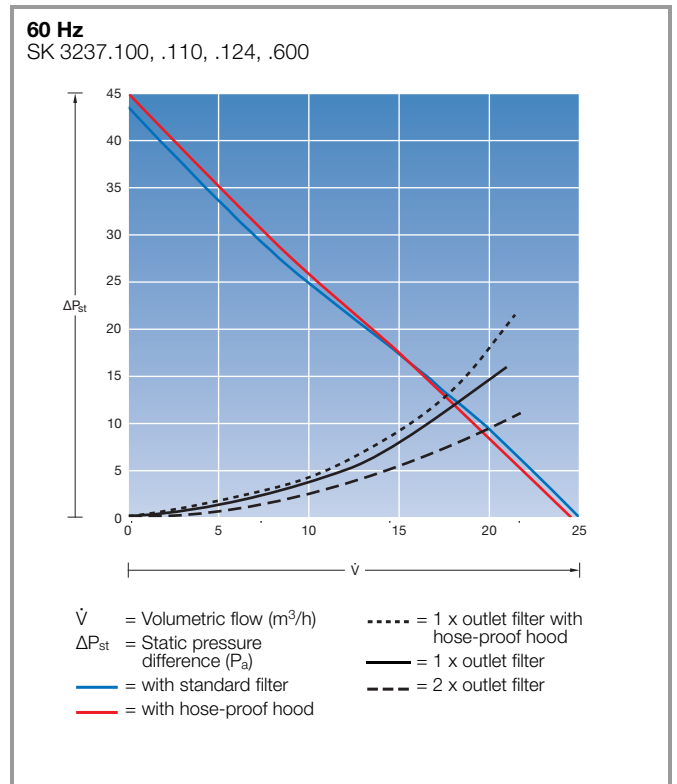
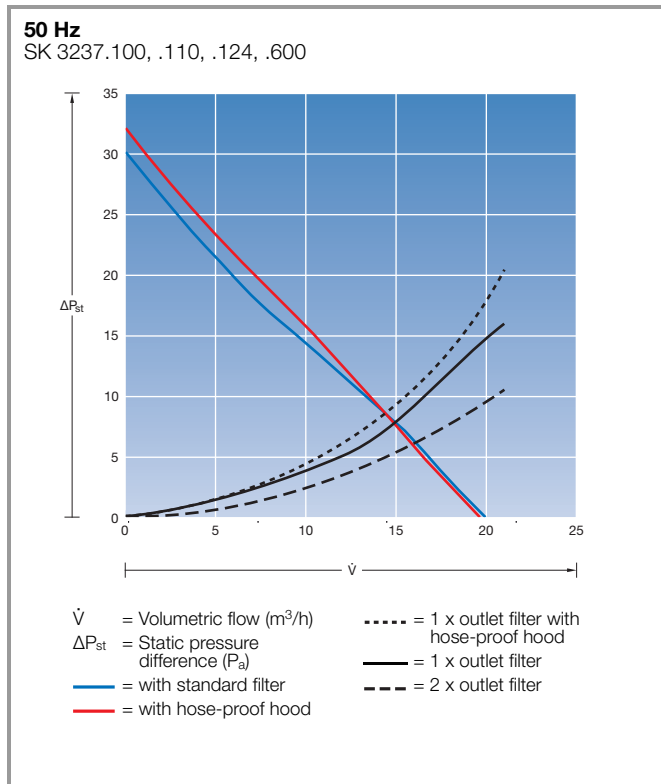
|  |    |
|--|----|
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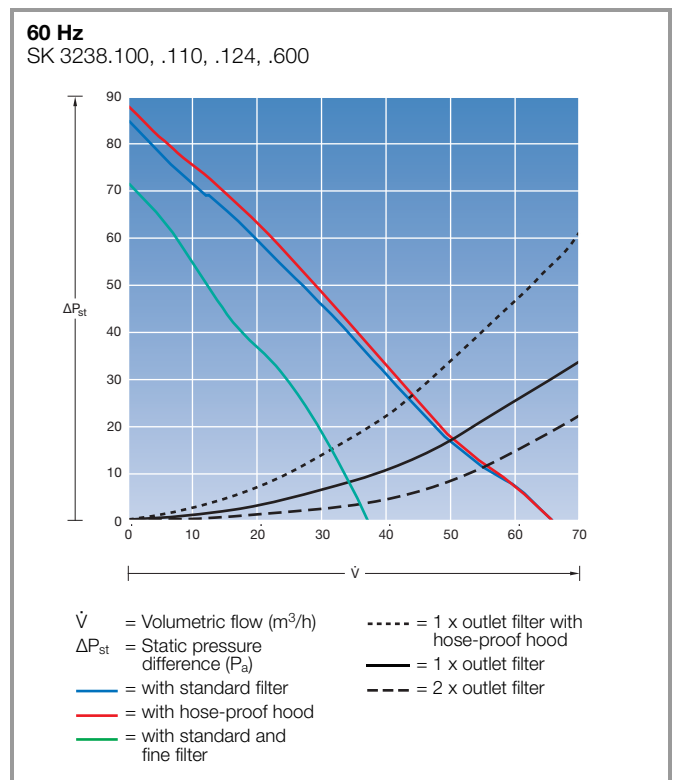
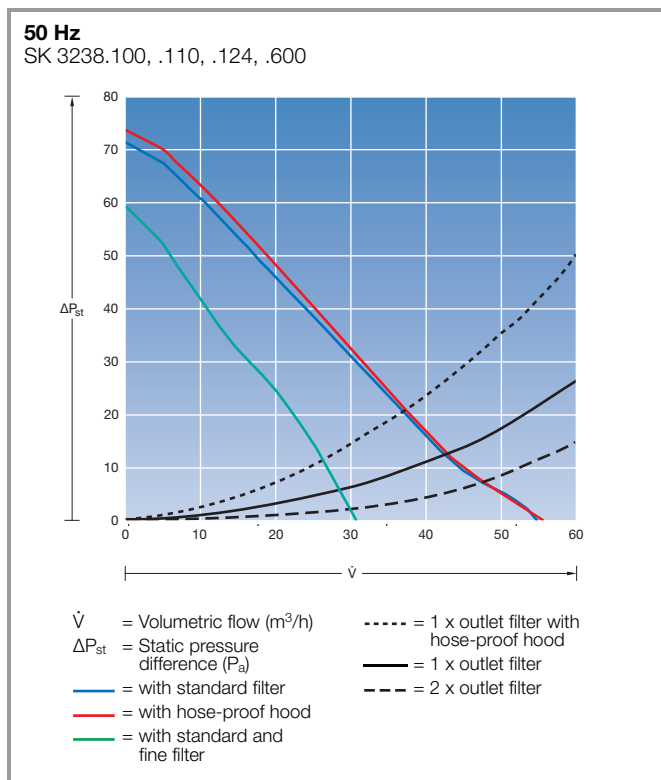
# Air Cooling

## TopTherm Filter Fans and TopTherm Filter Fans EMC

Air throughput 12/15 cfm (20/25 m<sup>3</sup>/h)

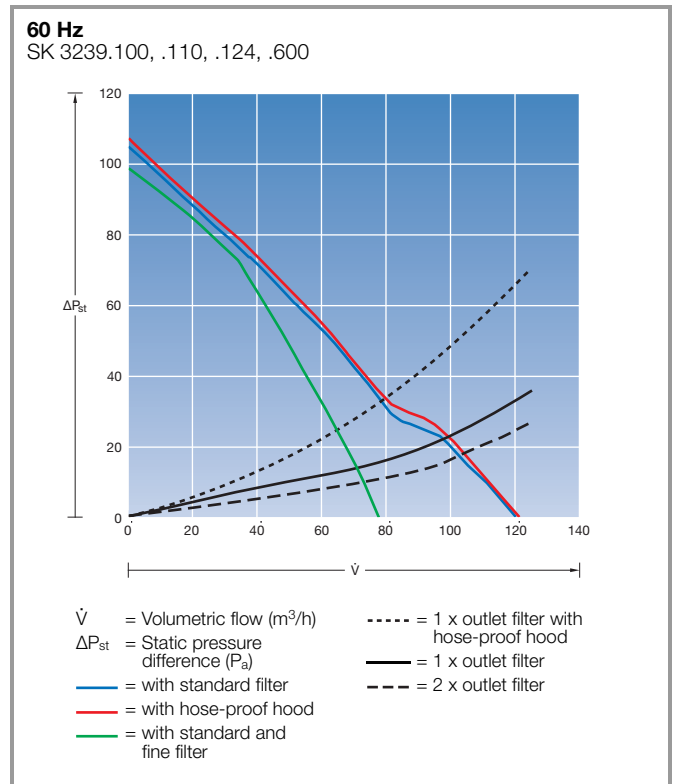
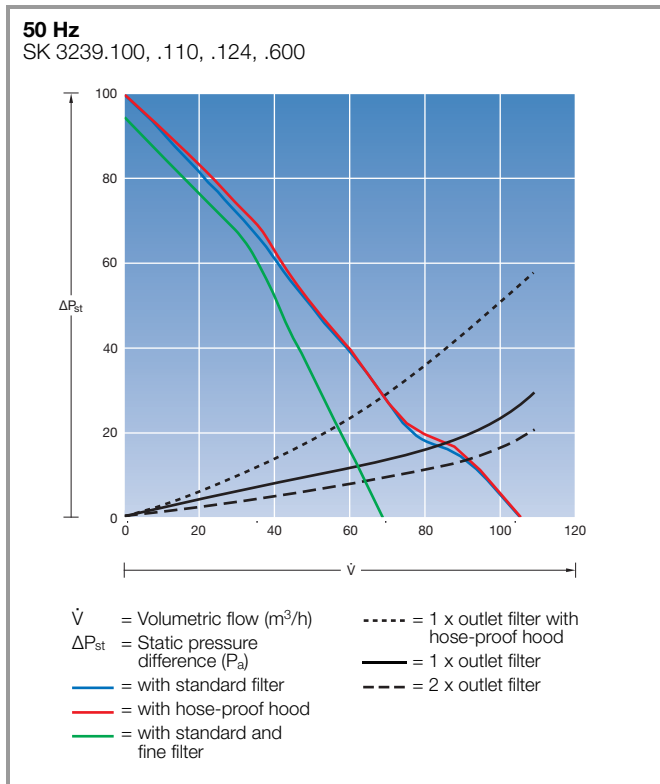


Air throughput 32/39 cfm (55/66 m<sup>3</sup>/h)

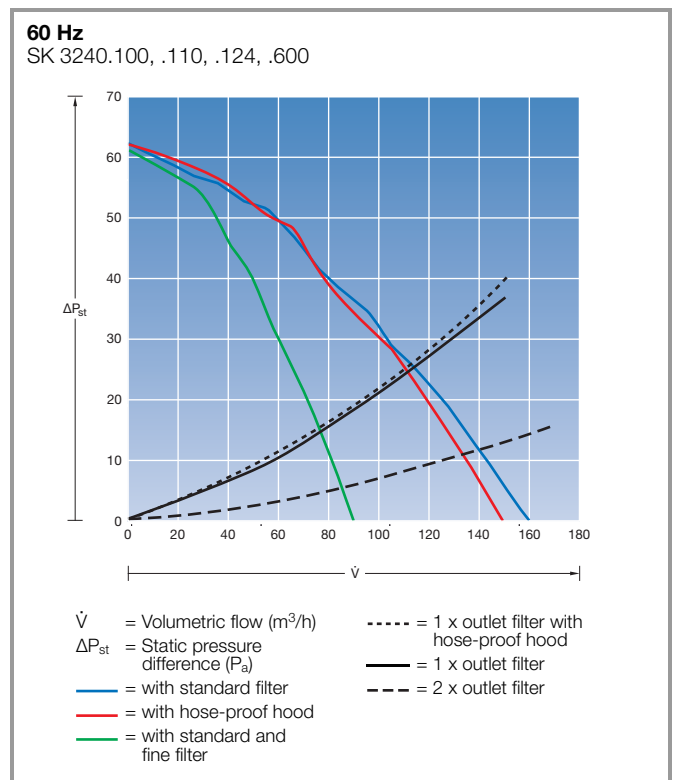
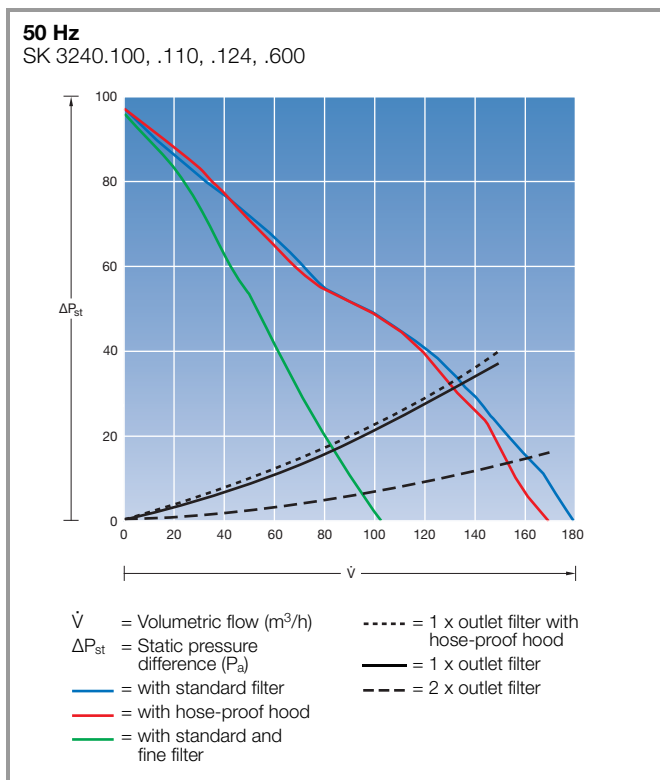


## TopTherm Filter Fans and TopTherm Filter Fans EMC

Air throughput 62/71 cfm (105/120 m<sup>3</sup>/h)



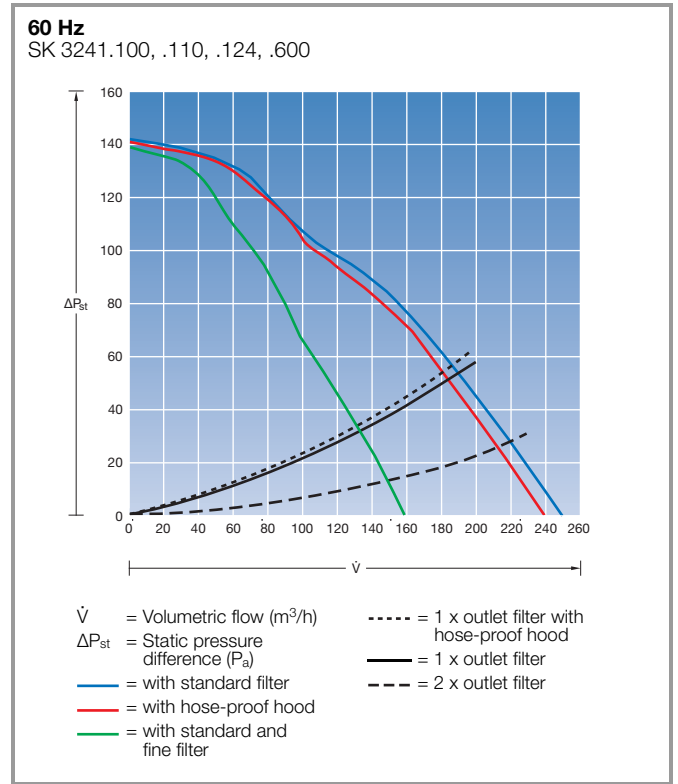
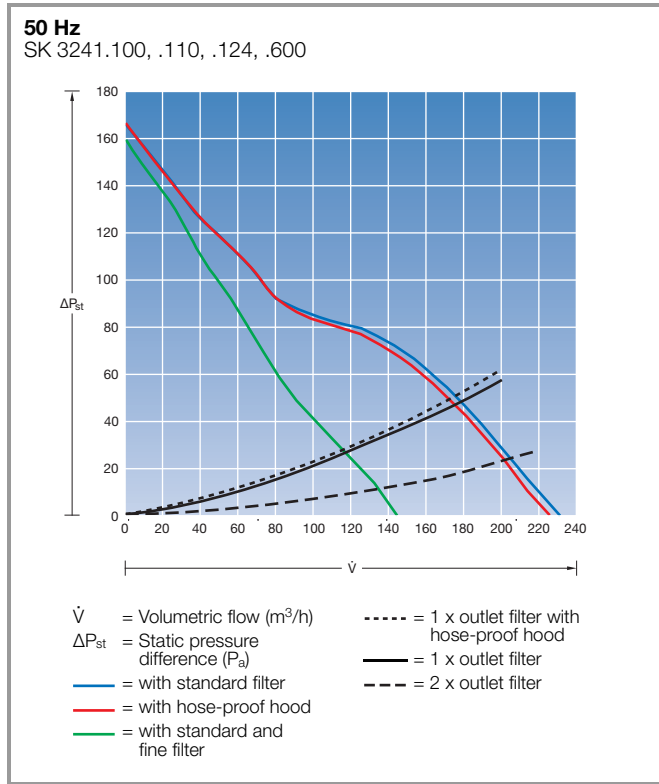
Air throughput 106/94 cfm (180/160 m<sup>3</sup>/h)



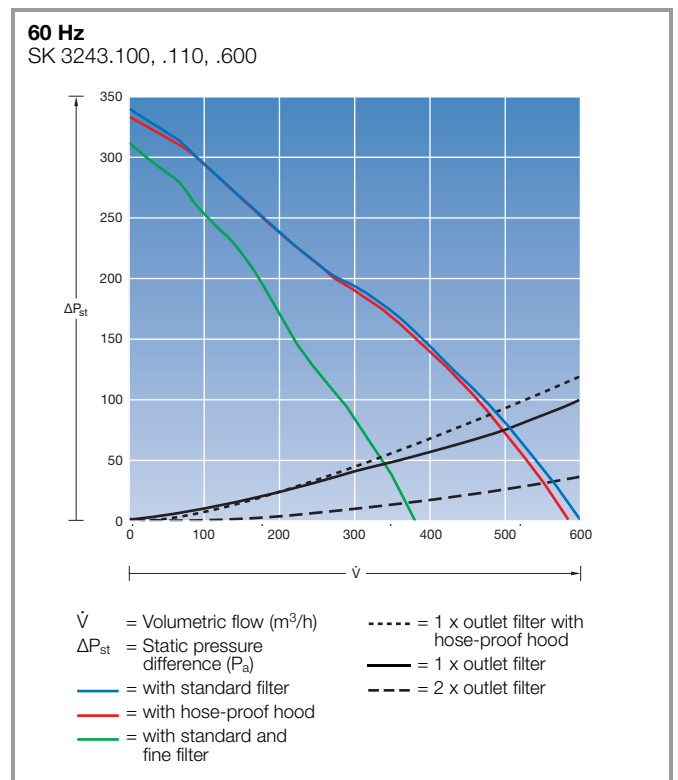
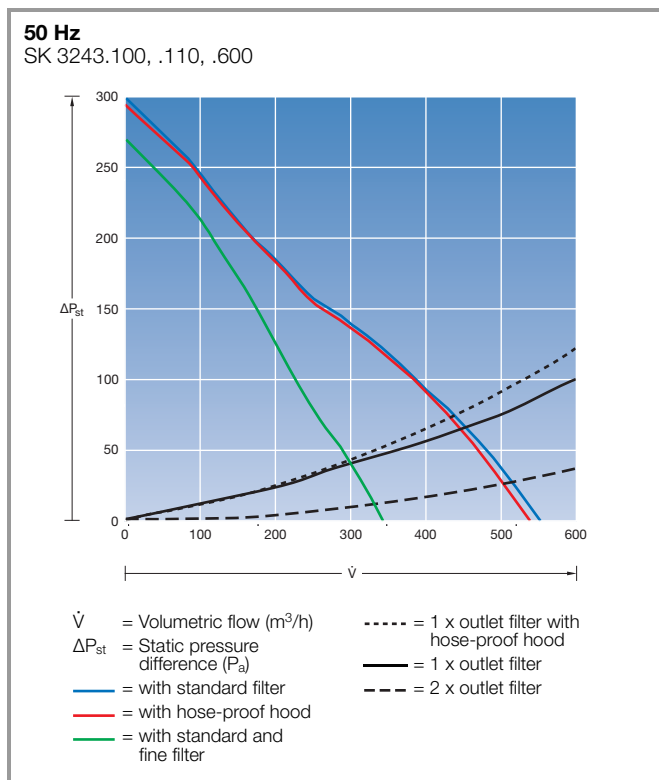
# Air Cooling

## TopTherm Filter Fans and TopTherm Filter Fans EMC

Air throughput 135/147 cfm (230/250 m<sup>3</sup>/h)

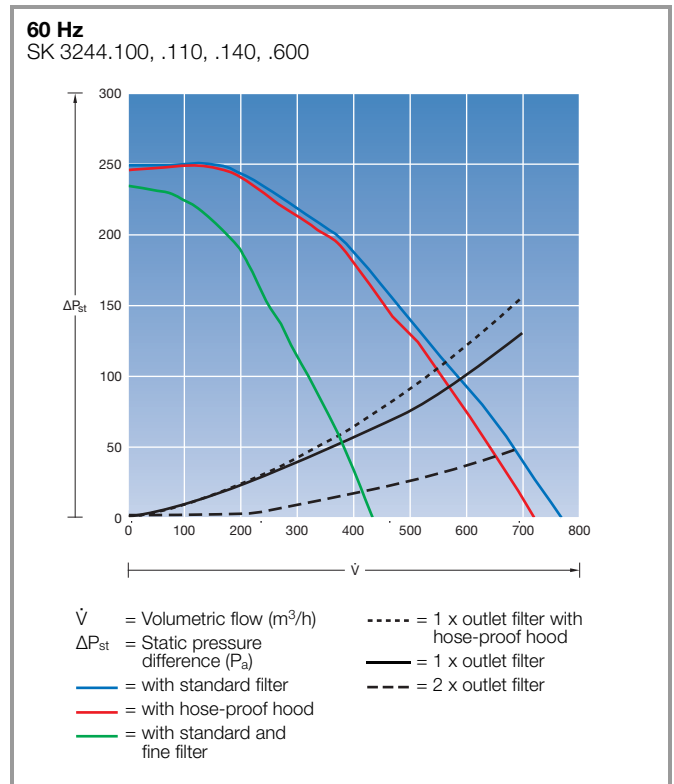
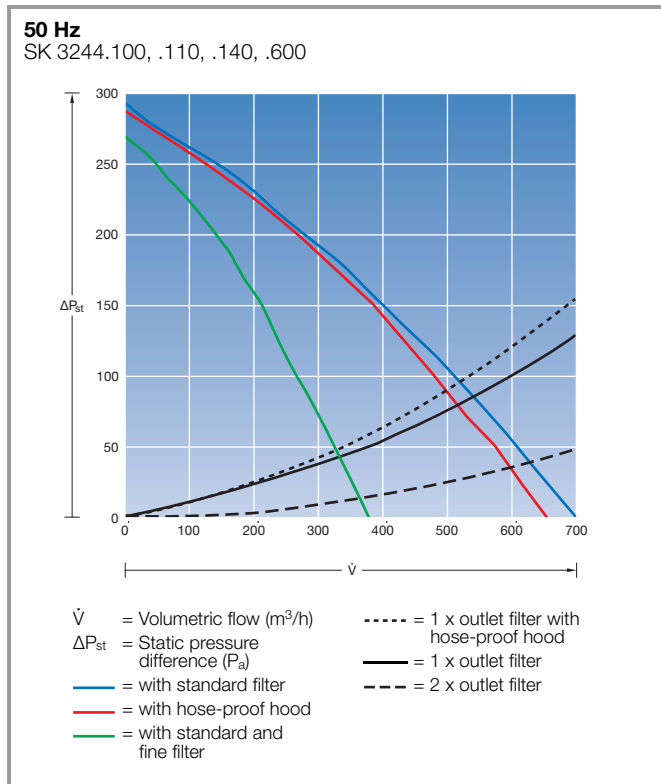


Air throughput 323/353 cfm (550/600 m<sup>3</sup>/h)

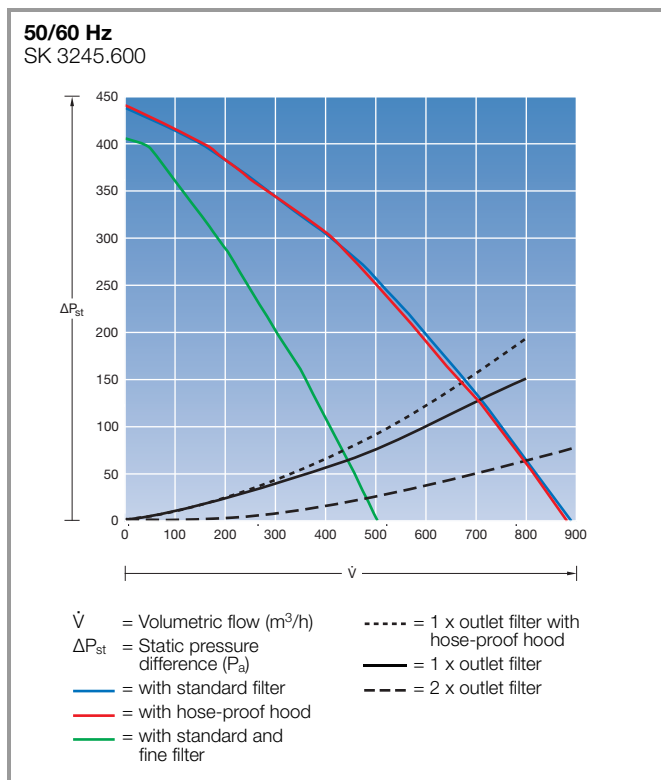


## TopTherm Filter Fans and TopTherm Filter Fans EMC

Air throughput 412/453 cfm (700/770 m<sup>3</sup>/h)



Air throughput 530 cfm (900 m<sup>3</sup>/h)

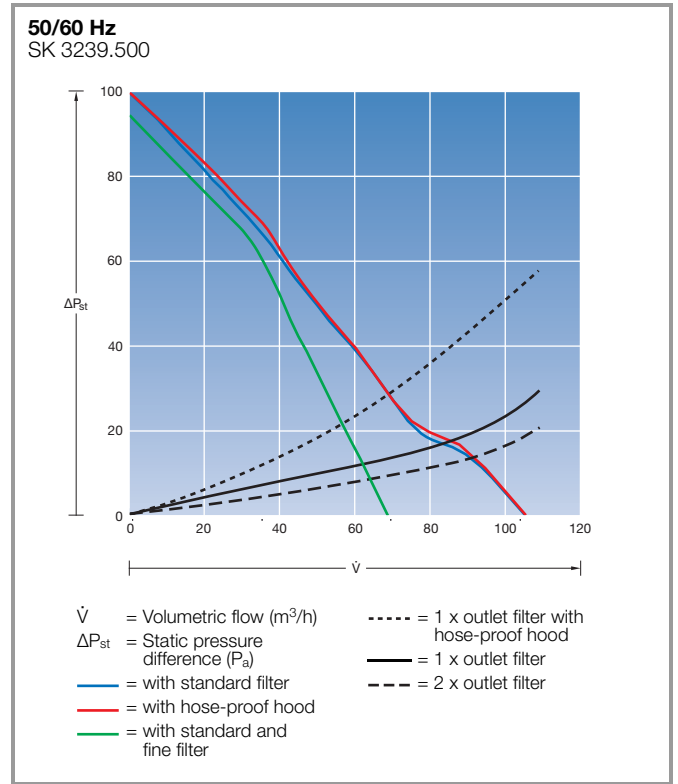
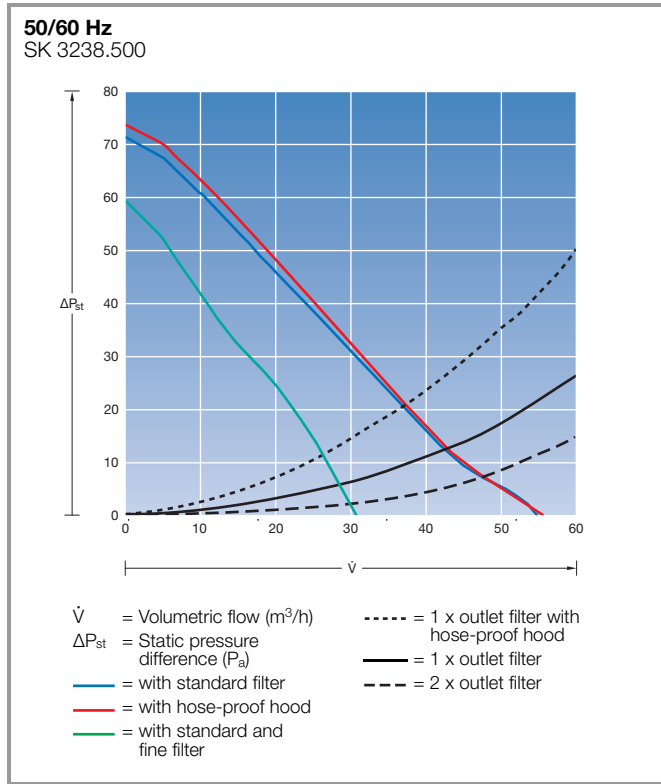


# Air Cooling

## TopTherm Filter Fans with EC Technology

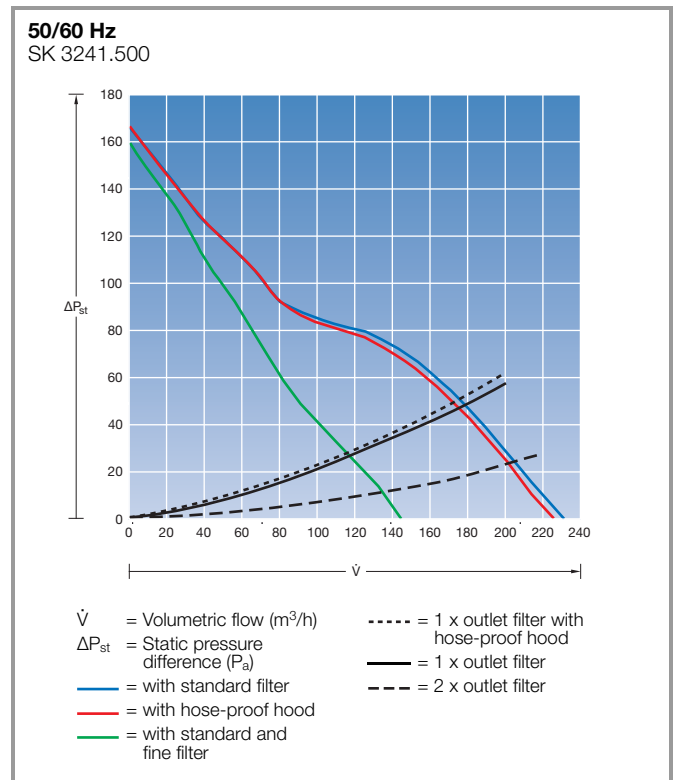
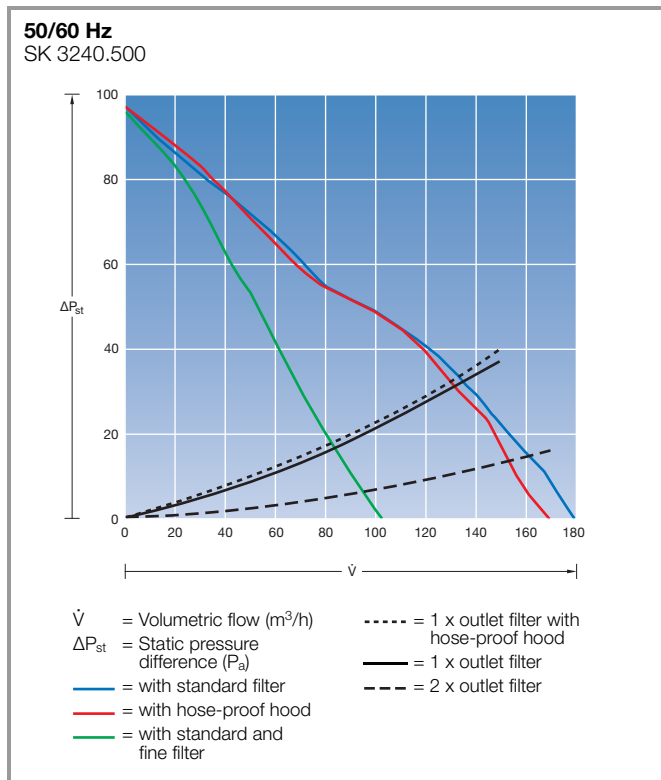
Air throughput 32 cfm (55 m<sup>3</sup>/h)

Air throughput 62 cfm (105 m<sup>3</sup>/h)



Air throughput 106 cfm (180 m<sup>3</sup>/h)

Air throughput 135 cfm (230 m<sup>3</sup>/h)

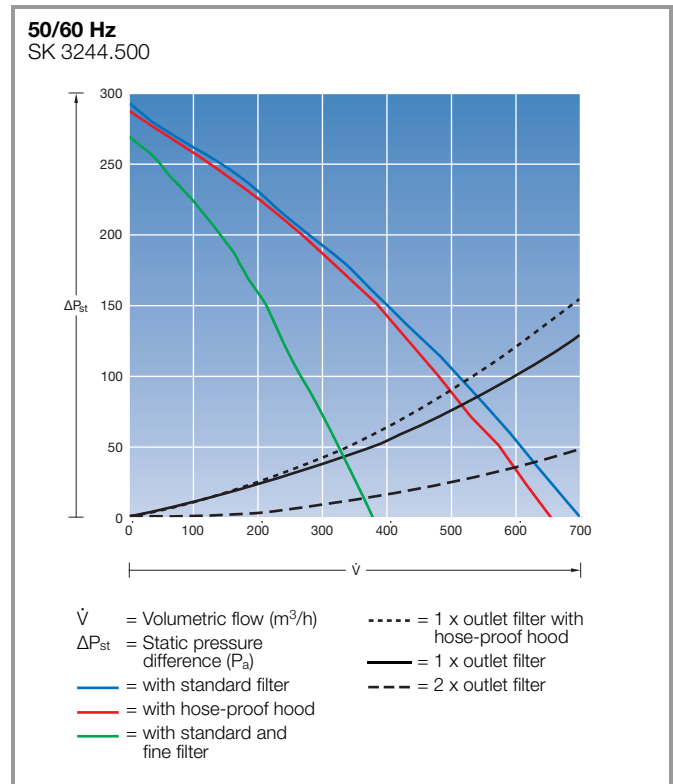
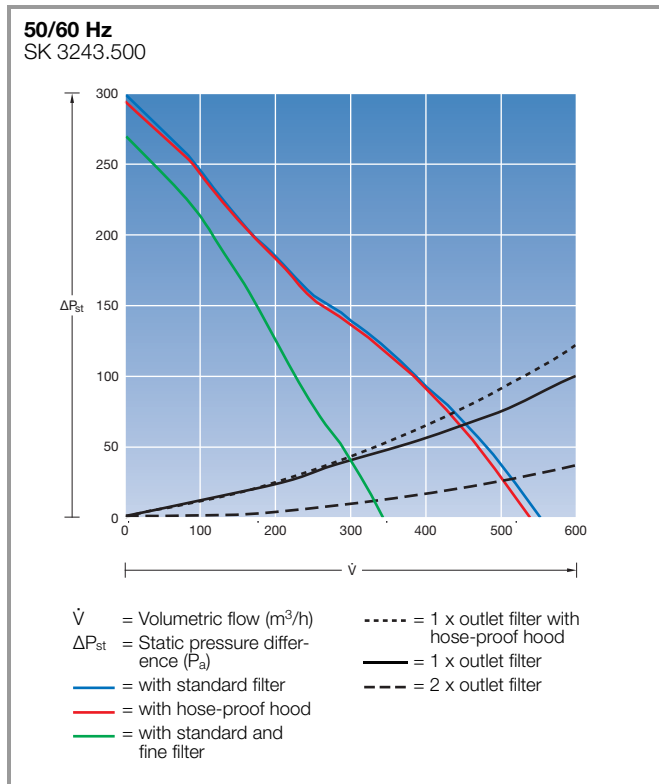




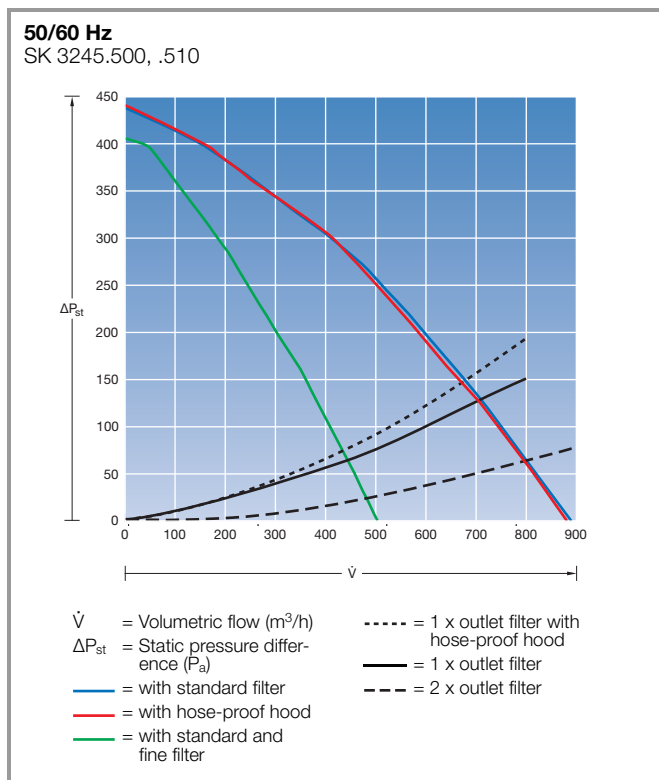
## TopTherm Filter Fans with EC Technology

Air throughput 323 cfm (550 m³/h)

Air throughput 412 cfm (700 m³/h)



Air throughput 530 cfm (900 m³/h)

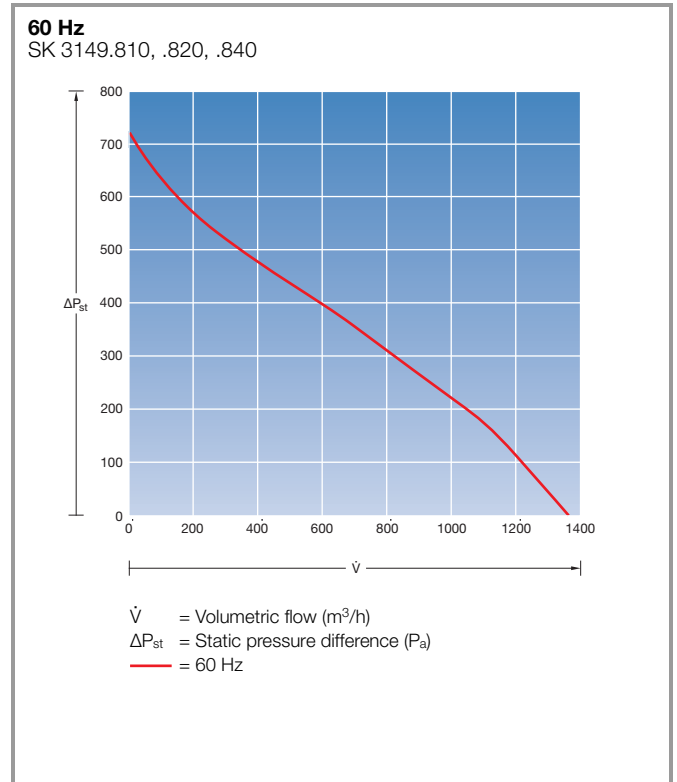
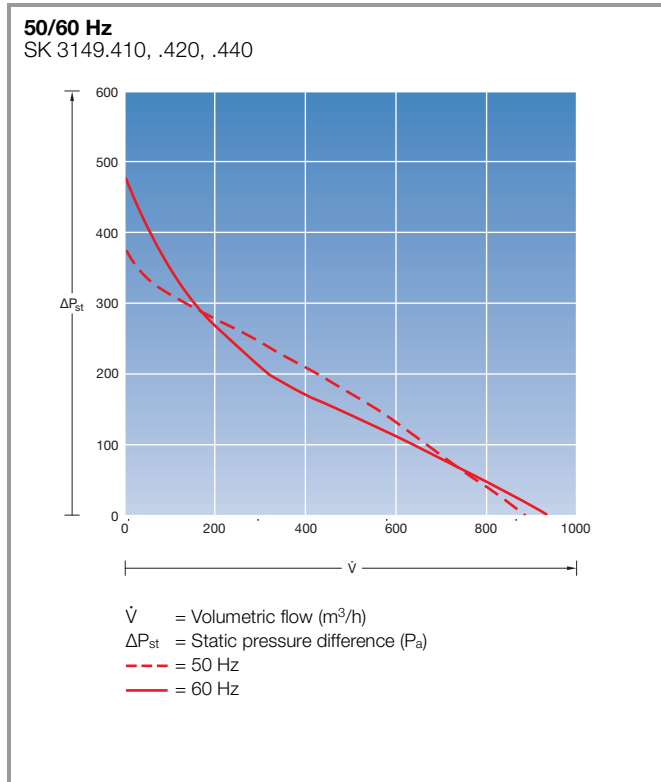


# Air Cooling

## TopTherm Roof-Mounted Fans

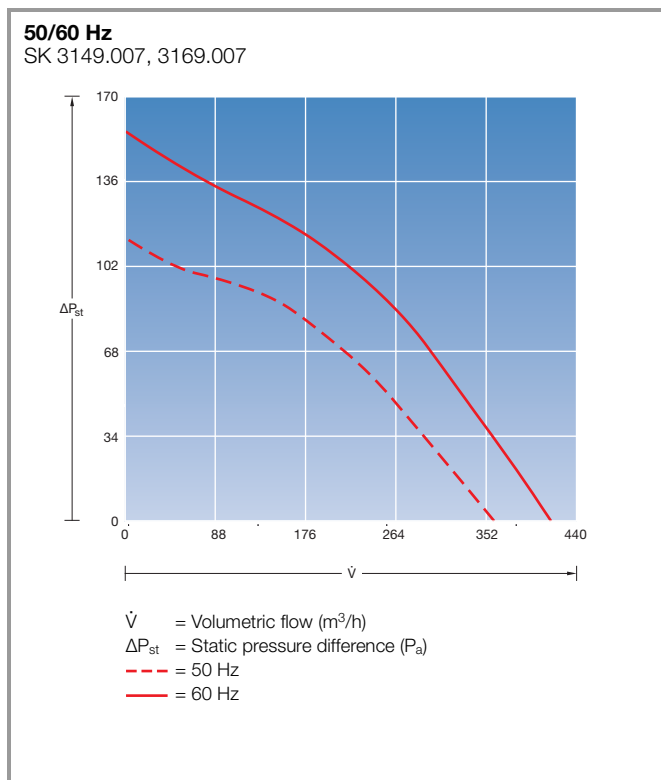
Air throughput 235 cfm (400 m<sup>3</sup>/h)

Air throughput 471 cfm (800 m<sup>3</sup>/h)



## Roof-Mounted Fan, Roof Vent

Air throughput 212 cfm (360 m<sup>3</sup>/h)

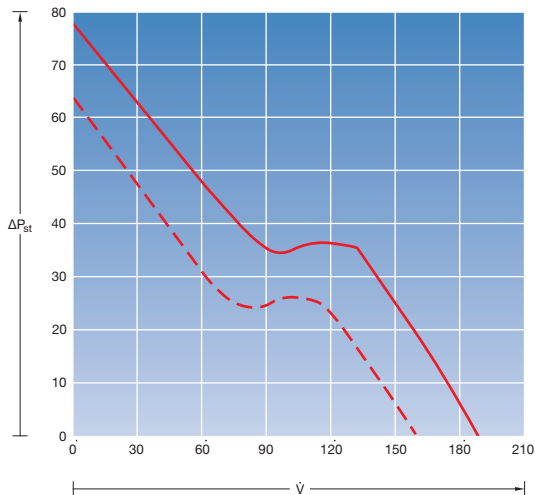


## Rack-Mounted Fans for 19" (482.6 mm)

Air throughput 188/283 cfm (320/480 m<sup>3</sup>/h)

### 50/60 Hz

SK 3340.230, 3350.230, 3341.115, .230, 3342.024, .230, .500, 3351.230, 3352.230, .500



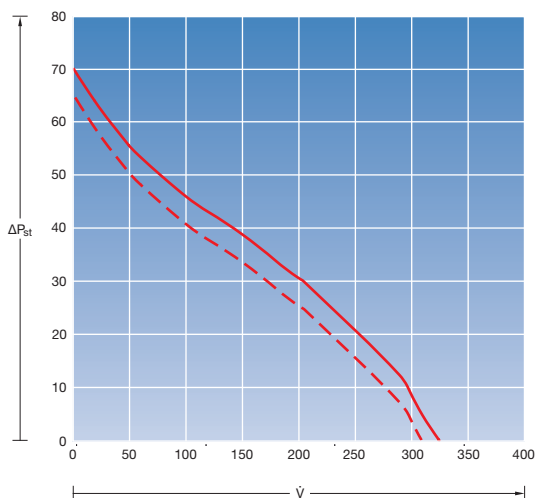
$\dot{V}$  = Volumetric flow (m<sup>3</sup>/h)  
 $\Delta P_{st}$  = Static pressure difference (Pa)  
 --- = 50 Hz  
 --- = 60 Hz

## Blower Fans for 19" (482.6 mm)

Air throughput 188 cfm (320 m<sup>3</sup>/h)

### 50/60 Hz

SK 3144.000, 3145.000

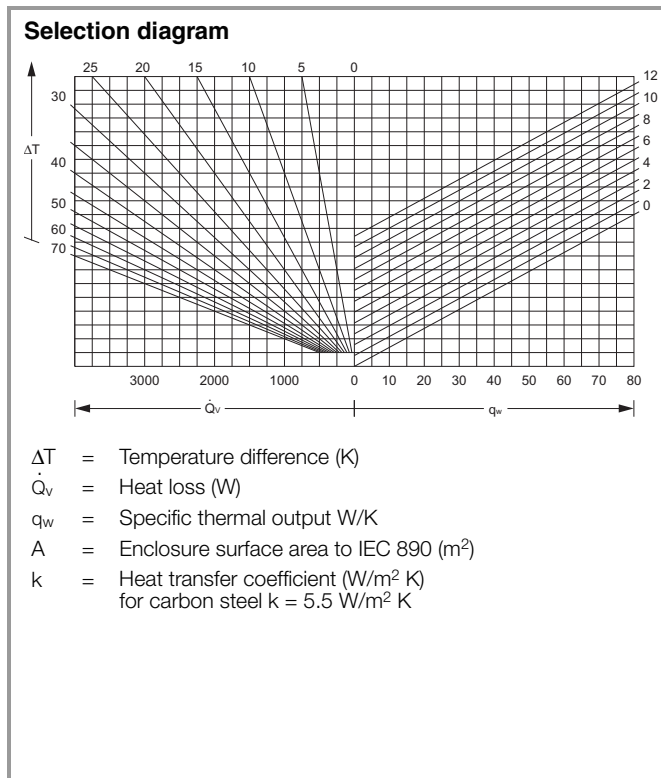
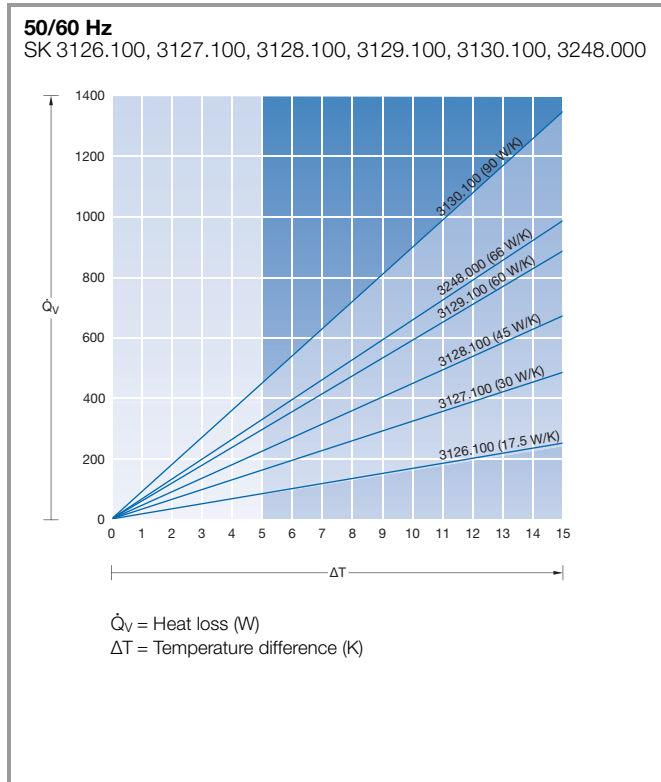


$\dot{V}$  = Volumetric flow (m<sup>3</sup>/h)  
 $\Delta P_{st}$  = Static pressure difference (Pa)  
 --- = 50 Hz  
 --- = 60 Hz

# Air Cooling

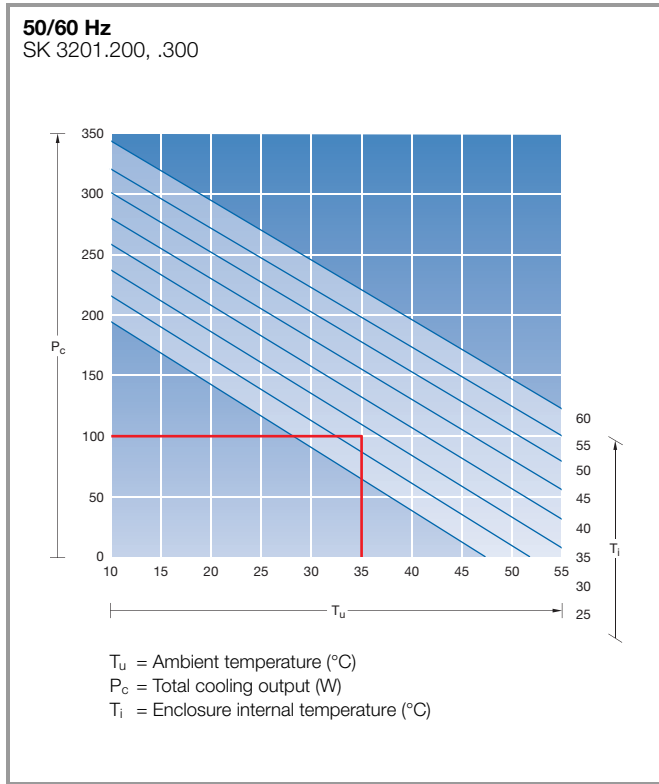
## TopTherm Air/Air Heat Exchangers

Specific thermal output 17.5 – 90 W/K, wall-mounted with controller

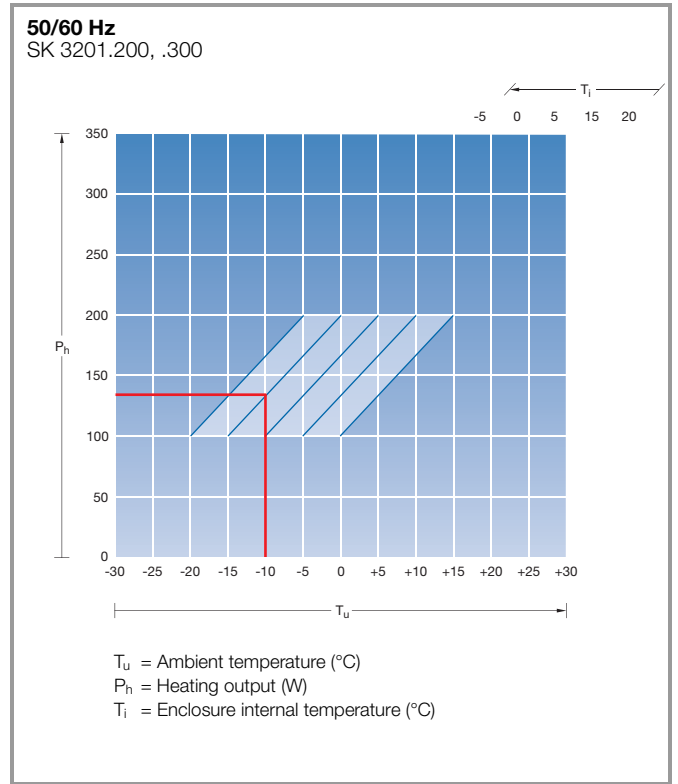


## Thermoelectric Cooler

Cooling output

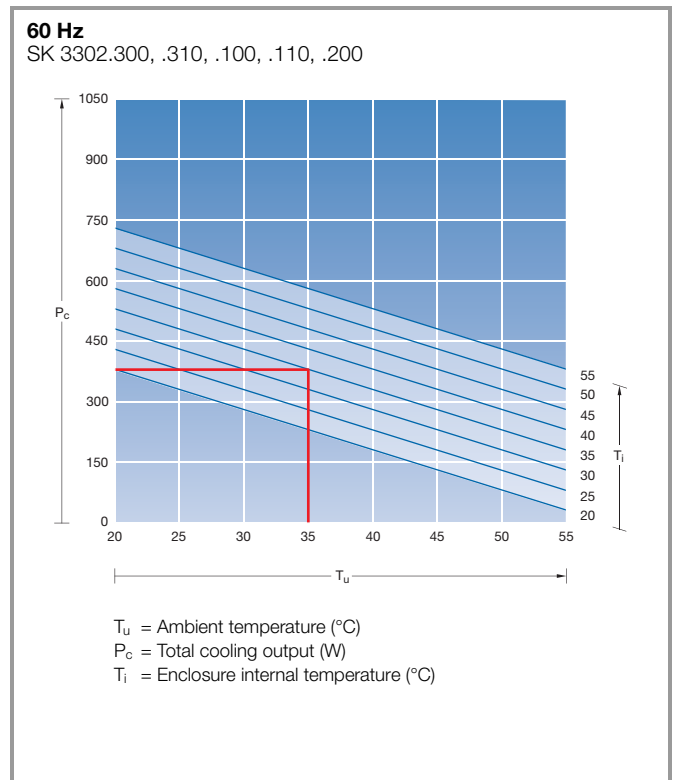
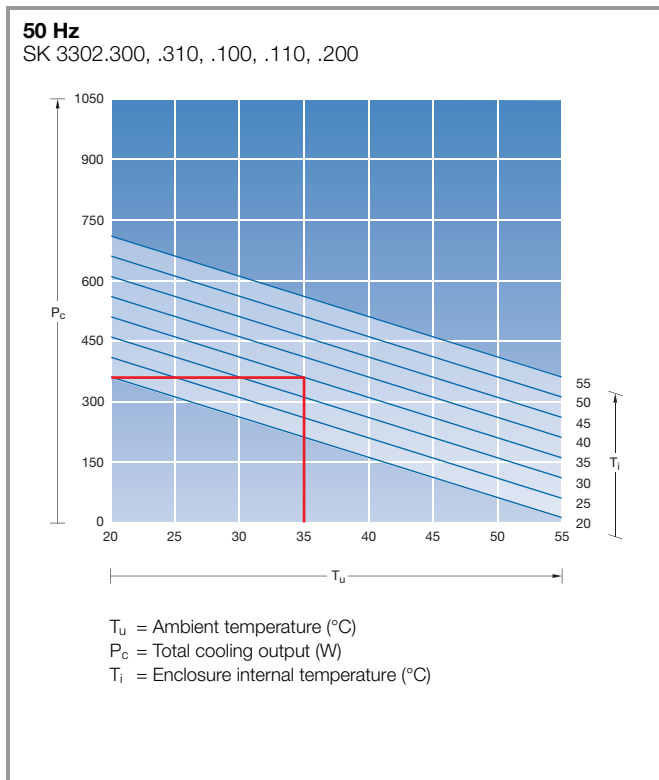


Heating output



## TopTherm Wall-Mounted Cooling Units

Power category 1024 BTU (300 W), 115/230 V, 1~

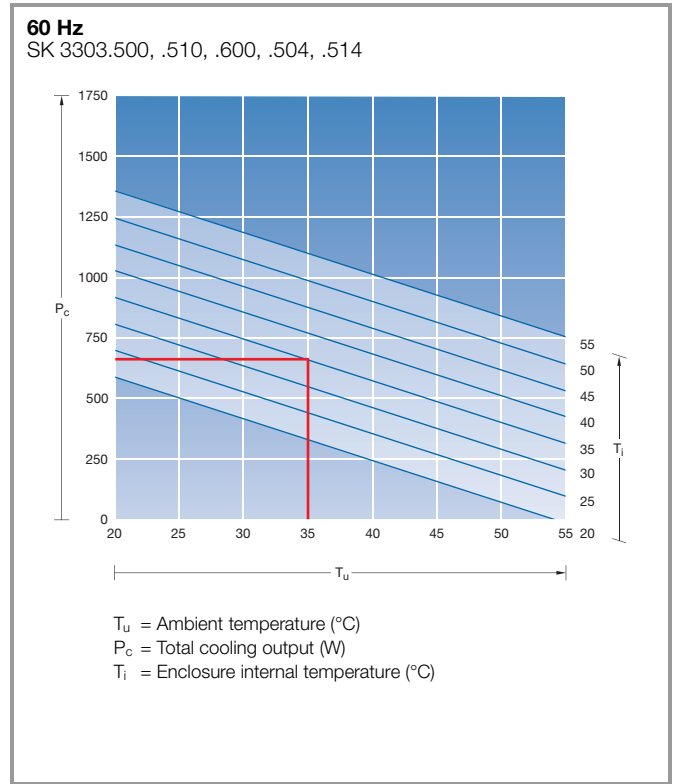
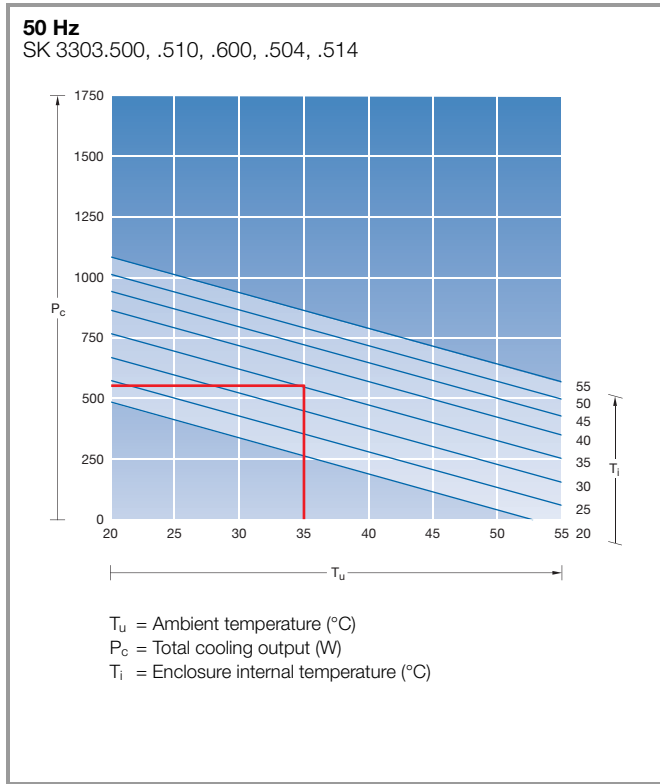




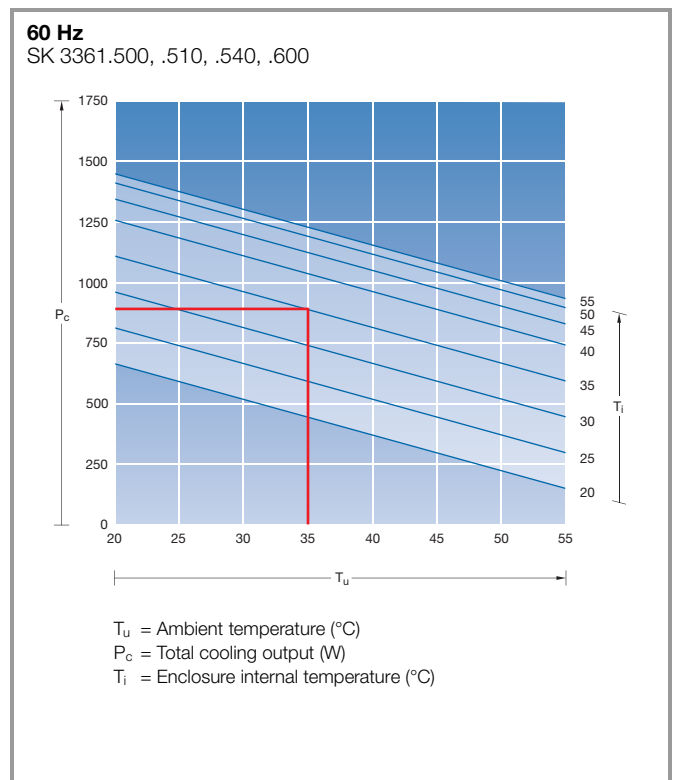
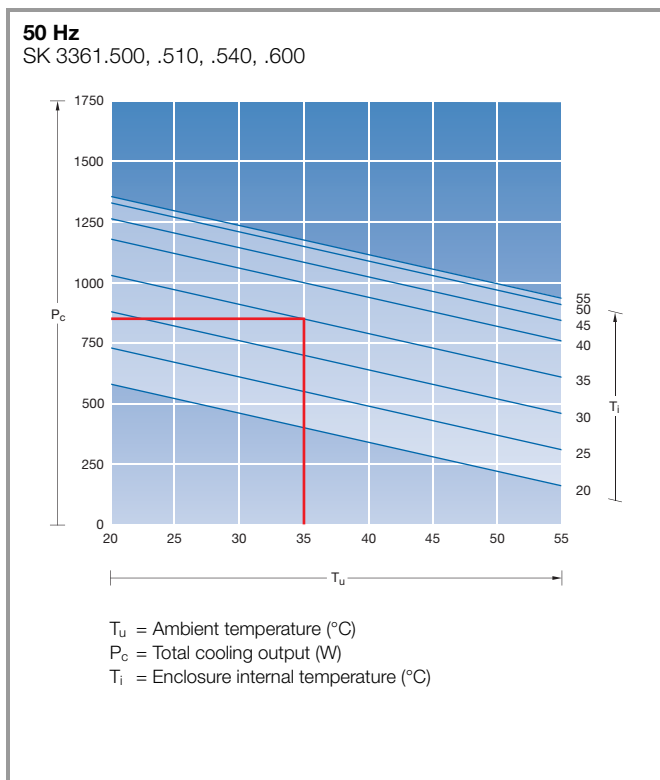
# Cooling Units

## TopTherm Blue e Wall-Mounted Cooling Units

Power category 1706 BTU (500 W), 115/230 V, 1~

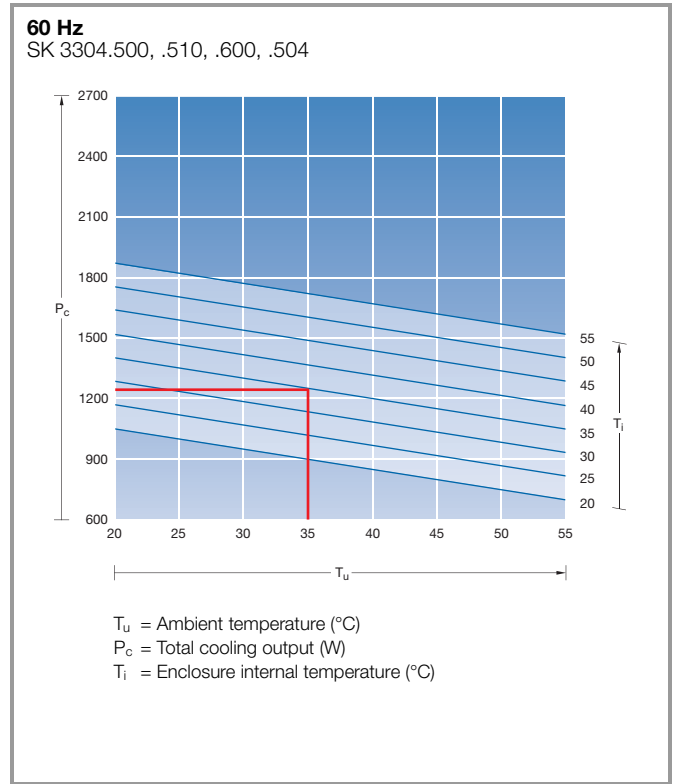
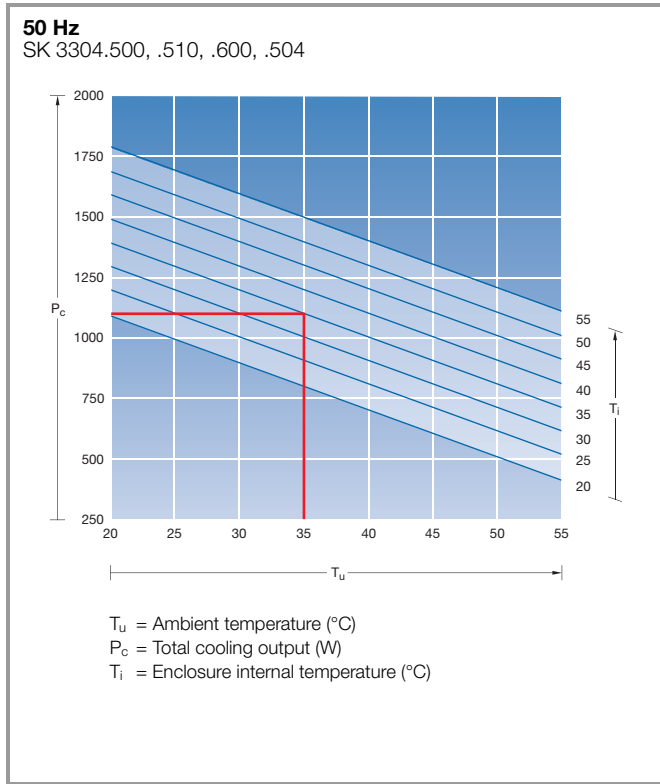


Power category 2559 BTU (750 W), 115/230 V, 1~, 400 V, 2~

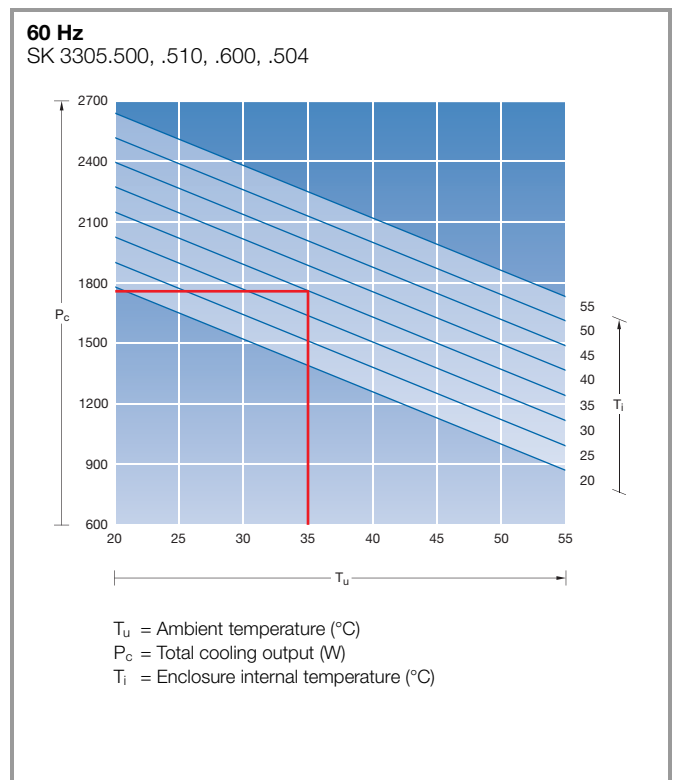
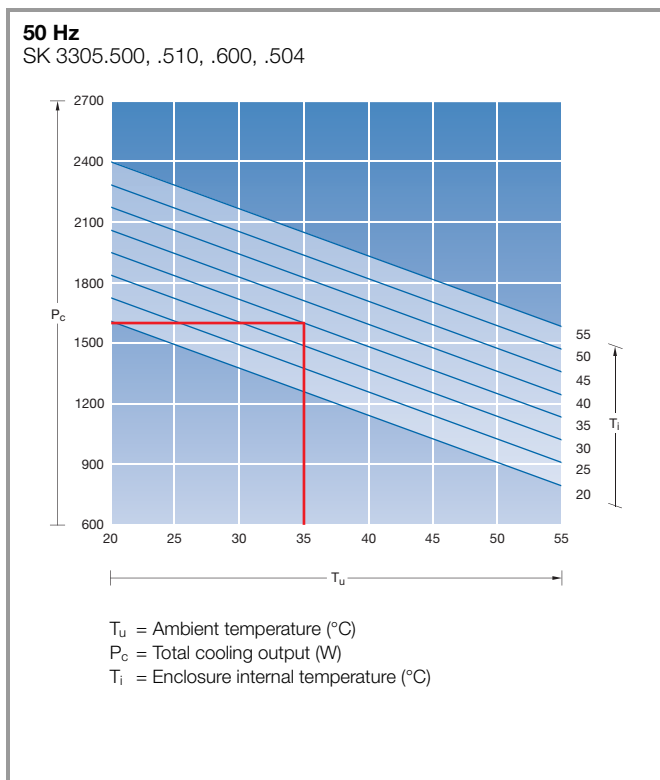


## TopTherm Blue e Wall-Mounted Cooling Units

Power category 3412 BTU (1000 W), 115/230 V, 1~



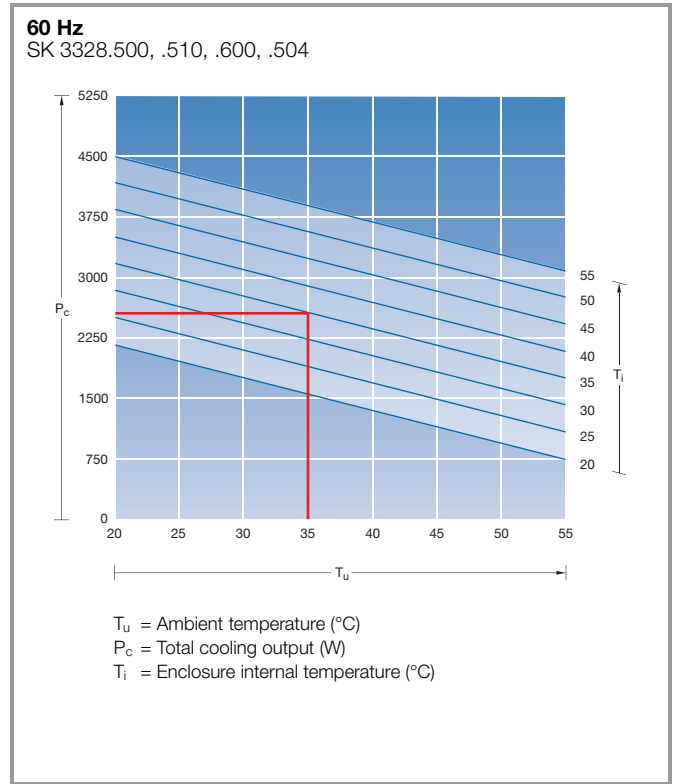
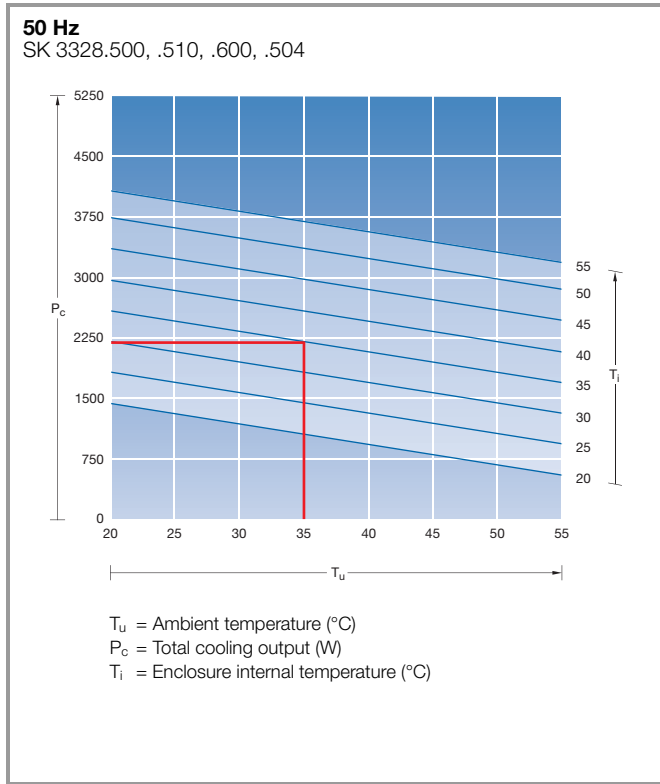
Power category 5118 BTU (1500 W), 115/230 V, 1~



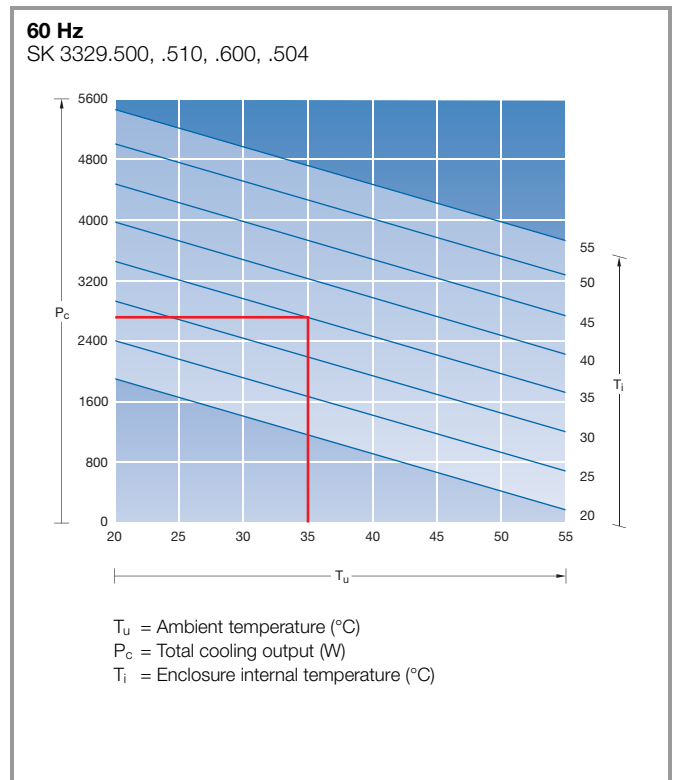
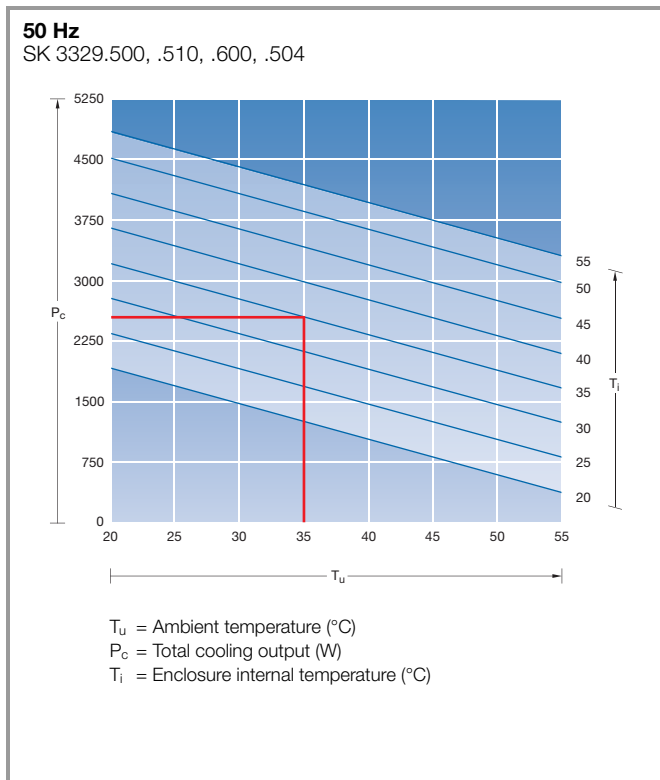
# Cooling Units

## TopTherm Blue e Wall-Mounted Cooling Units

Power category 6824 BTU (2000 W), 115/230 V, 1~

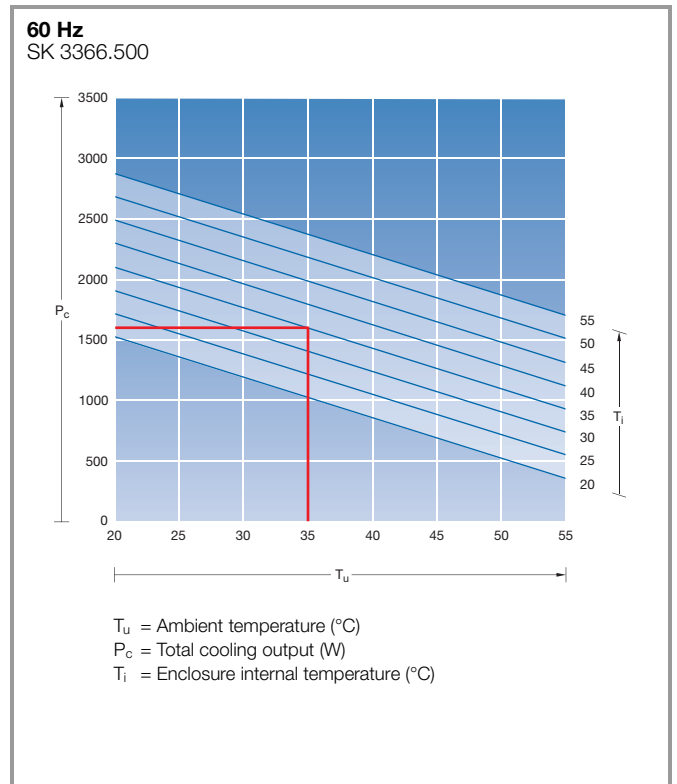
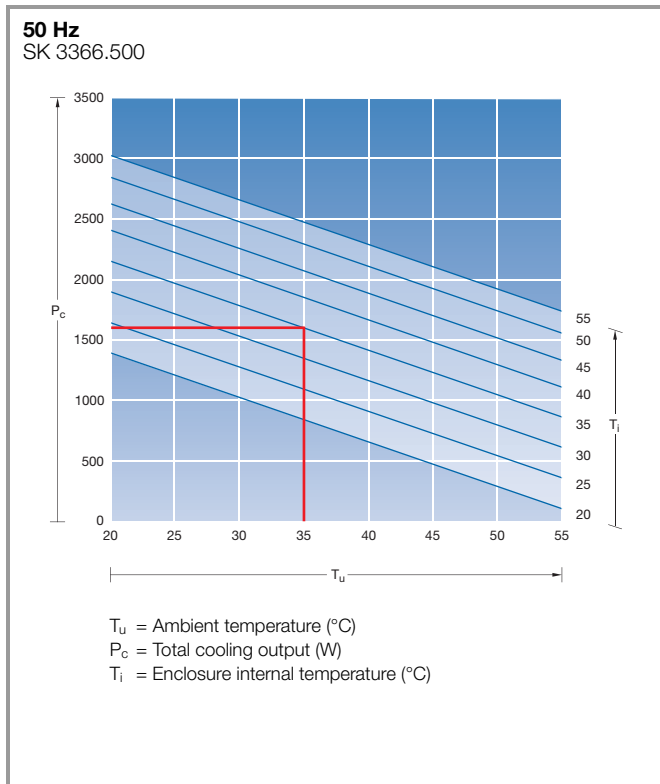


Power category 8530 BTU (2500 W), 115/230 V, 1~

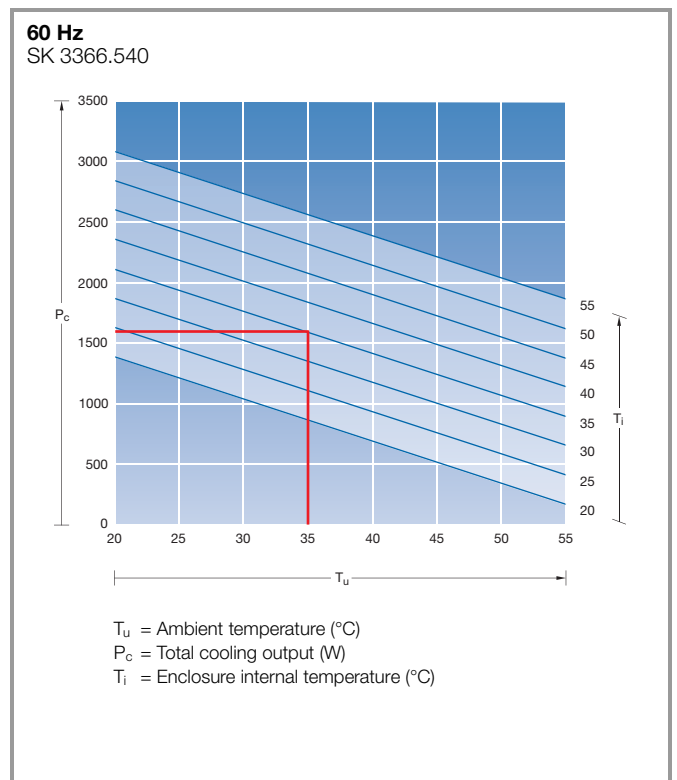
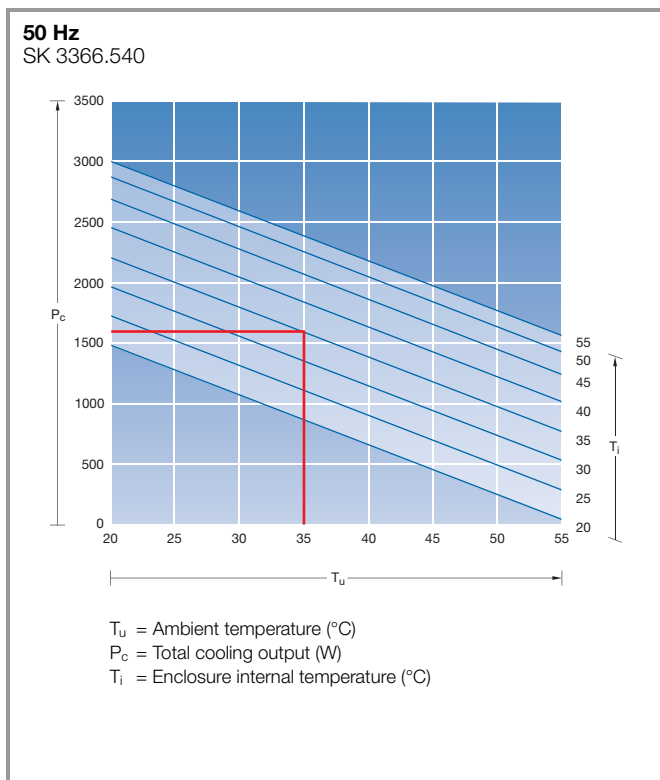


## TopTherm Blue e Wall-Mounted Cooling Units, Slimline

Power category 5118 BTU (1500 W), 230 V, 1~



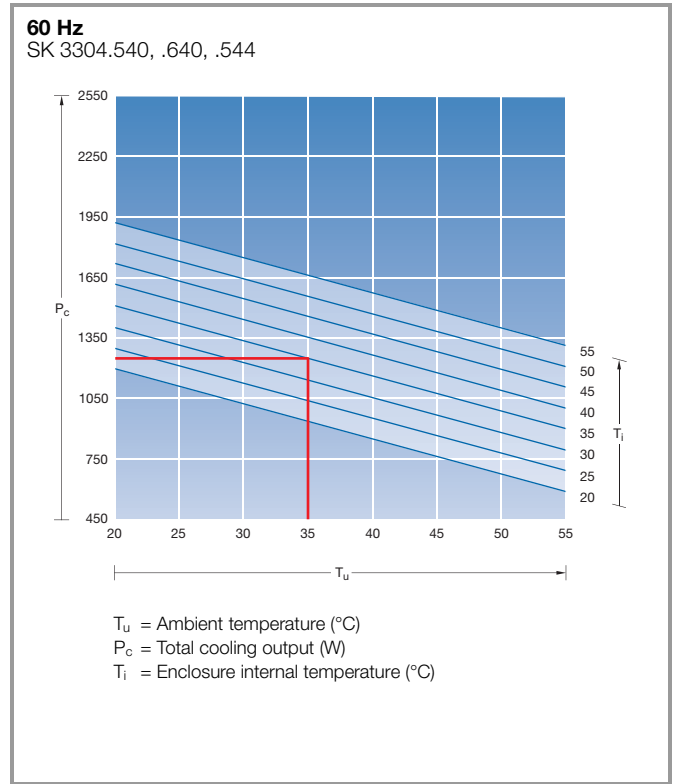
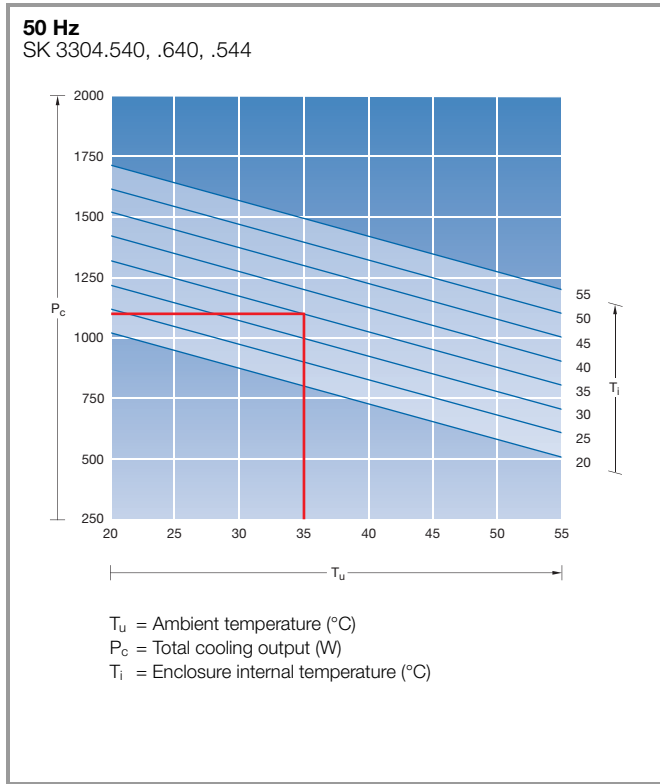
Power category 5118 BTU (1500 W), 400/460 V, 3~



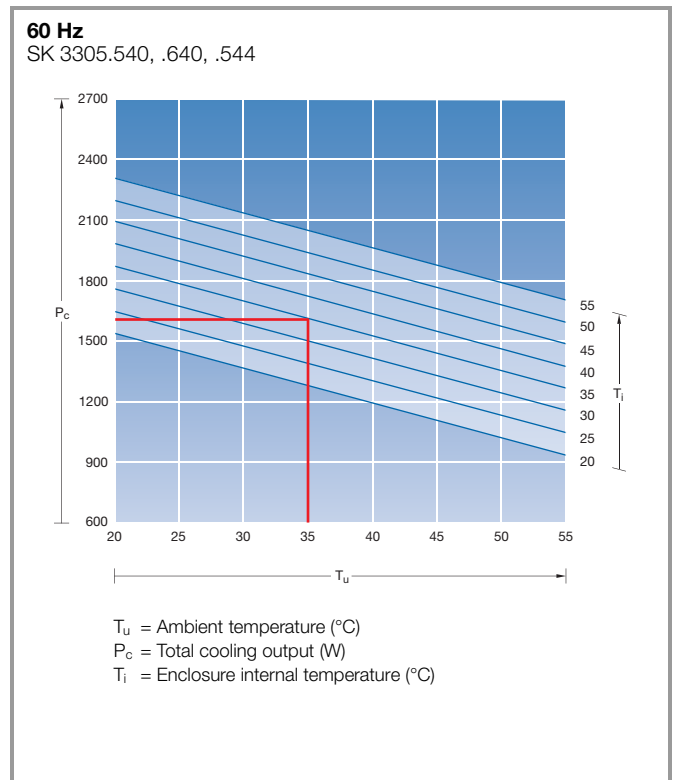
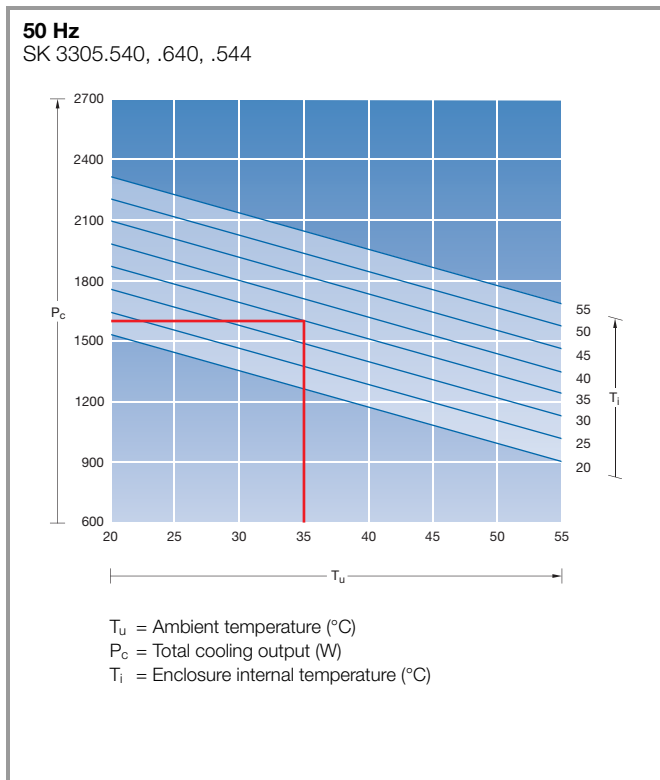
# Cooling Units

## TopTherm Blue e Wall-Mounted Cooling Units

Power category 3412 BTU (1000 W), 400/460 V, 3~



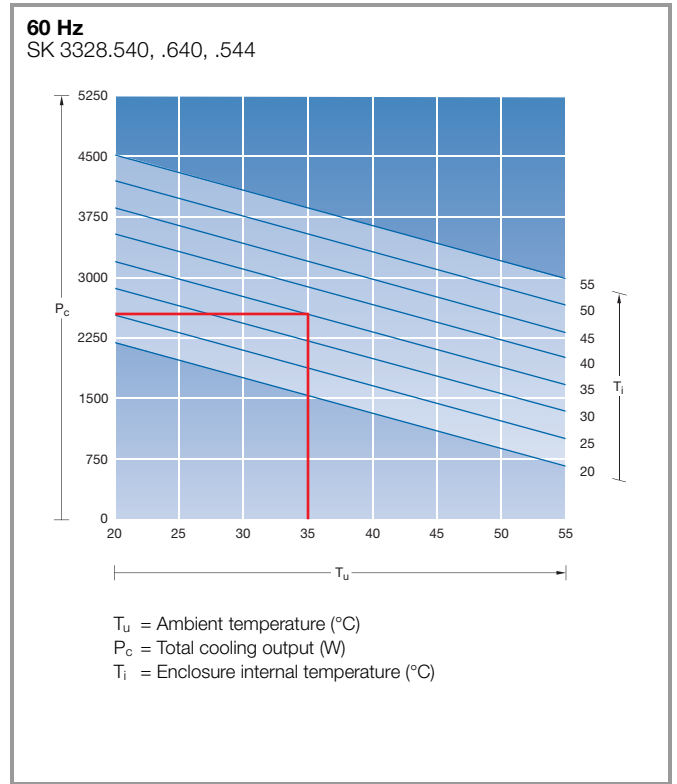
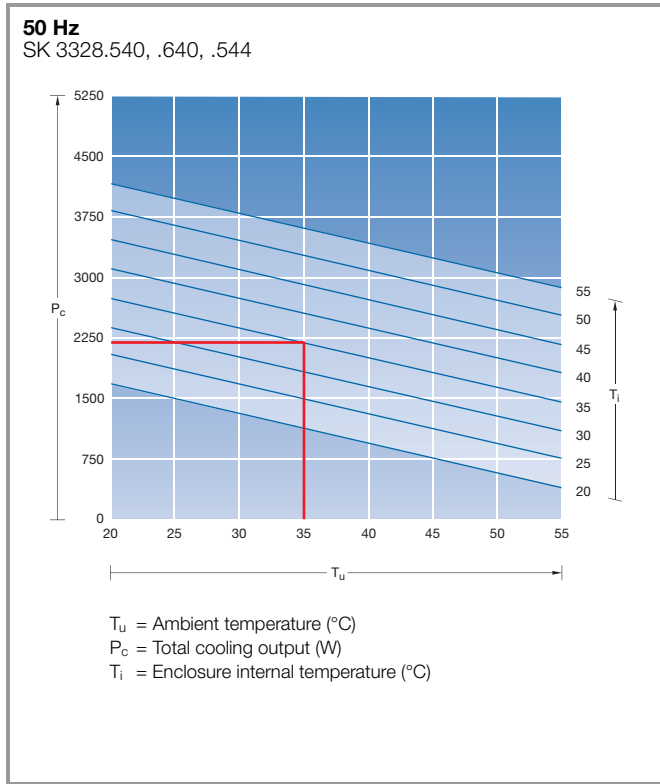
Power category 5118 BTU (1500 W), 400/460 V, 3~



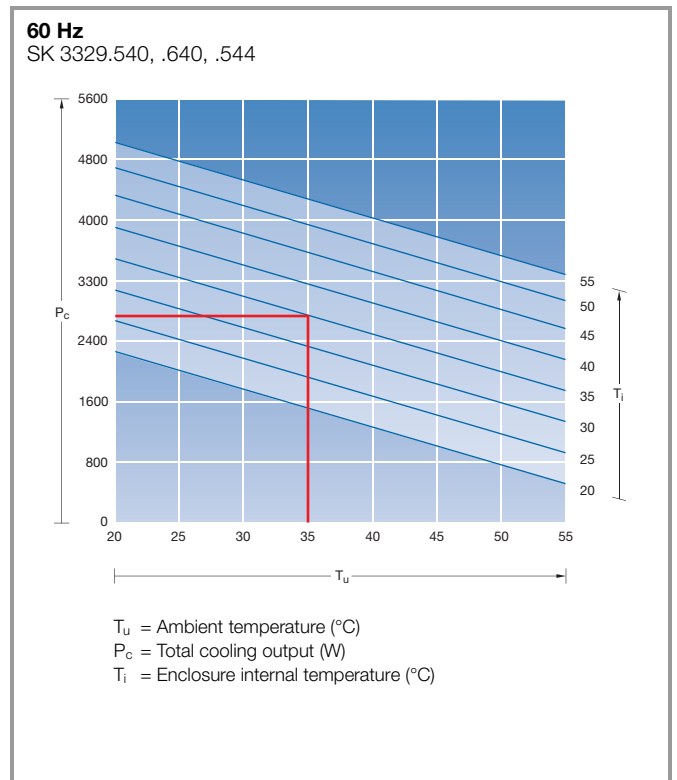
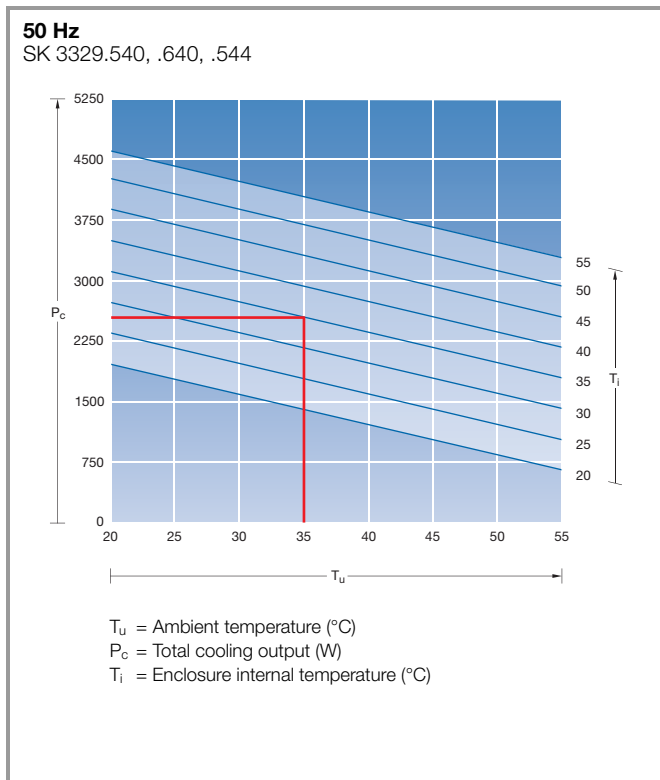


## TopTherm Blue e Wall-Mounted Cooling Units

Power category 6824 BTU (2000 W), 400/460 V, 3~



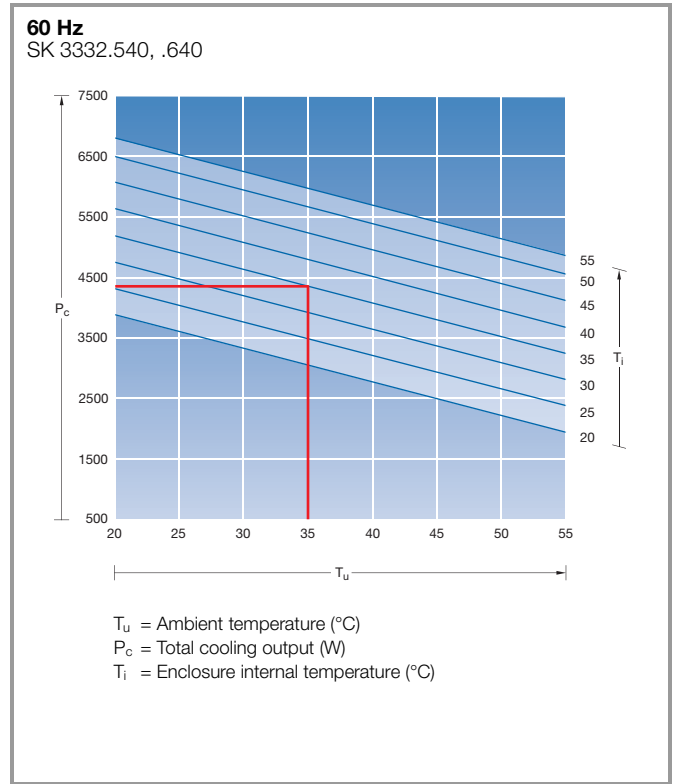
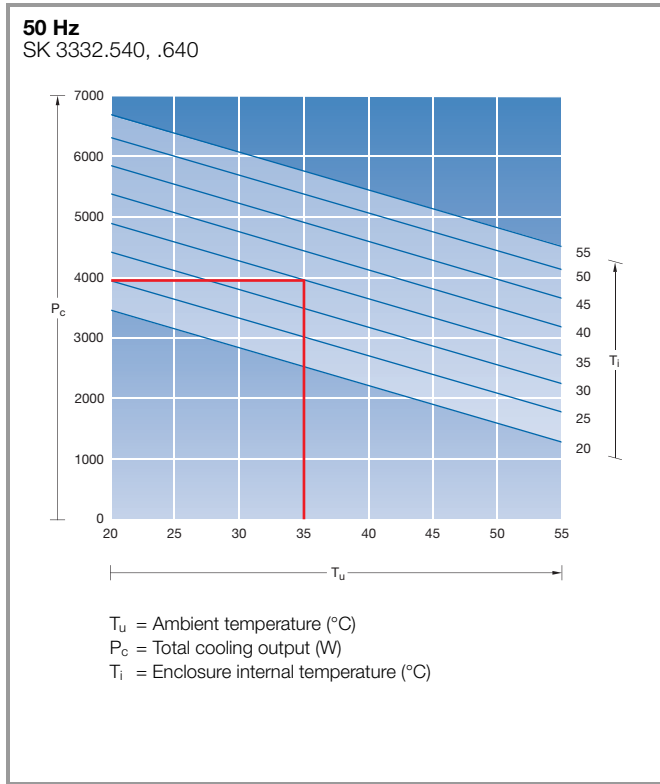
Power category 8530 BTU (2500 W), 400/460 V, 3~



# Cooling Units

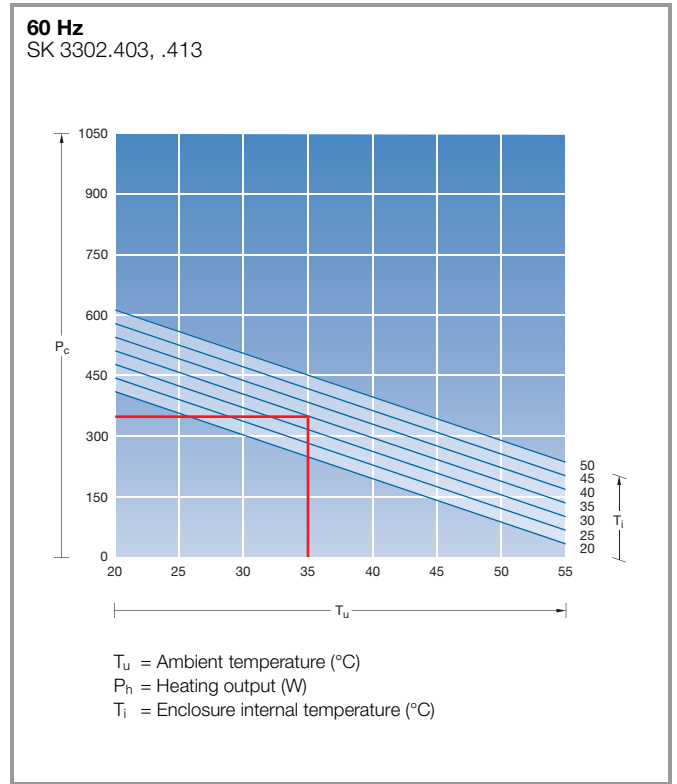
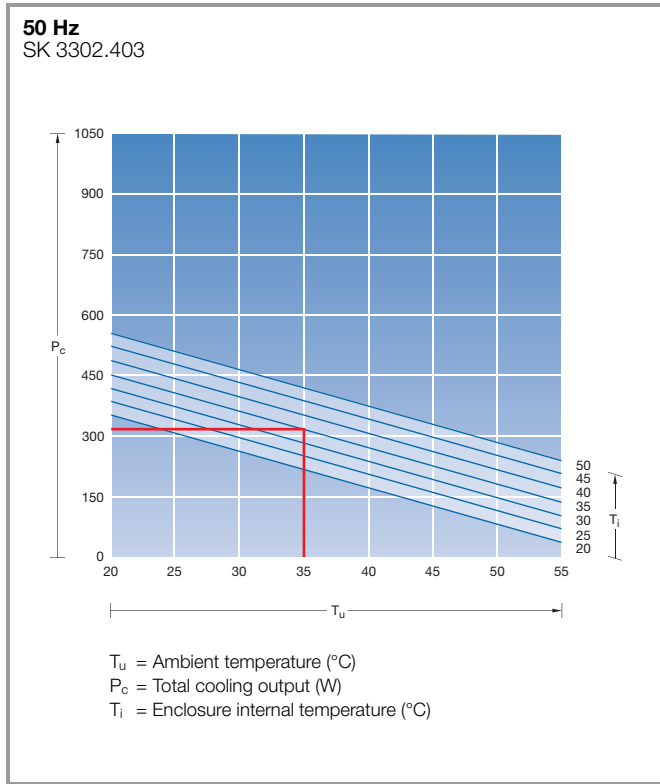
## TopTherm Blue e Wall-Mounted Cooling Units

Power category 13649 BTU (4000 W), 400/460 V, 3~

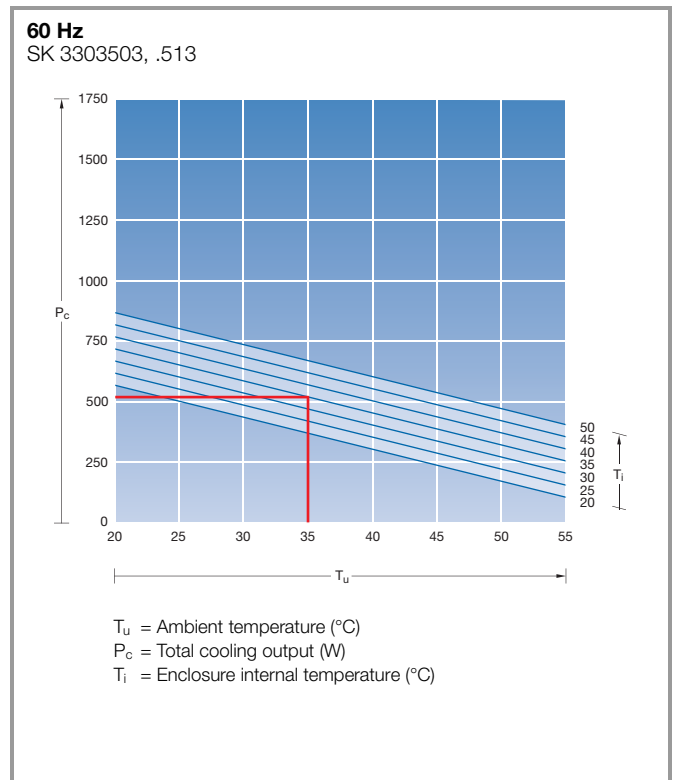
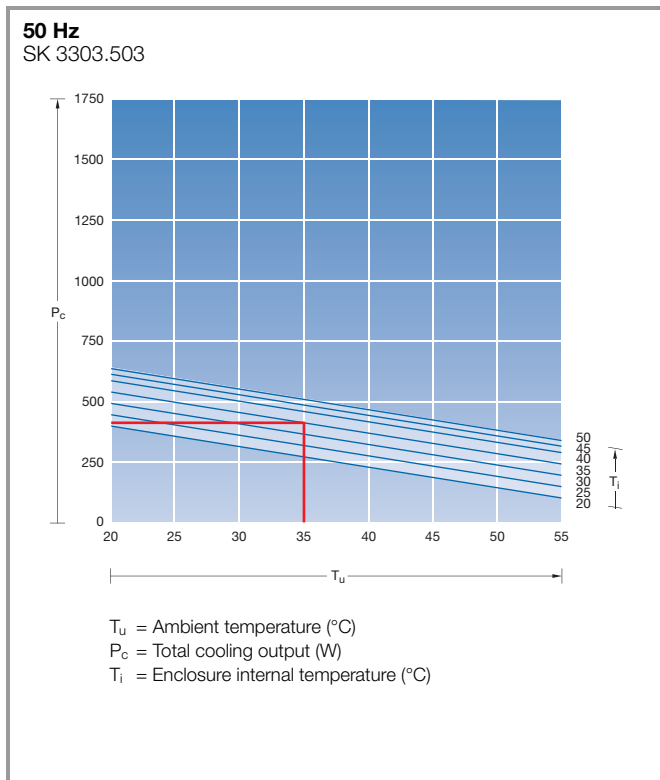


## TopTherm Blue e Wall-Mounted Cooling Units, UL Type 3R

Power category 1024 BTU (300 W), 115/230 V, 1~



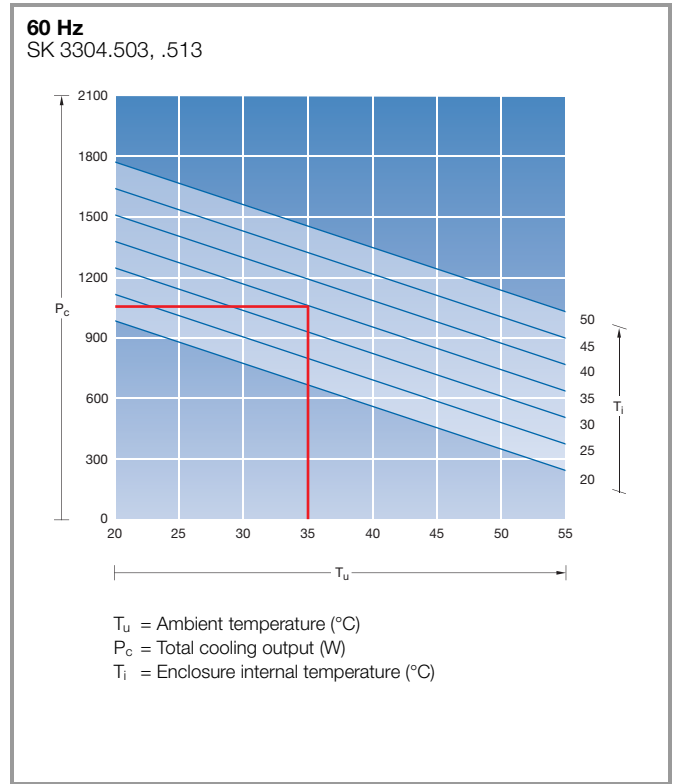
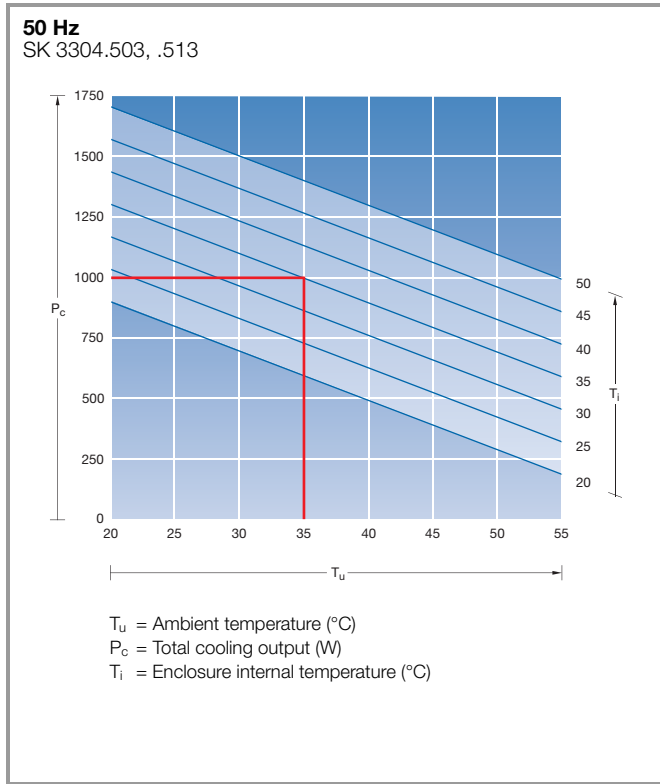
Power category 1706 BTU (500 W) , 115/230 V, 1~



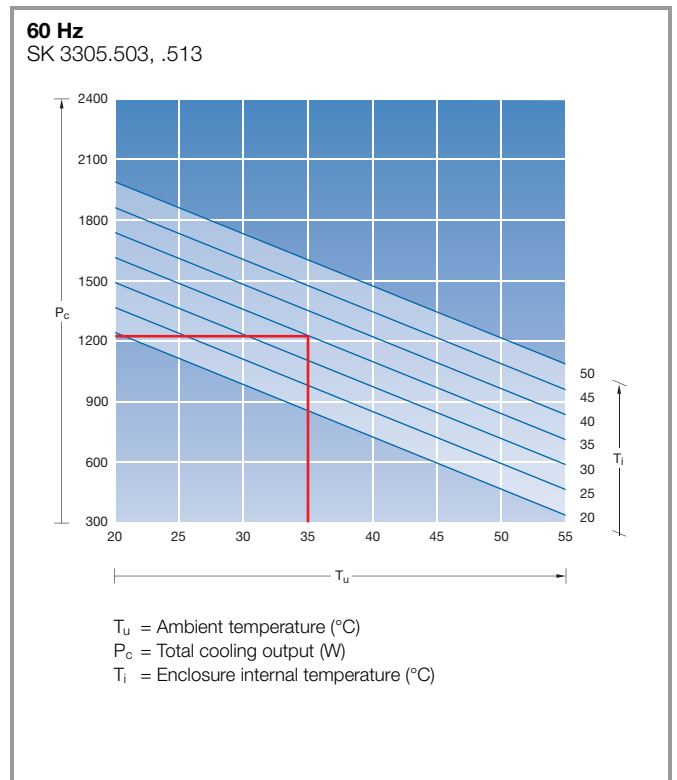
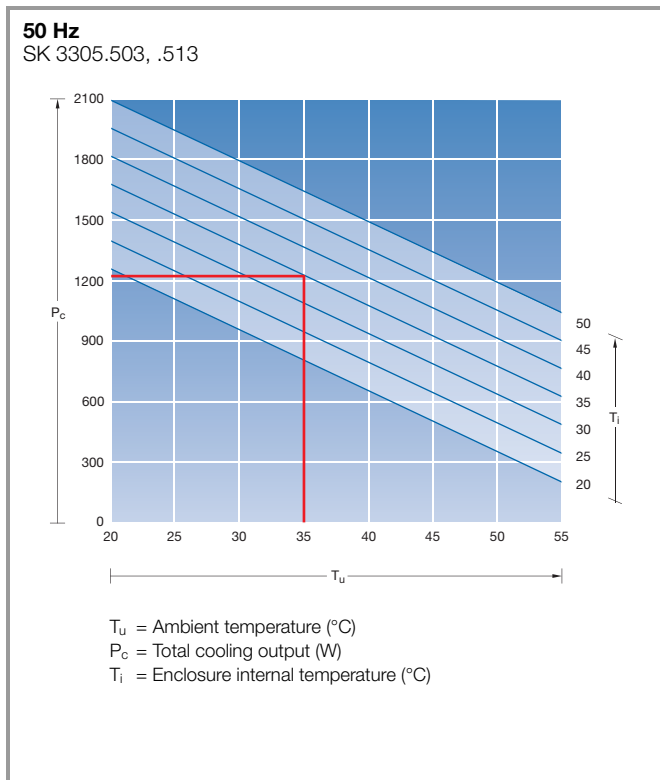
# Cooling Units

## TopTherm Blue e Wall-Mounted Cooling Units, UL Type 3R

Power category 3412 BTU (1000 W), 115/230 V, 1~

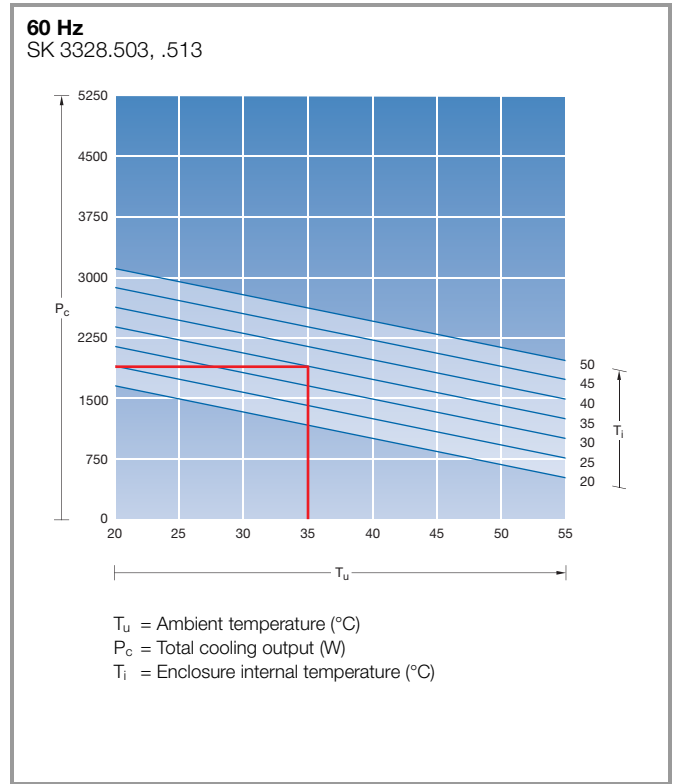
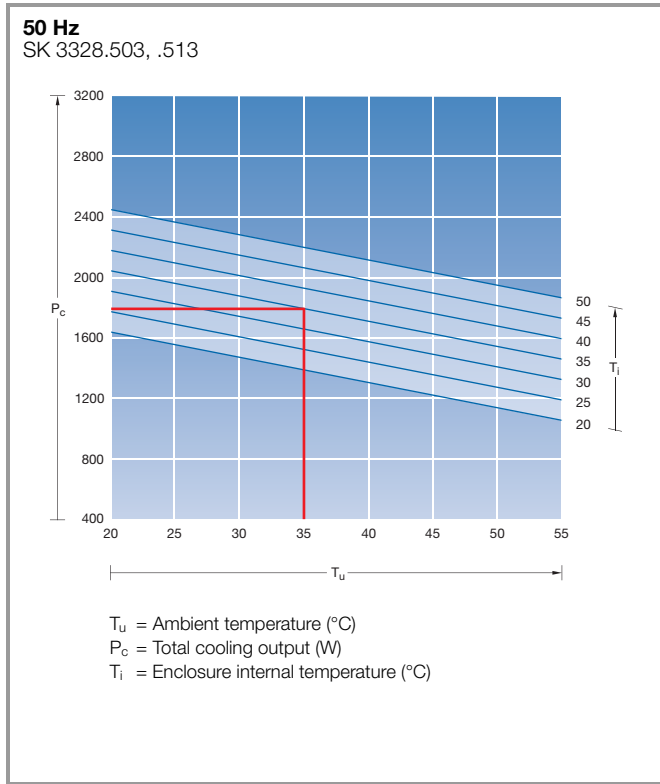


Power category 5118 BTU (1500 W), 115/230 V, 1~

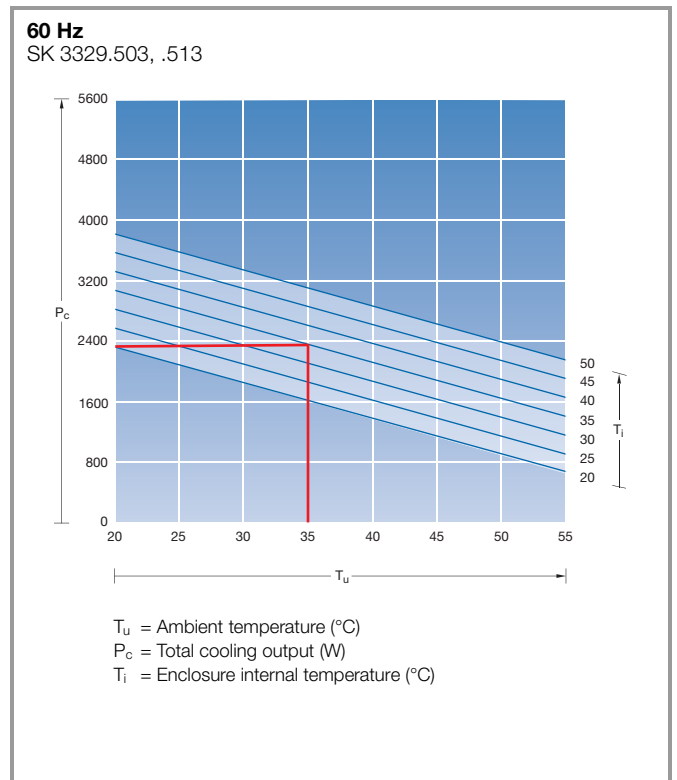
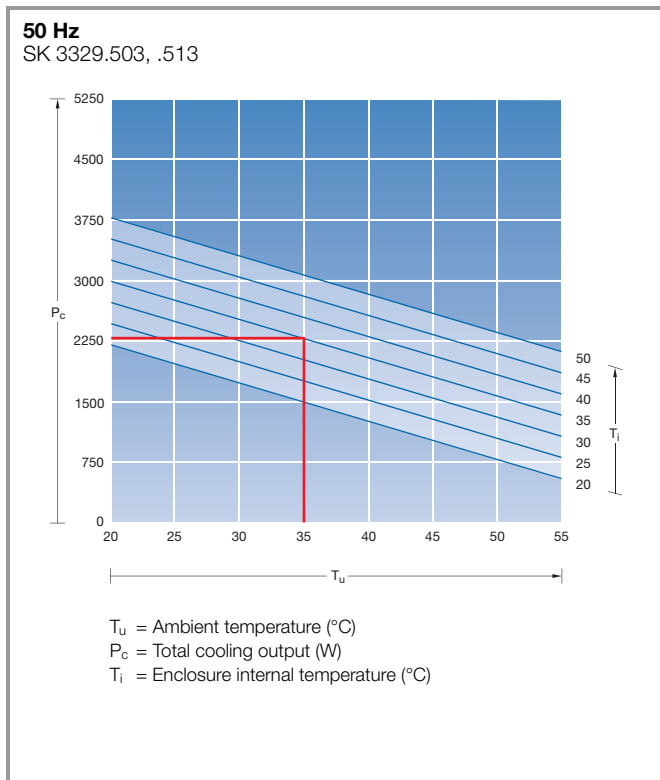


## TopTherm Blue e Wall-Mounted Cooling Units, UL Type 3R

Power category 6824 BTU (2000 W), 115/230 V, 1~



Power category 7506 BTU (2200 W), 115/230 V, 1~

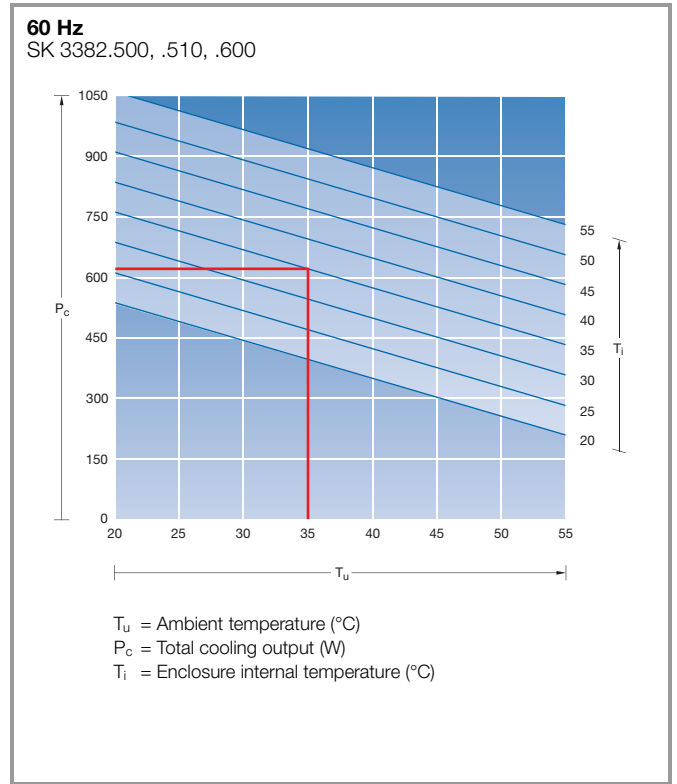
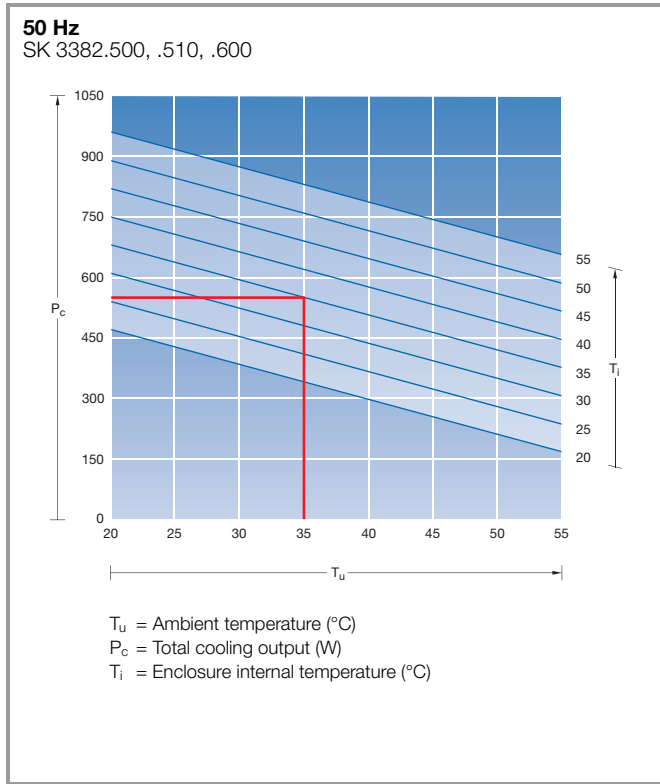




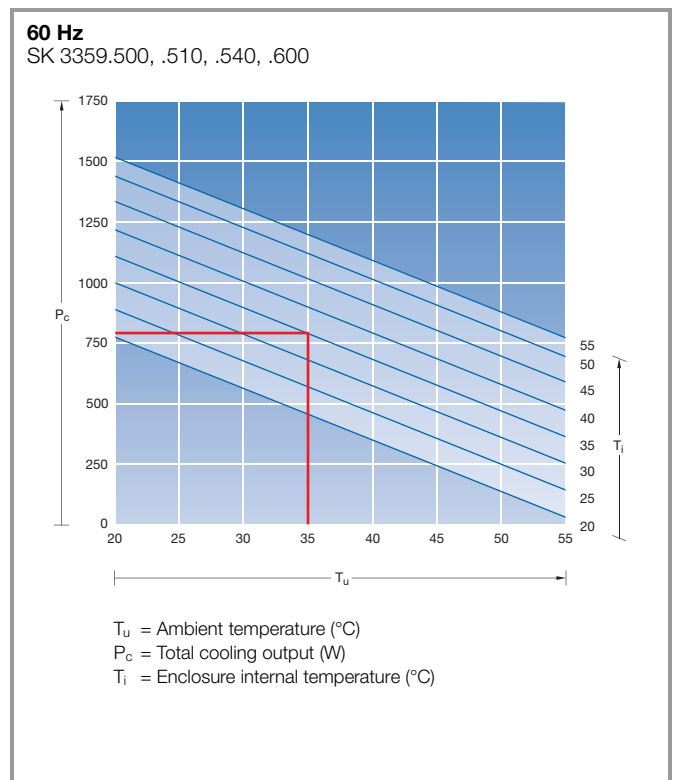
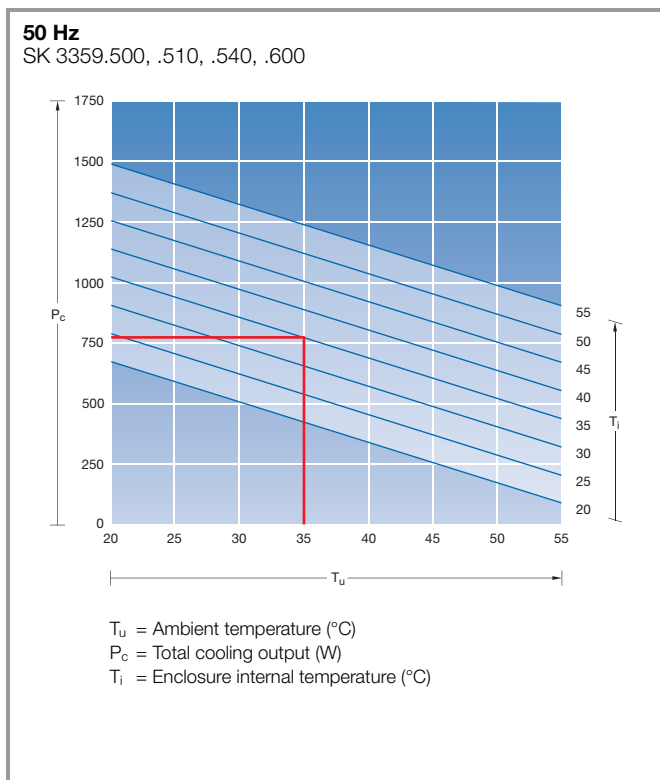
# Cooling Units

## TopTherm Blue e Roof-Mounted Cooling Units

Power category 1706 BTU (500 W), 115/230 V, 1~



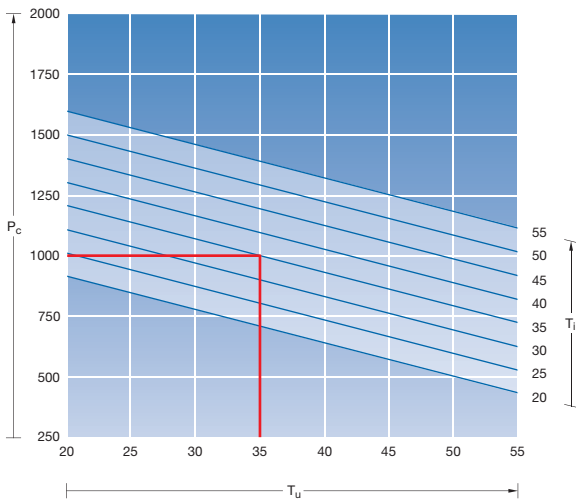
Power category 2559 BTU (750 W), 115/230 V, 1~, 400 V, 2~



## TopTherm Blue e Roof-Mounted Cooling Units

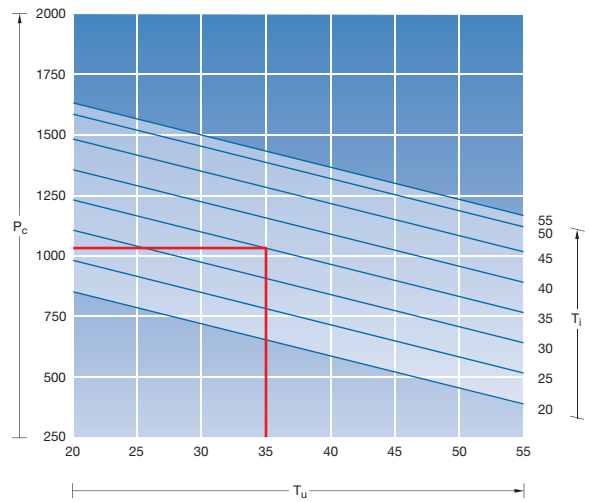
Power category 3412 BTU (1000 W), 115/230 V, 1~, 400 V, 2~

**50 Hz**  
SK 3383.500, .510, .540, .600



$T_u$  = Ambient temperature (°C)  
 $P_c$  = Total cooling output (W)  
 $T_i$  = Enclosure internal temperature (°C)

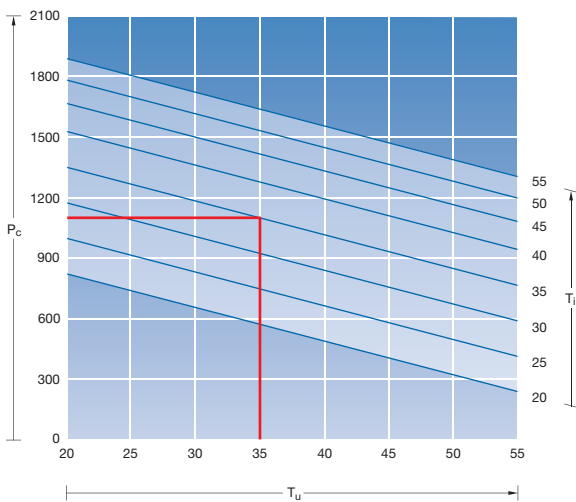
**60 Hz**  
SK 3383.500, .510, .540, .600



$T_u$  = Ambient temperature (°C)  
 $P_c$  = Total cooling output (W)  
 $T_i$  = Enclosure internal temperature (°C)

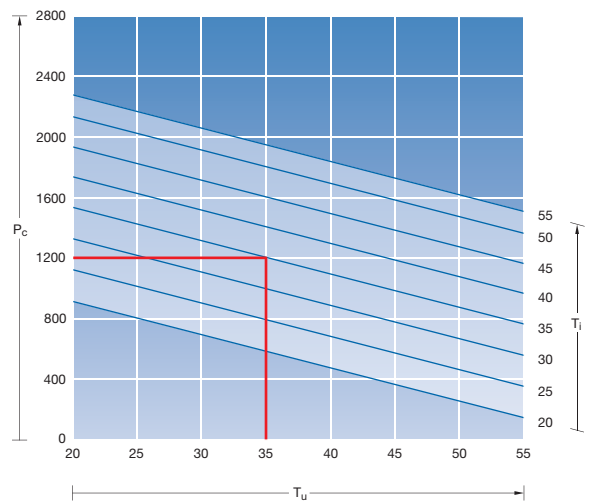
Power category 3753 BTU (1100 W), 115/230 V, 1~

**50 Hz**  
SK 3273.500, .515



$T_u$  = Ambient temperature (°C)  
 $P_c$  = Total cooling output (W)  
 $T_i$  = Enclosure internal temperature (°C)

**60 Hz**  
SK 3273.500, .515

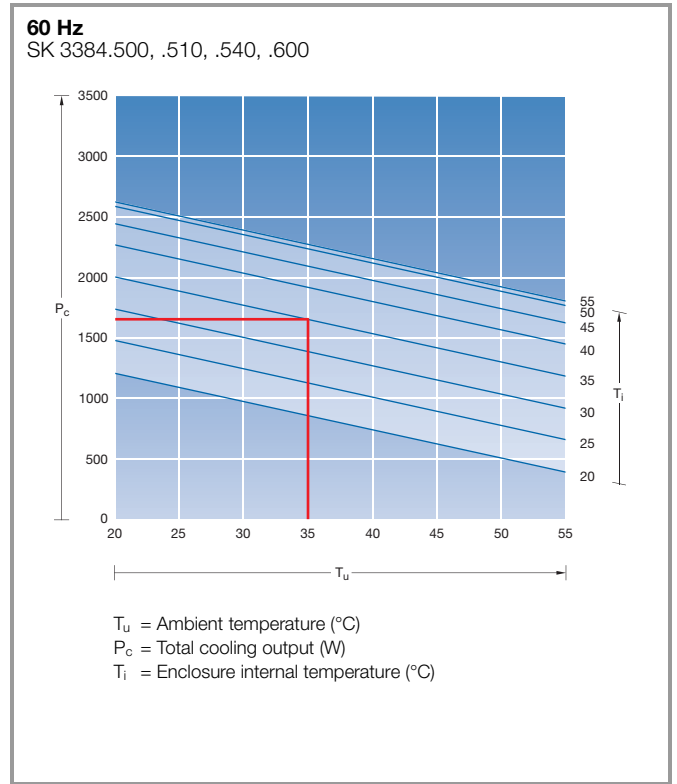
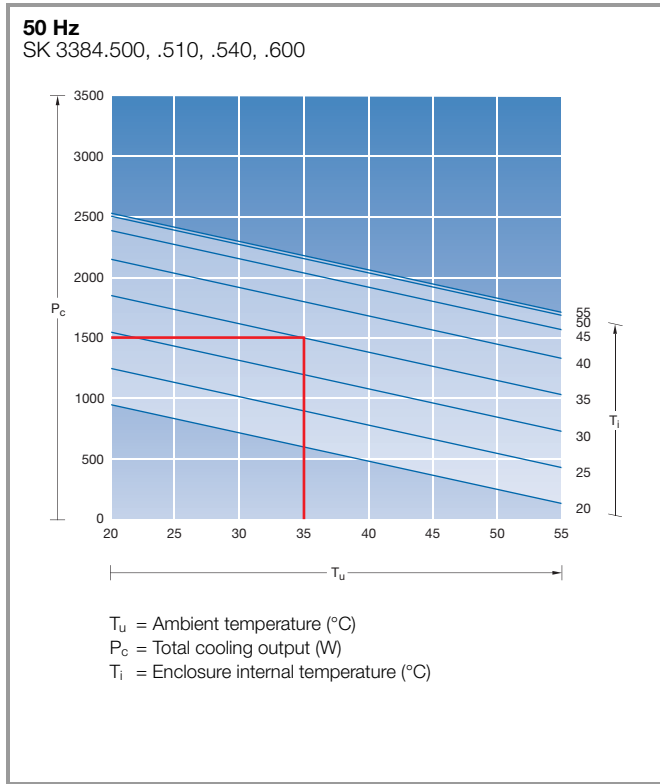


$T_u$  = Ambient temperature (°C)  
 $P_c$  = Total cooling output (W)  
 $T_i$  = Enclosure internal temperature (°C)

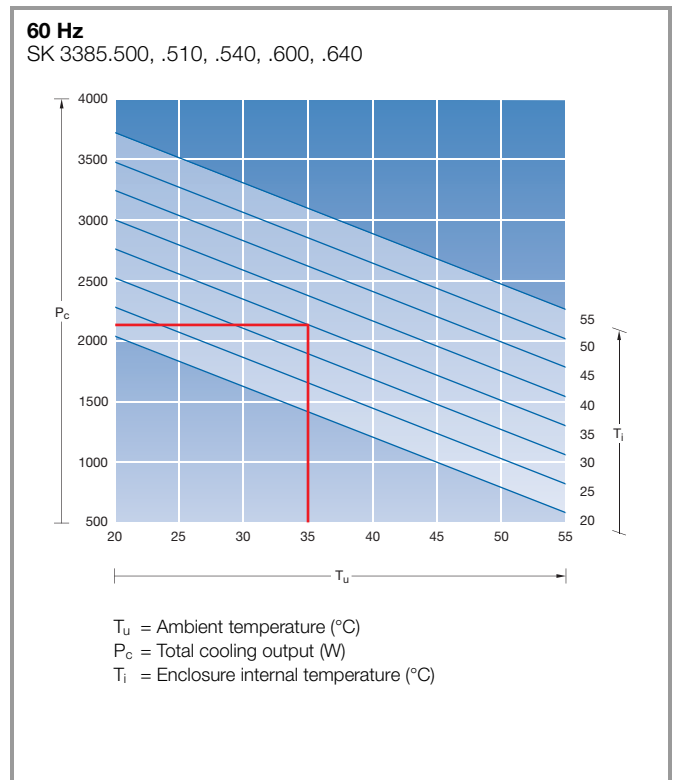
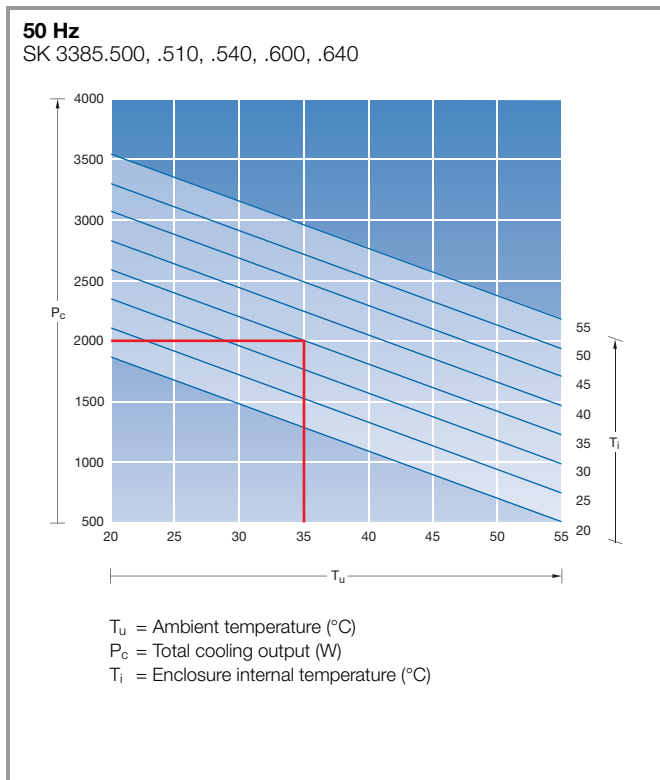
# Cooling Units

## TopTherm Blue e Roof-Mounted Cooling Units

Power category 5118 BTU (1500 W), 115/230 V, 1~, 400 V, 2~

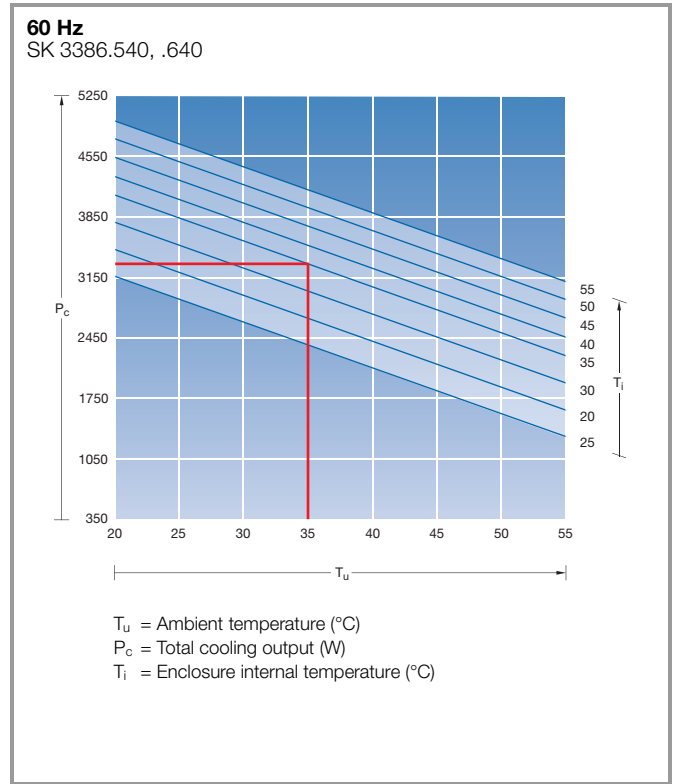
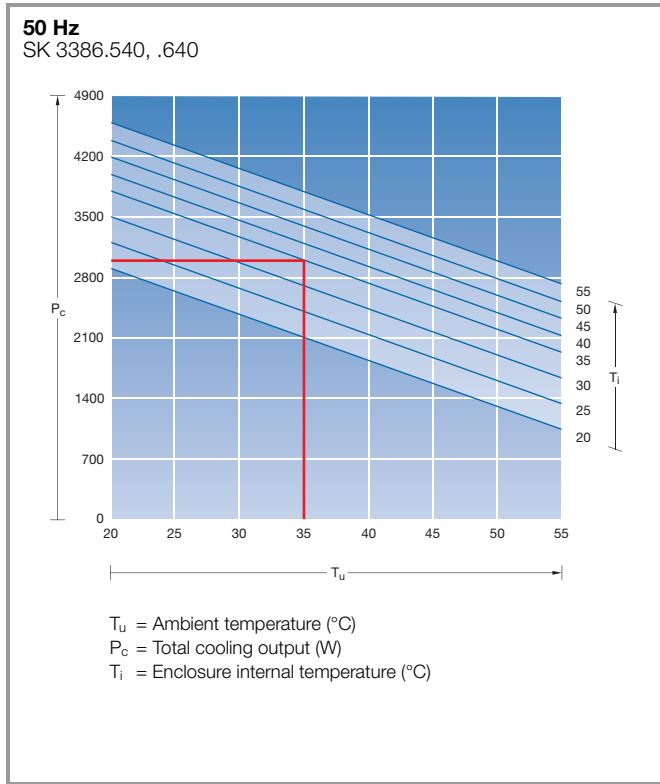


Power category 6824 BTU (2000 W), 115/230 V, 1~, 400 V, 2~

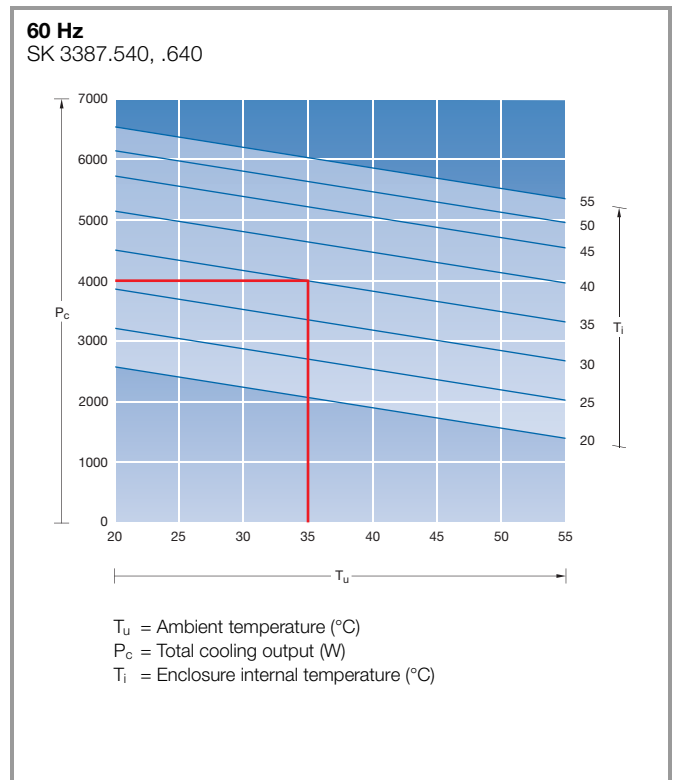
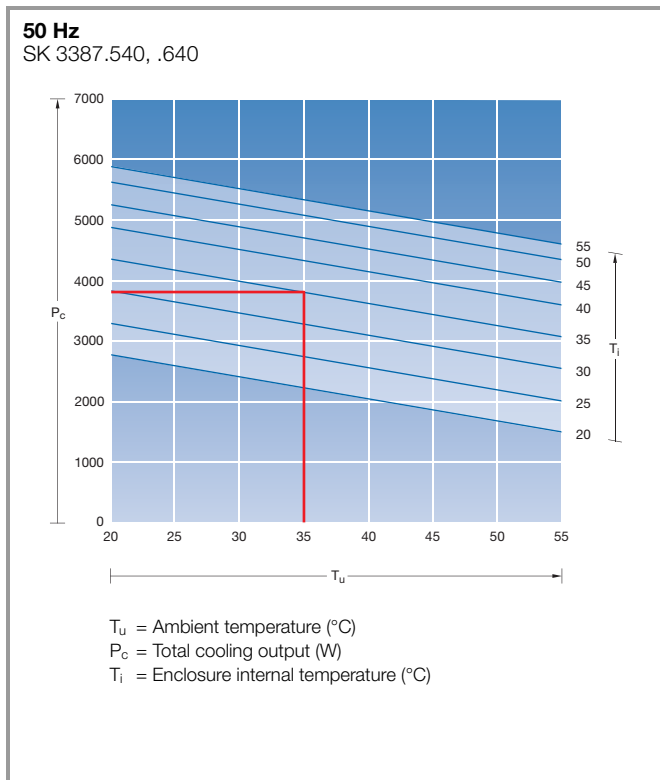


## TopTherm Blue e Roof-Mounted Cooling Units

Power category 10236 BTU (3000 W), 400/460 V, 3~



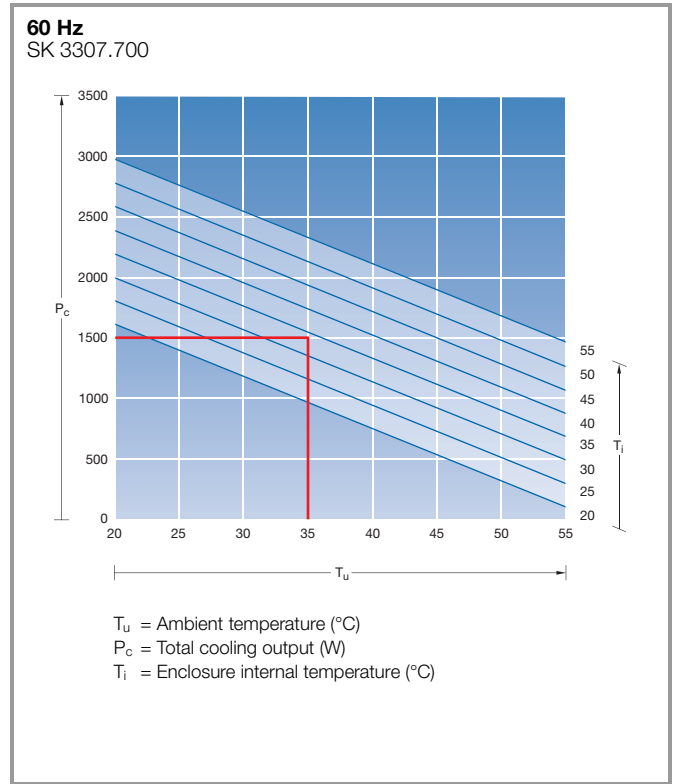
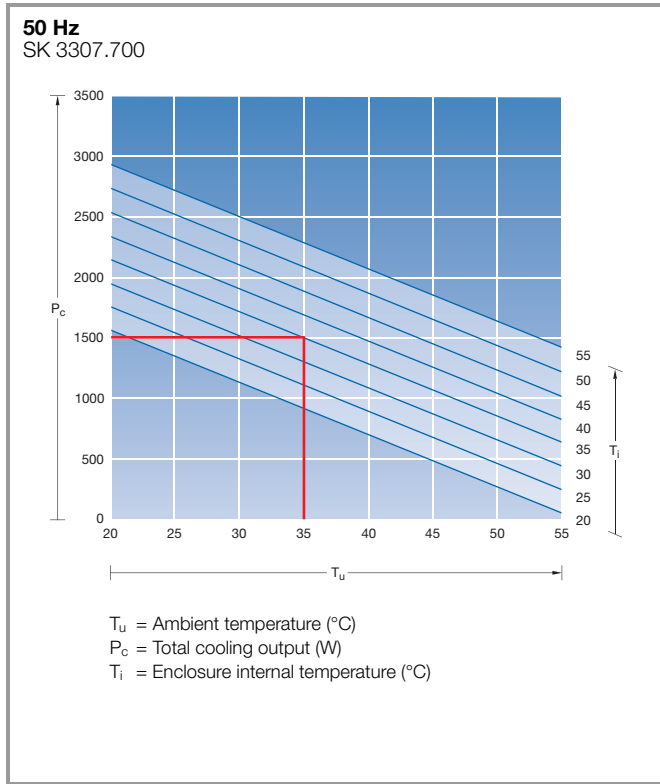
Power category 13649 BTU (4000 W), 400/460 V, 3~



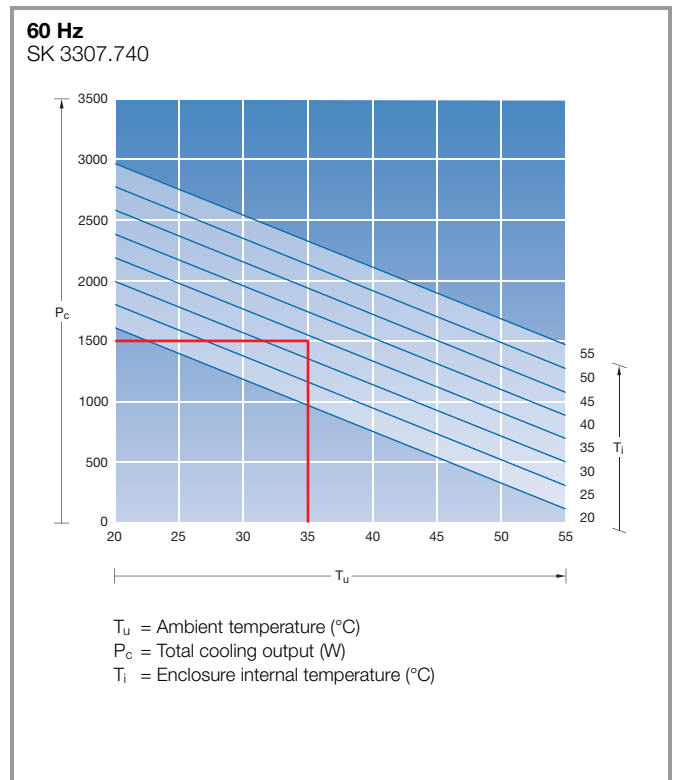
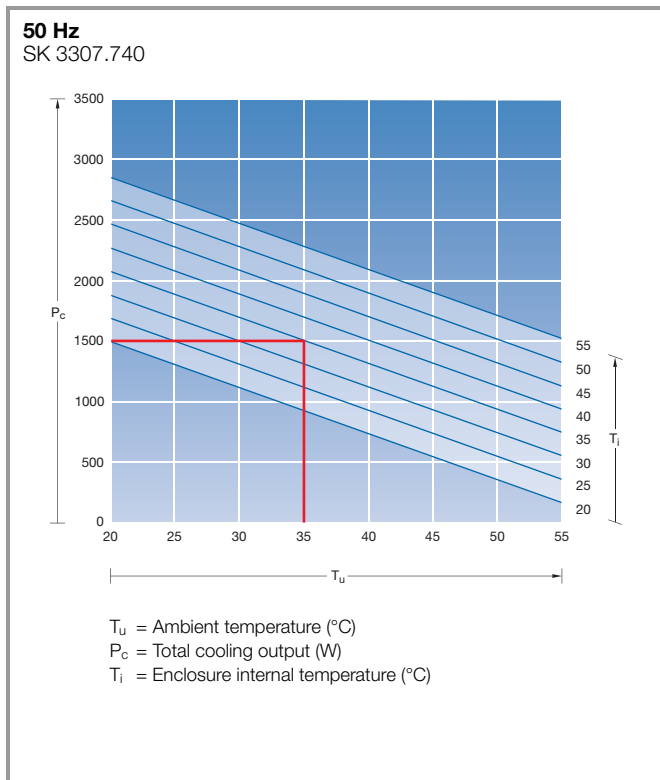
# Cooling Units

## Modular Climate Control Concept – Blue e Cooling Module

Power category 5118 BTU (1500 W), 230 V, 1~

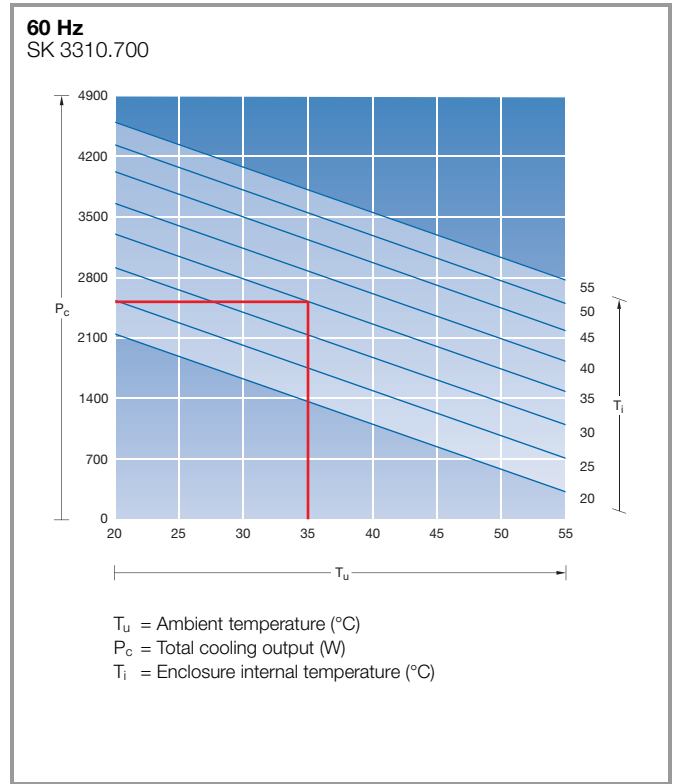
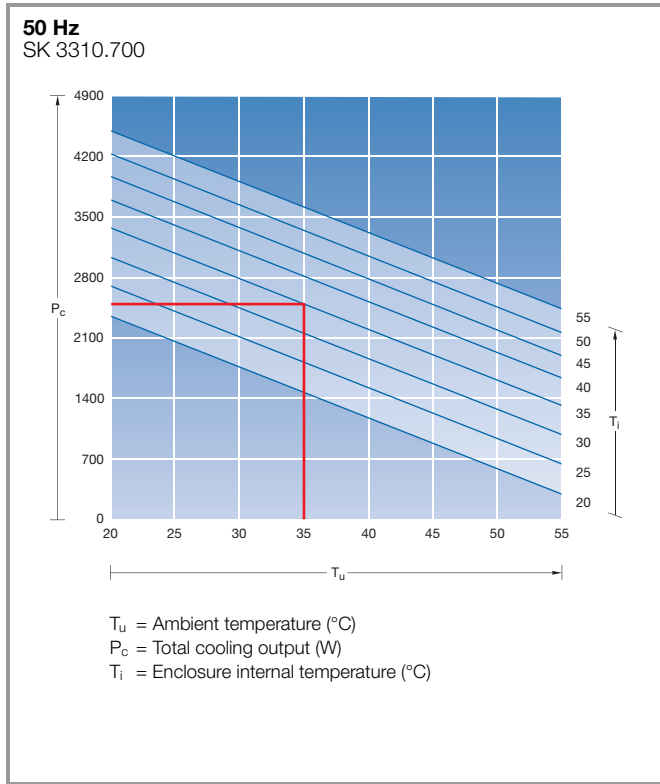


Power category 5118 BTU (1500 W), 400/460 V, 3~

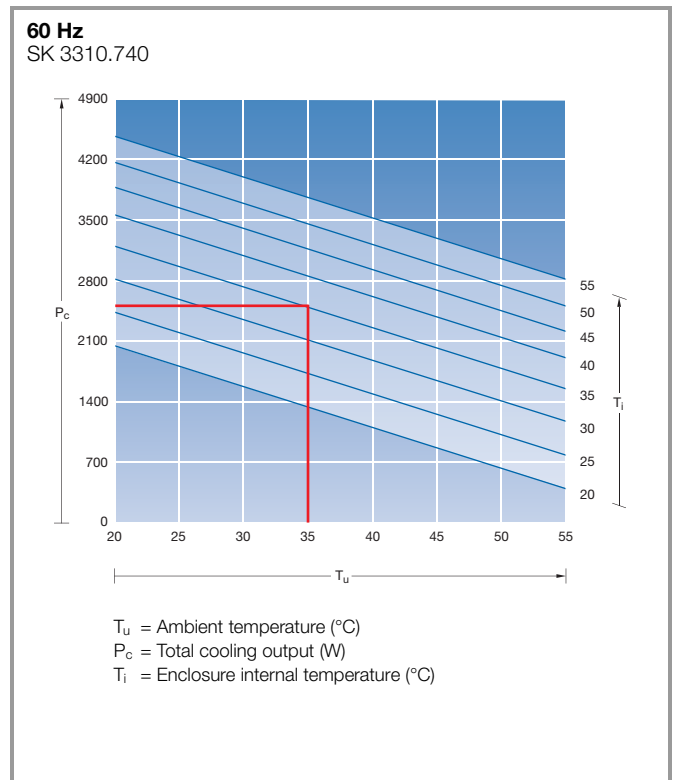
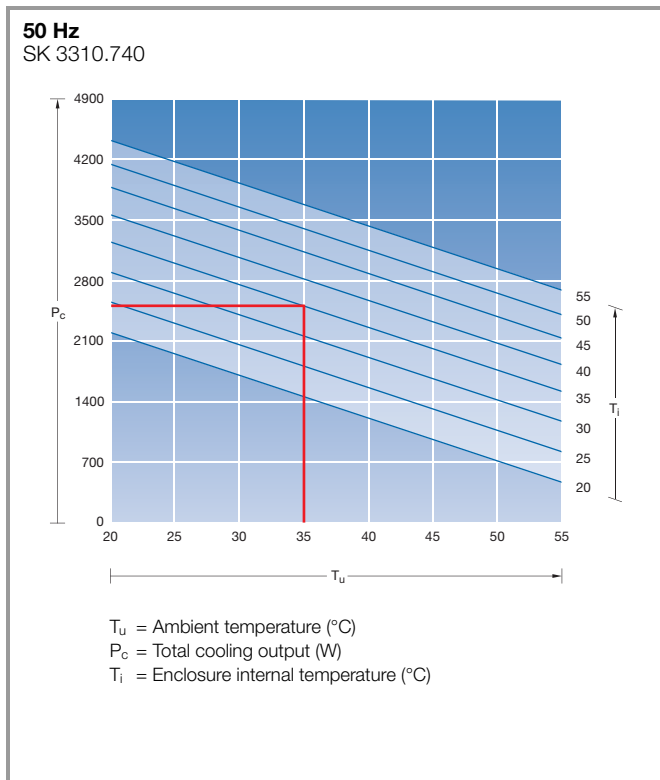


## Modular Climate Control Concept – Blue e Cooling Module

Power category 8530 BTU (2500 W), 230 V, 1~



Power category 8530 BTU (2500 W), 400/460 V, 3~



# Liquid Cooling

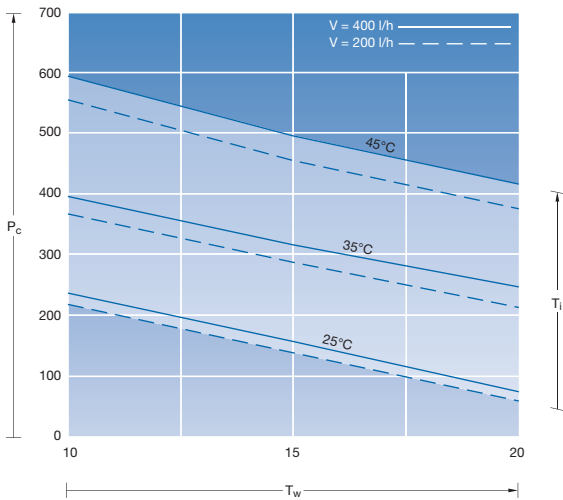
## Wall-Mounted Air/Water Heat Exchangers

Power category 1024 BTU (300 W)

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

50/60 Hz

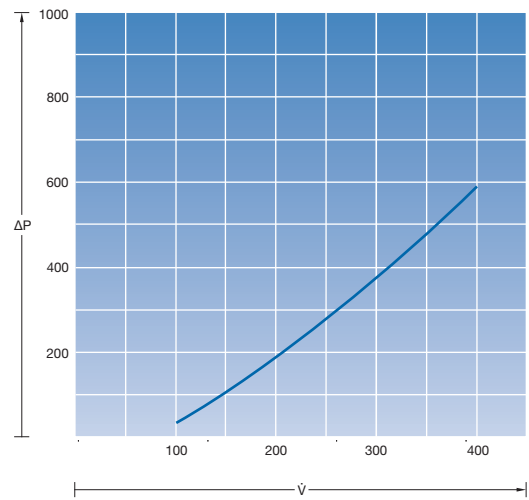
SK 3212.024, .115, .230



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

Water resistance diagram

SK 3212.024, .115, .230



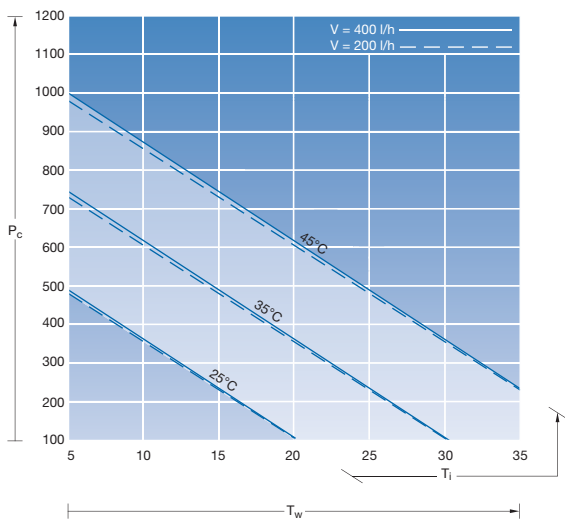
$\dot{V}$  = Volumetric flow (l/h)  
 $\Delta P$  = Water resistance (mbar)

Power category 2047 BTU (600 W)

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

50/60 Hz

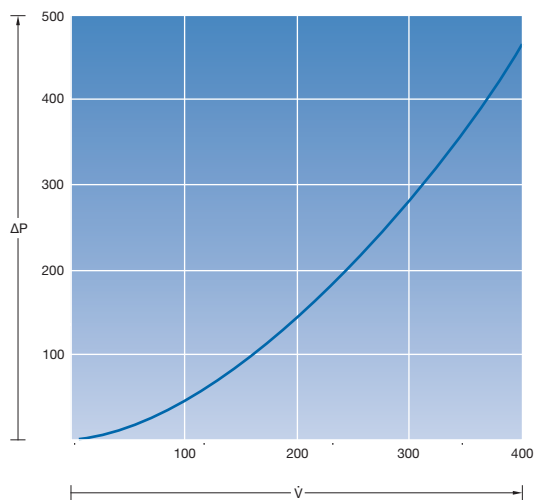
SK 3214.100



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

Water resistance diagram

SK 3214.100



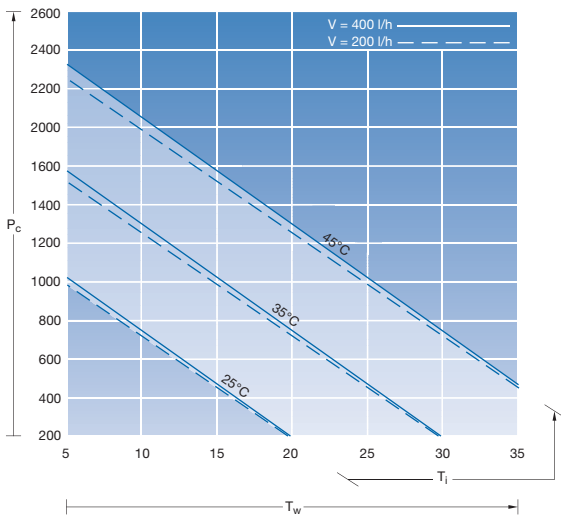
$\dot{V}$  = Volumetric flow (l/h)  
 $\Delta P$  = Water resistance (mbar)

## Wall-Mounted Air/Water Heat Exchangers

Power category 4265 BTU (1250 W)

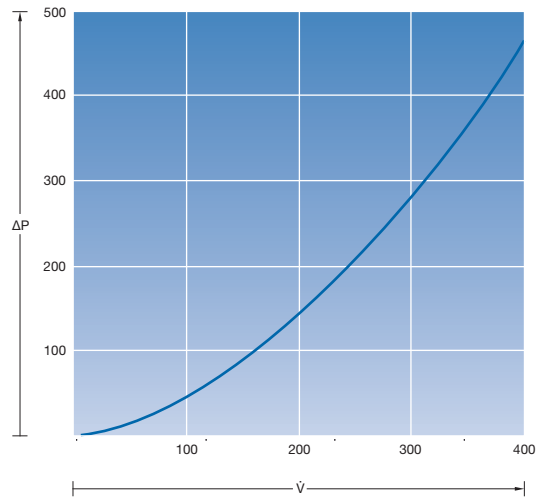
Water-carrying parts: Copper/brass (Cu/CuZn)

50/60 Hz  
SK 3215.100



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

Water resistance diagram  
SK 3215.100

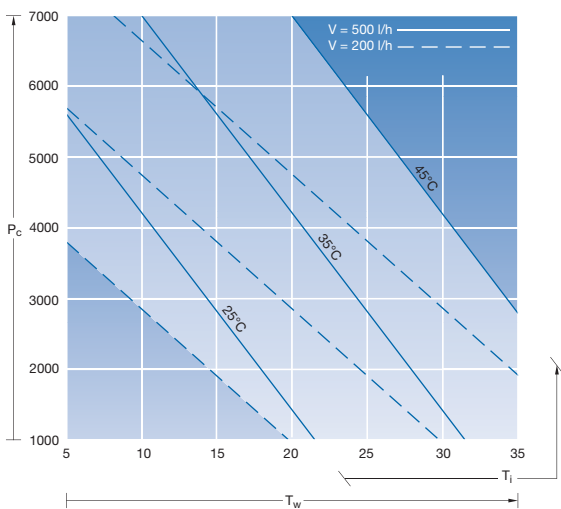


$\dot{V}$  = Volumetric flow (l/h)  
 $\Delta P$  = Water resistance (mbar)

Power category 23885 BTU (7000 W)

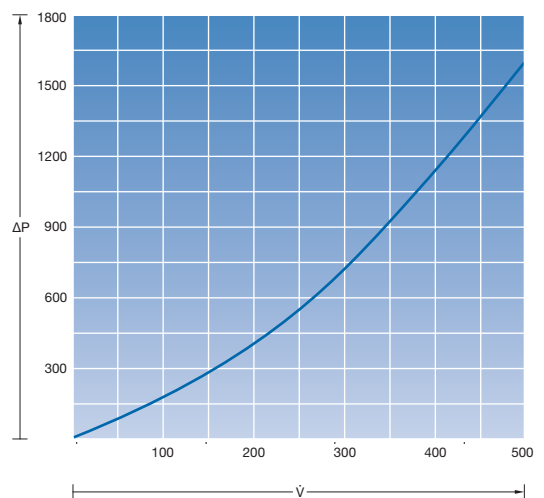
Water-carrying parts: Copper/brass (Cu/CuZn)

50/60 Hz  
SK 3216.480



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

Water resistance diagram  
SK 3216.480



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



# Liquid Cooling

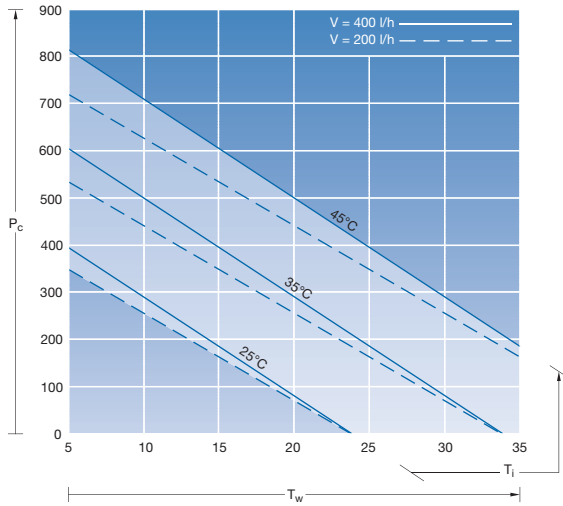
## Wall-Mounted Air/Water Heat Exchangers

Power category 1706 BTU (500 W)

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

### 50 Hz

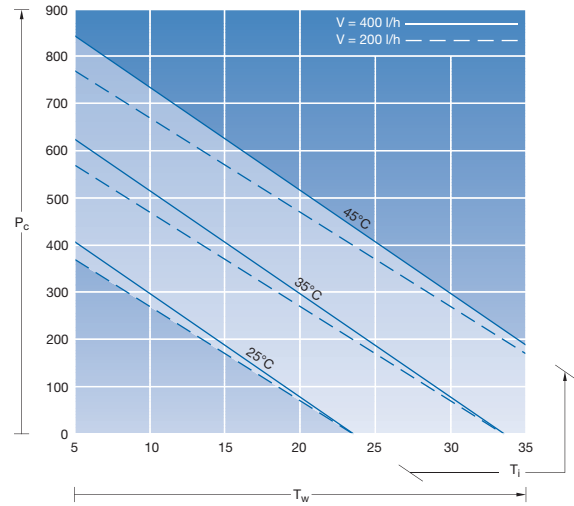
SK 3363.100, .500



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

### 60 Hz

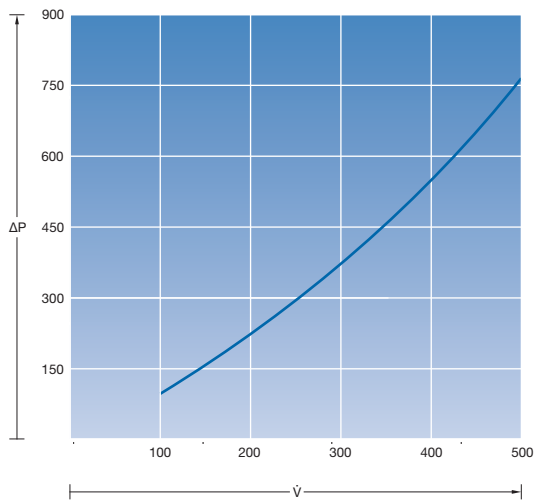
SK 3363.100, .500



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

### Water resistance diagram

SK 3363.100, .500



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

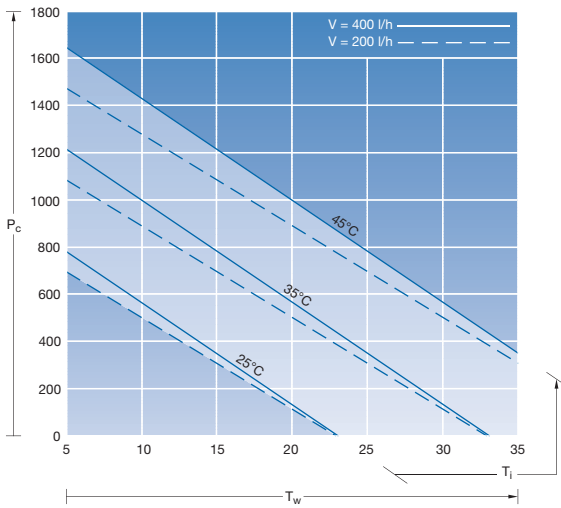
## Wall-Mounted Air/Water Heat Exchangers

Power category 3412 BTU (1000 W)

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

### 50 Hz

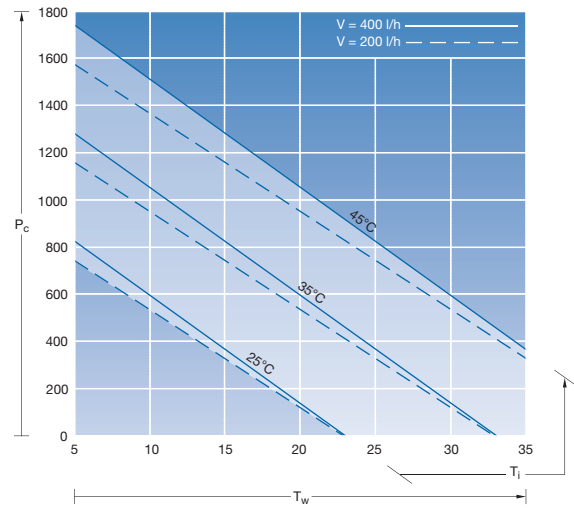
SK 3364.100, .500



$T_w$  = Water inlet temperature ( $^\circ\text{C}$ )  
 $P_c$  = Total cooling output (W)  
 $T_i$  = Enclosure internal temperature ( $^\circ\text{C}$ )

### 60 Hz

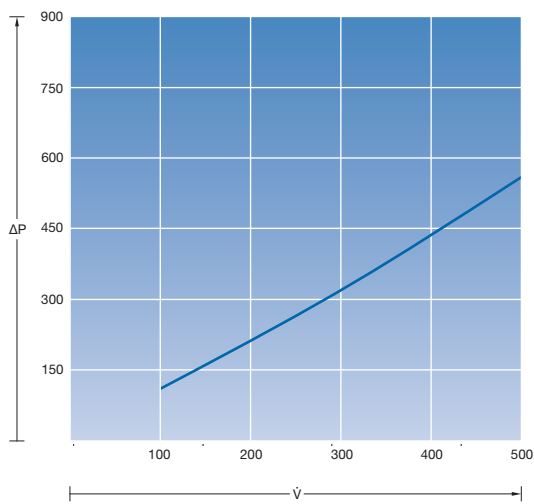
SK 3364.100, .500



$T_w$  = Water inlet temperature ( $^\circ\text{C}$ )  
 $P_c$  = Total cooling output (W)  
 $T_i$  = Enclosure internal temperature ( $^\circ\text{C}$ )

### Water resistance diagram

SK 3364.100, .500



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

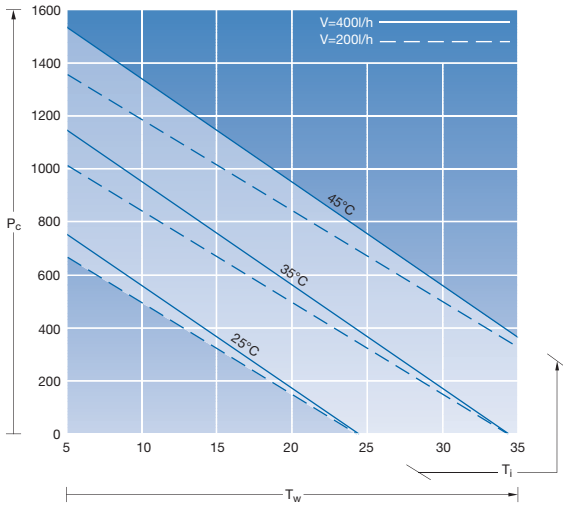
# Liquid Cooling

## Wall-Mounted Air/Water Heat Exchangers

Power category 3412 BTU (1000 W)

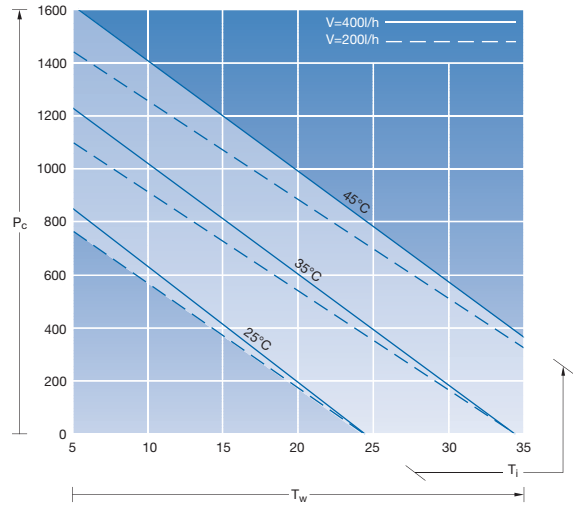
Water-carrying parts: Stainless steel (1.4571)

**50 Hz**  
SK 3364.504



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

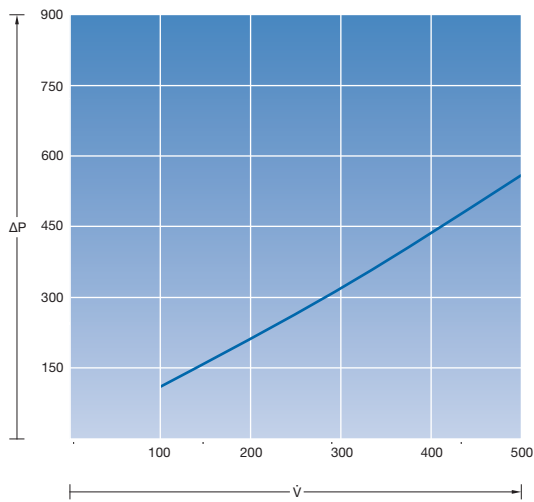
**60 Hz**  
SK 3364.504



$T_w$  = 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)

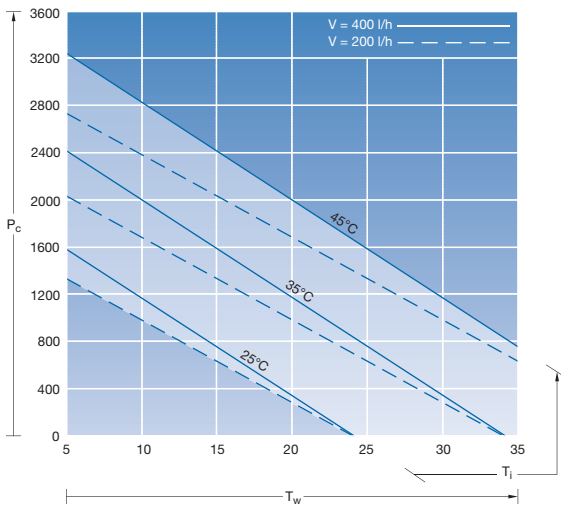
## Wall-Mounted Air/Water Heat Exchangers

Power category 6824 BTU (2000 W)

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

### 50 Hz

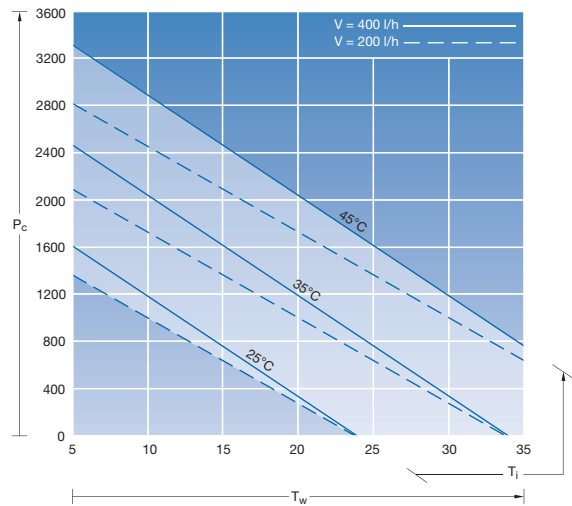
SK 3373.100, .500



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

### 60 Hz

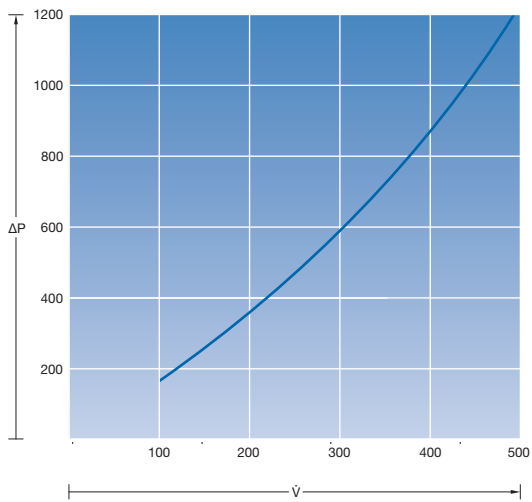
SK 3373.100, .500



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

### Water resistance diagram

SK 3373.100, .500



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

# Liquid Cooling

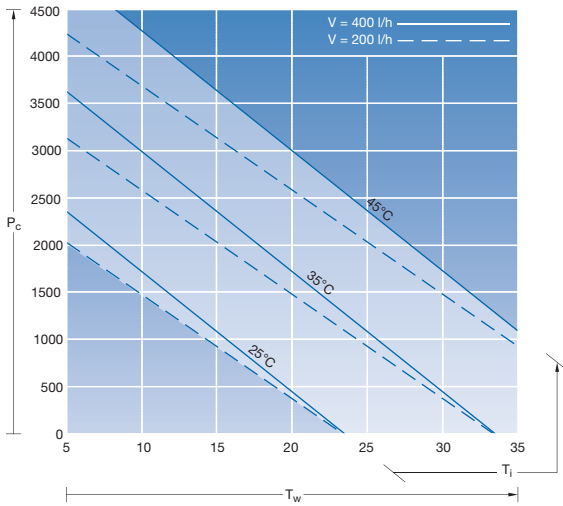
## Wall-Mounted Air/Water Heat Exchangers

Power category 10236 BTU (3000 W)

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

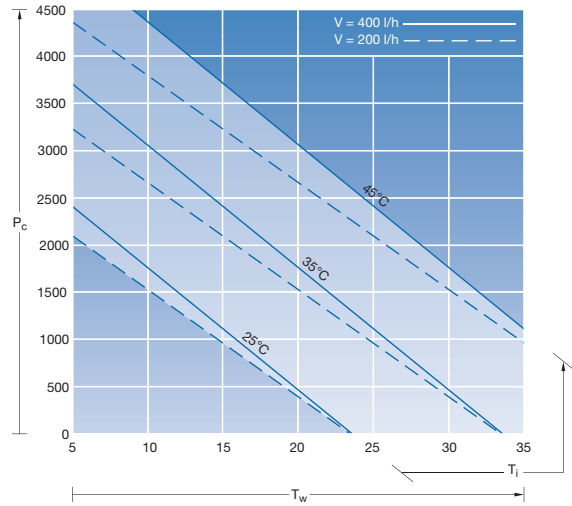
### 50 Hz

SK 3374.100, .500



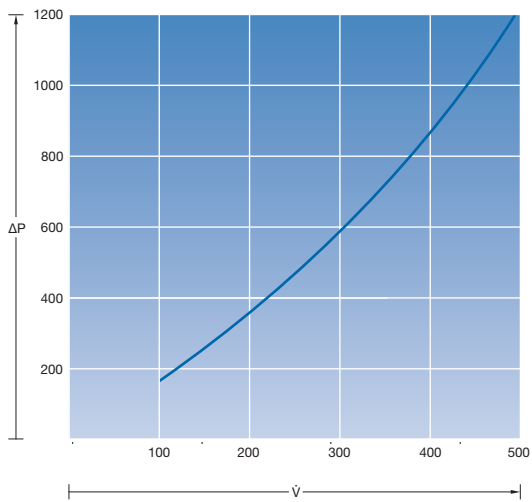
### 60 Hz

SK 3374.100, .500



### Water resistance diagram

SK 3374.100, .500

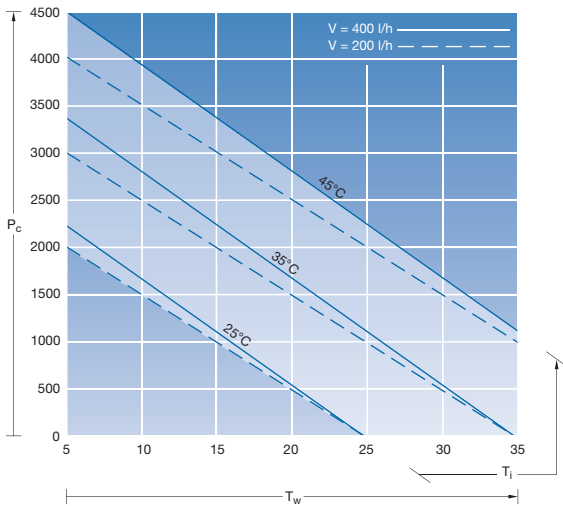


## Wall-Mounted Air/Water Heat Exchangers

Power category 8530 BTU (2500 W)

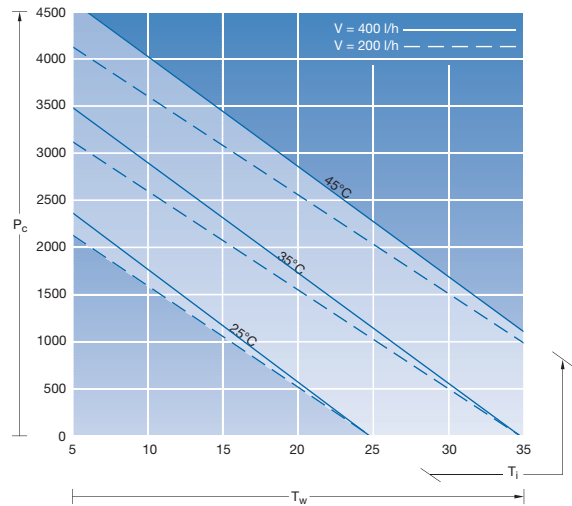
Water-carrying parts: Stainless steel (1.4571)

**50 Hz**  
SK 3374.504



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

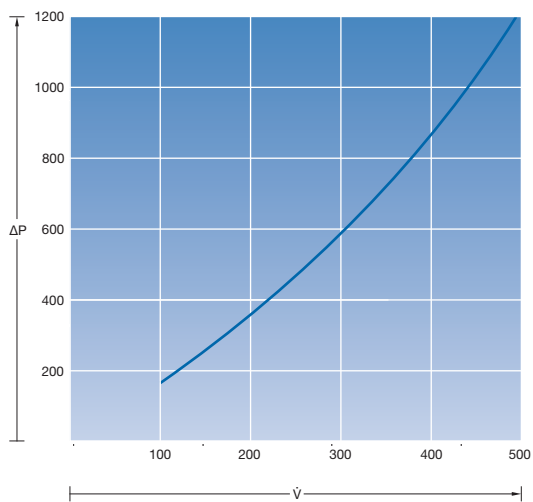
**60 Hz**  
SK 3374.504



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

### Water resistance diagram

SK 3374.504



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

# Liquid Cooling

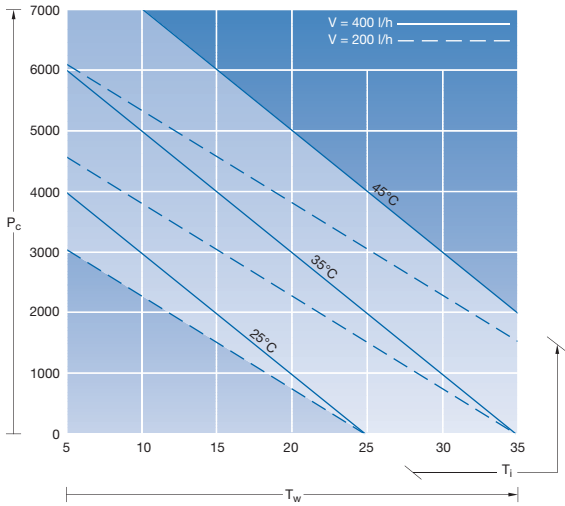
## Wall-Mounted Air/Water Heat Exchangers

Power category 10236 BTU (5000 W)

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

### 50 Hz

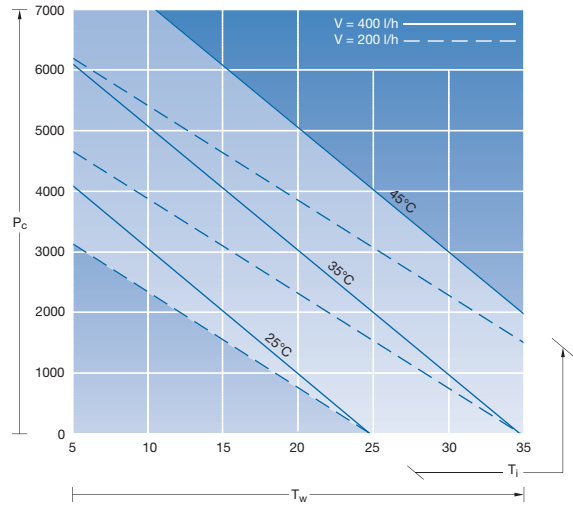
SK 3375.100, .500



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

### 60 Hz

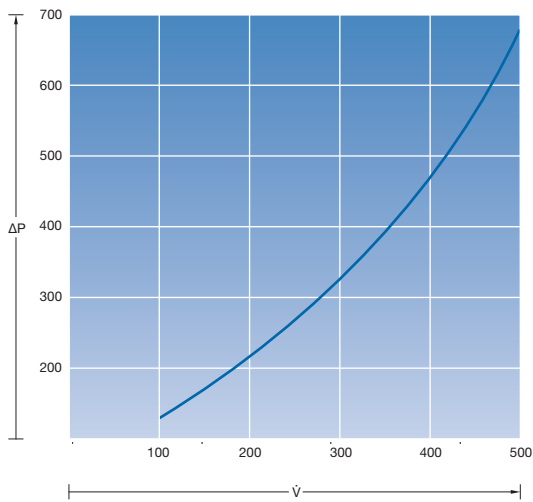
SK 3375.100, .500



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

### Water resistance diagram

SK 3375.100, .500



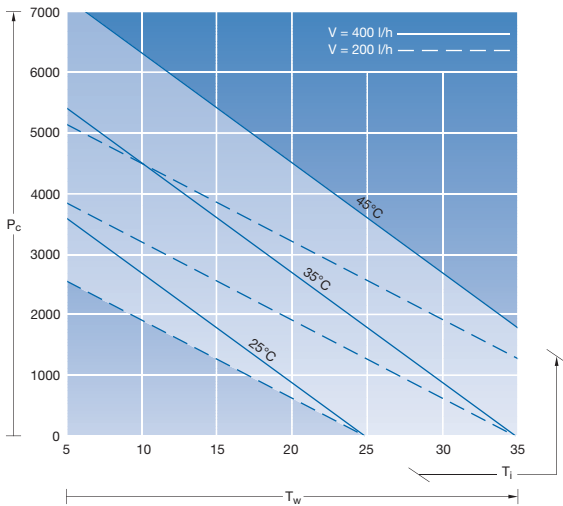
$\dot{V}$  = Volumetric flow (l/h)  
 $\Delta P$  = Water resistance (mbar)

## Wall-Mounted Air/Water Heat Exchangers

Power category 13649 BTU (4000 W)

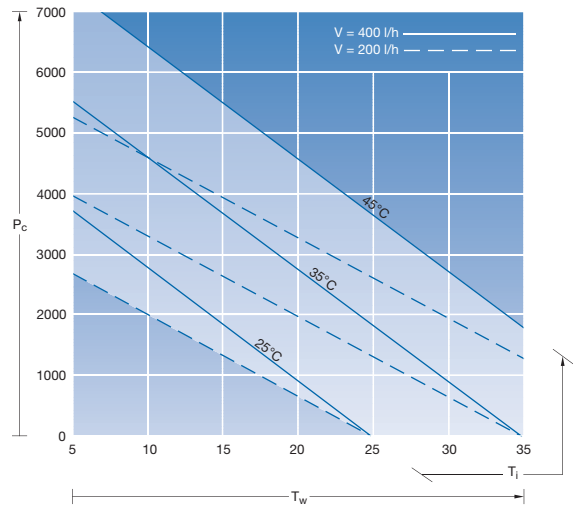
Water-carrying parts: Stainless steel (1.4571)

**50 Hz**  
SK 3375.504



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

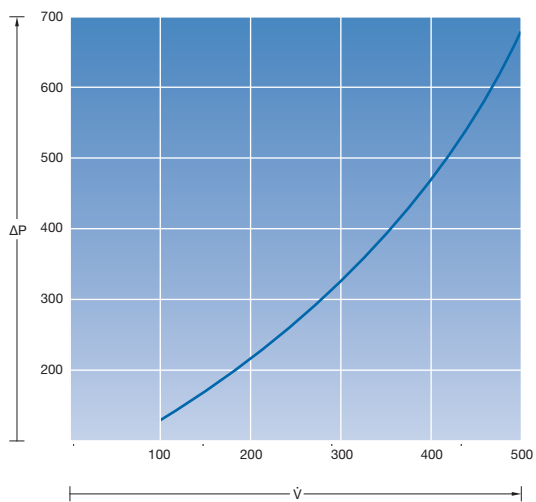
**60 Hz**  
SK 3375.504



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

### Water resistance diagram

SK 3375.504



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



# Liquid Cooling

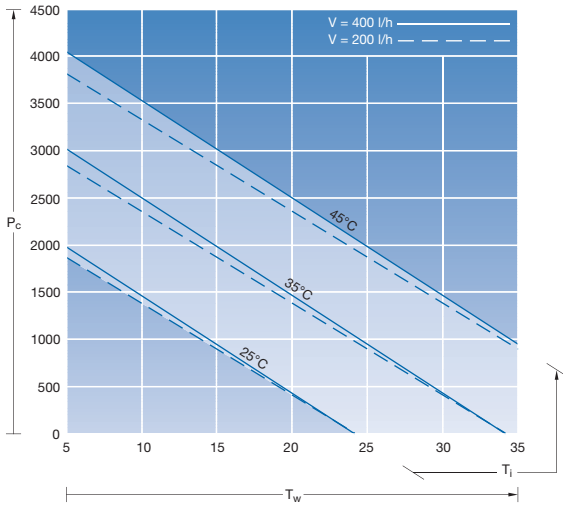
## Roof-Mounted Air/Water Heat Exchangers

Power category 8530 BTU (2500 W)

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

**50 Hz**

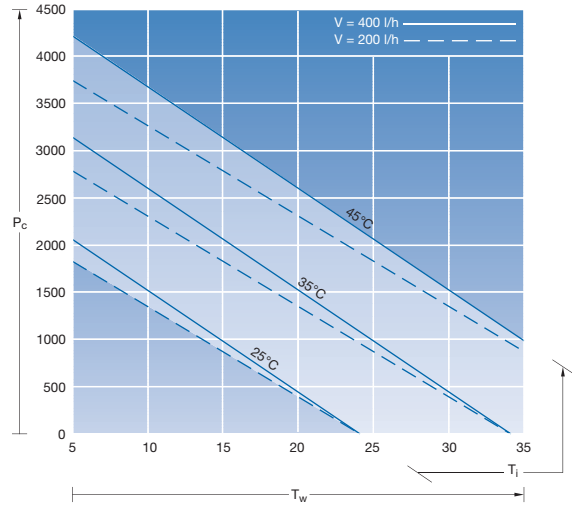
SK 3209.100, .500



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

**60 Hz**

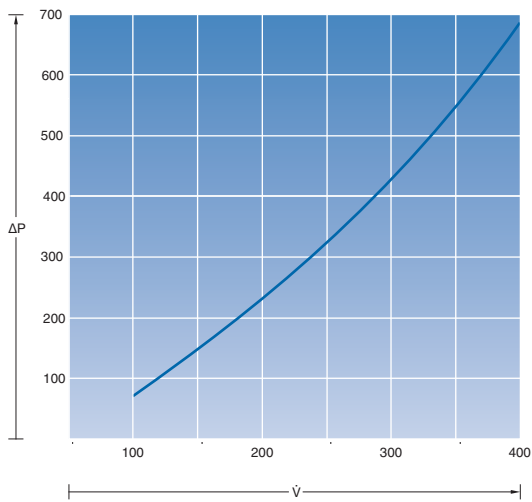
SK 3209.100, .500



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

### Water resistance diagram

SK 3209.100, .500



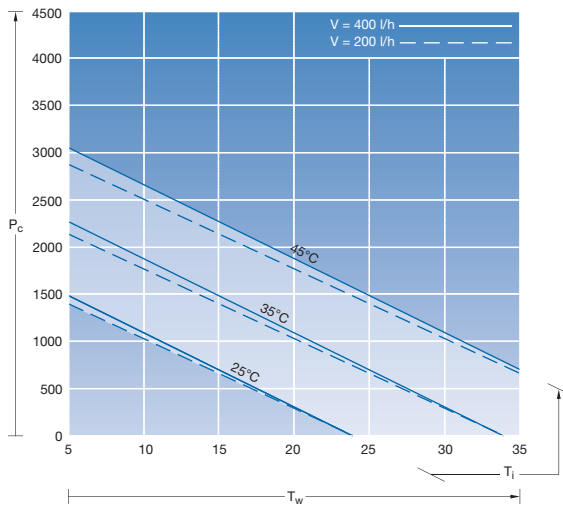
$\dot{V}$  = Volumetric flow (l/h)  
 $\Delta P$  = Water resistance (mbar)

## Roof-Mounted Air/Water Heat Exchangers

Power category 6397.5 BTU (1875 W)

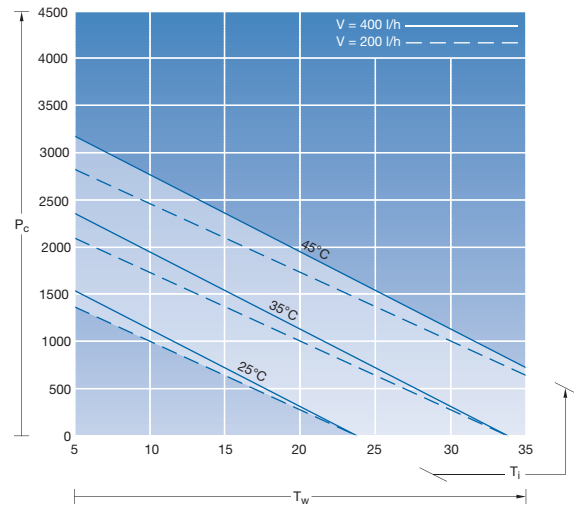
Water-carrying parts: Stainless steel (1.4571)

**50 Hz**  
SK 3209.504



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

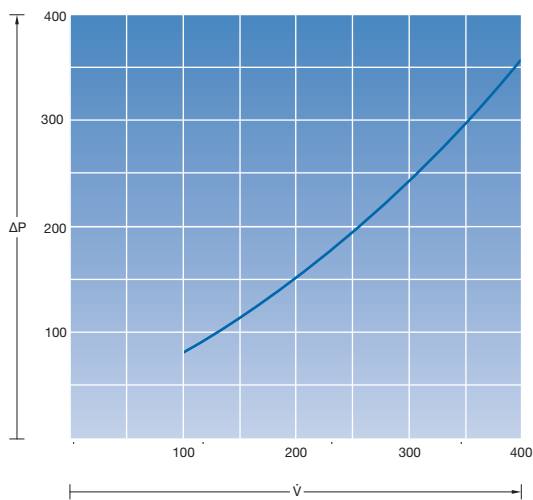
**60 Hz**  
SK 3209.504



$T_w$  = 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)

# Liquid Cooling

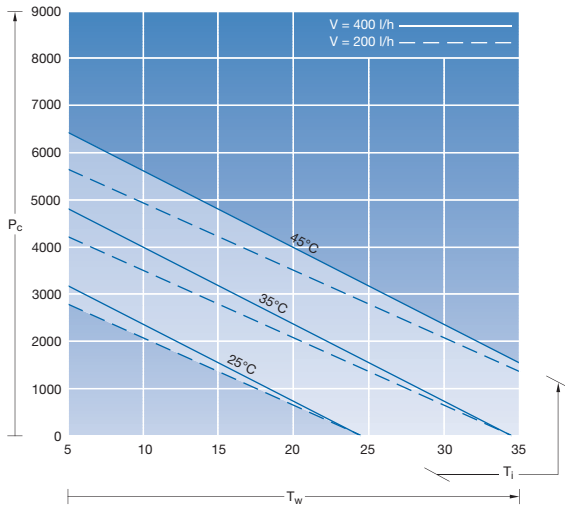
## Roof-Mounted Air/Water Heat Exchangers

Power category 13649 BTU (4000 W)

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

**50 Hz**

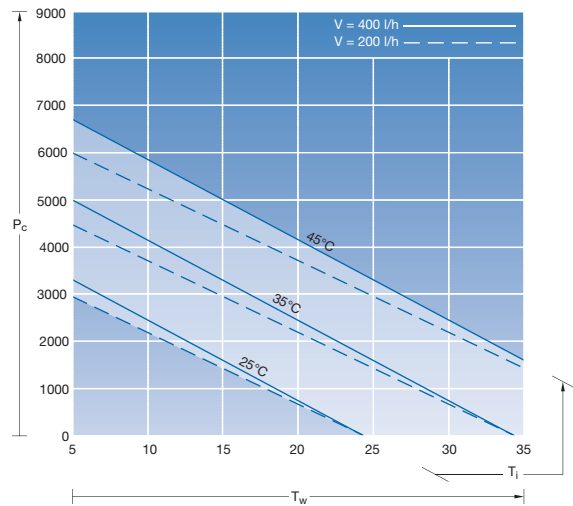
SK 3210.100, .500



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

**60 Hz**

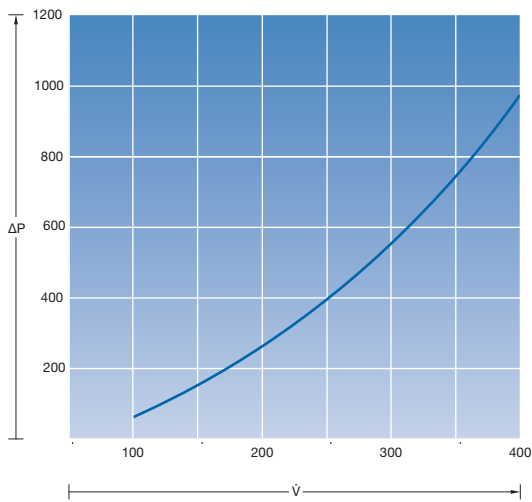
SK 3210.100, .500



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

### Water resistance diagram

SK 3210.100, .500



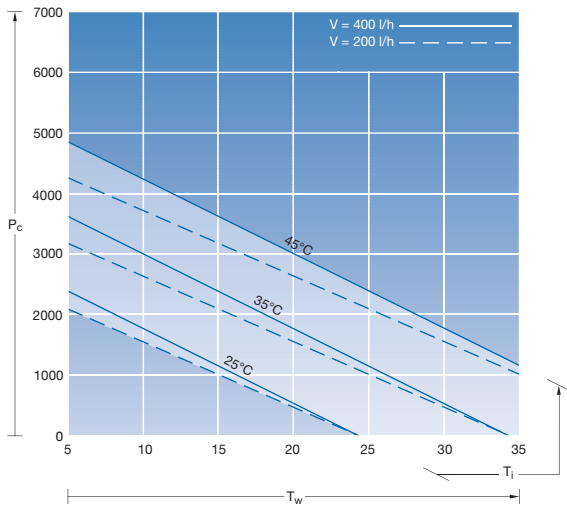
$\dot{V}$  = Volumetric flow (l/h)  
 $\Delta P$  = Water resistance (mbar)

## Roof-Mounted Air/Water Heat Exchangers

Power category 10236 BTU (3000 W)

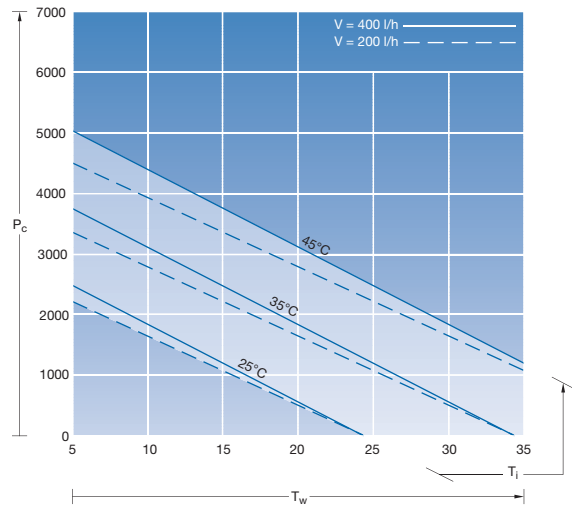
Water-carrying parts: Stainless steel (1.4571)

**50 Hz**  
SK 3210.504



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

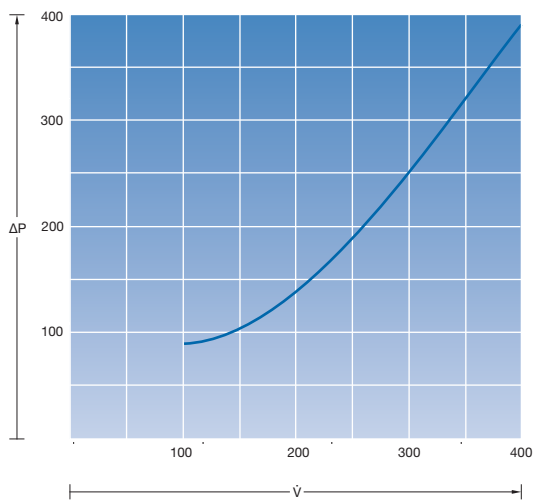
**60 Hz**  
SK 3210.504



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

### Water resistance diagram

SK 3210.504

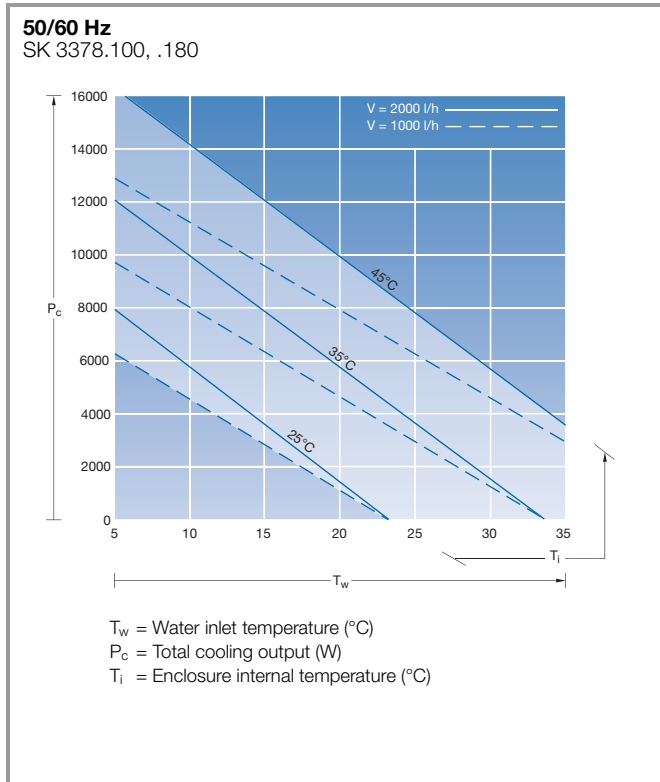


$\dot{V}$  = Volumetric flow (l/h)  
 $\Delta P$  = Water resistance (mbar)

# Liquid Cooling

## Liquid Cooling Package

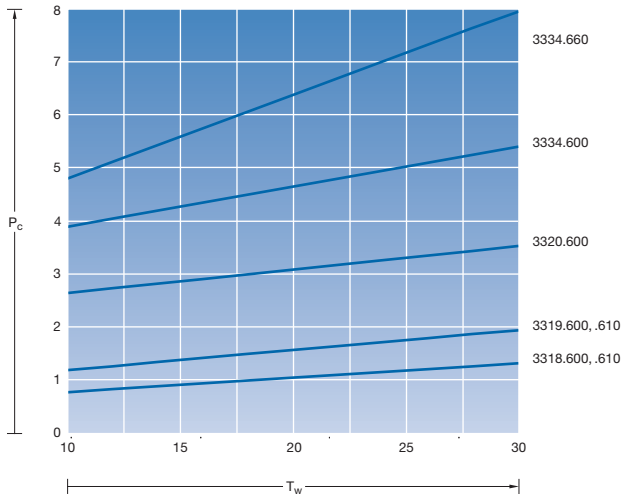
Power category 34121 BTU (10 kW), LCP Rack Industry  
Water-carrying parts: Copper/brass (Cu/CuZn)



## TopTherm Chillers

Power category 3412 – 20473 BTU (1 – 6 kW)

50 Hz at  $T_u = 32^\circ\text{C}$  (ambient temperature)

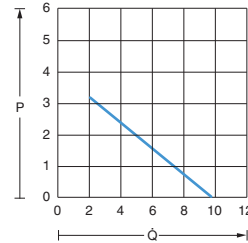


$T_w$  = Water inlet temperature ( $^\circ\text{C}$ )  
 $P_c$  = Total cooling output (kW)

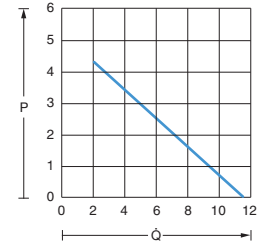
Characteristic curves of pump

SK 3318.600/SK 3318.610/SK 3319.600/SK 3319.610

50 Hz

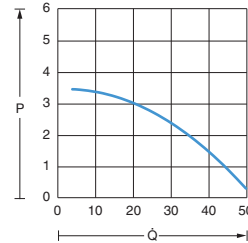


60 Hz

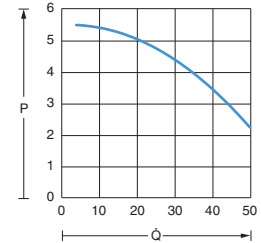


SK 3320.600/SK 3334.600/SK 3334.660

50 Hz



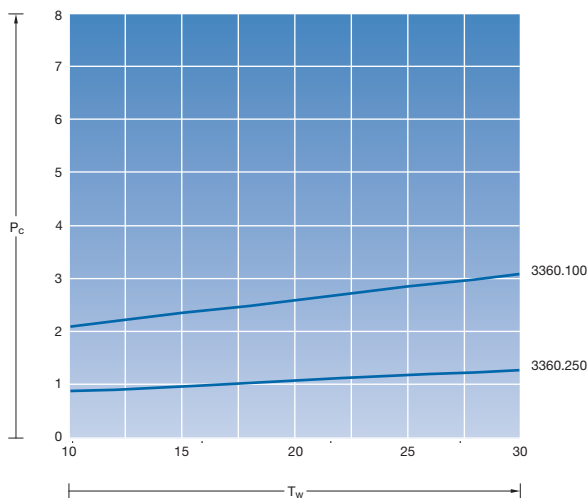
60 Hz



P = External static pressure [bar]  
 Q = Delivery flow Q [l/min]

Power category 3412 – 8530 BTU (1 – 2.5 kW), wall-mounted

50 Hz at  $T_u = 32^\circ\text{C}$  (ambient temperature)

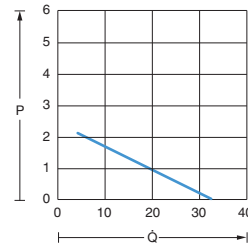


$T_w$  = Water inlet temperature ( $^\circ\text{C}$ )  
 $P_c$  = Total cooling output (kW)

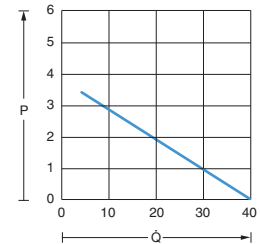
Characteristic curves of pump

SK 3360.100, .250

50 Hz



60 Hz



P = External static pressure [bar]  
 Q = Delivery flow Q [l/min]

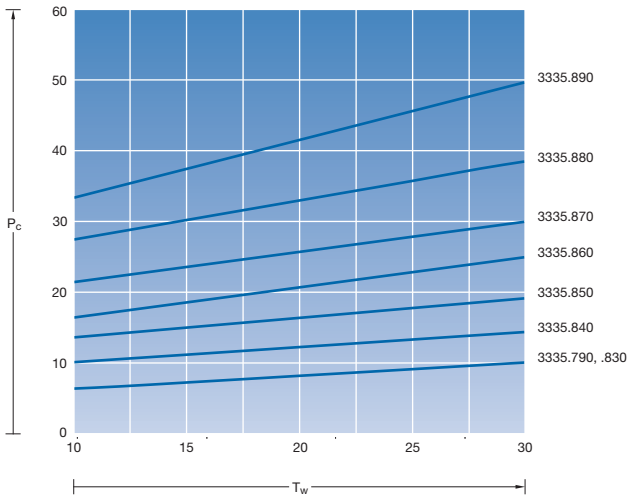
# Liquid Cooling

## TopTherm Chillers

Power category 27297 – 136486 BTU (8 – 40 kW)

### 50 Hz at $T_{u} = 32^{\circ}\text{C}$ (ambient temperature)

SK 3335.790, .830, .840, .850, .860, .870, .880, .890

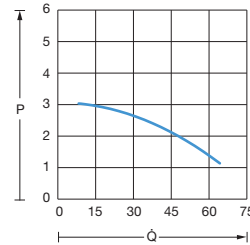


$T_w$  = Water inlet temperature ( $^{\circ}\text{C}$ )  
 $P_c$  = Total cooling output (kW)

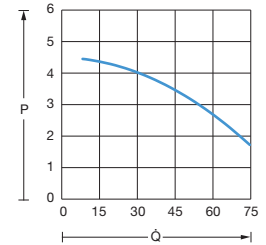
### Characteristic curves of pump

SK 3335.850

#### 50 Hz

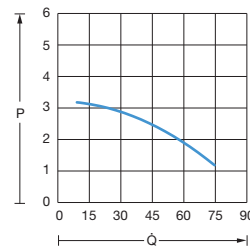


#### 60 Hz

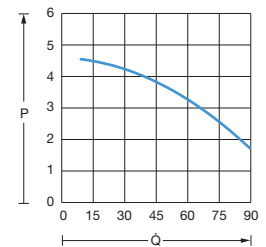


SK 3335.860

#### 50 Hz

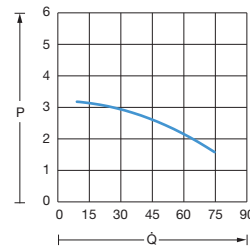


#### 60 Hz

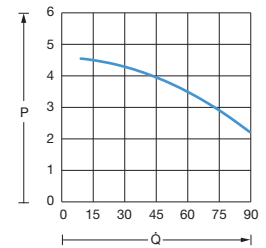


SK 3335.870

#### 50 Hz



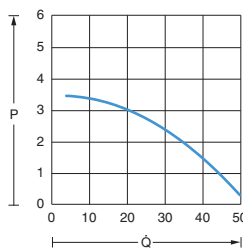
#### 60 Hz



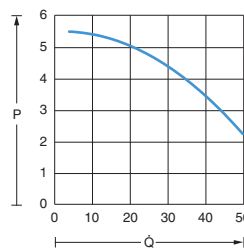
### Characteristic curves of pump

SK 3335.790, .830

#### 50 Hz

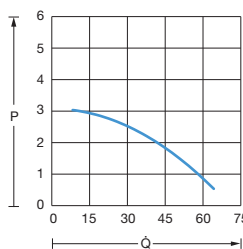


#### 60 Hz

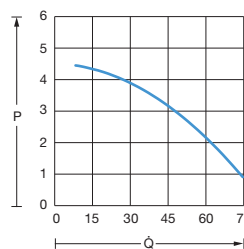


SK 3335.840

#### 50 Hz

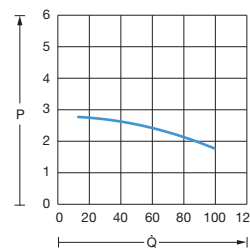


#### 60 Hz

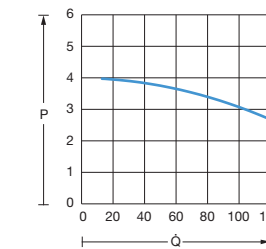


SK 3335.880

#### 50 Hz

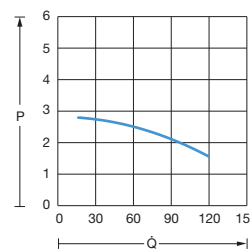


#### 60 Hz

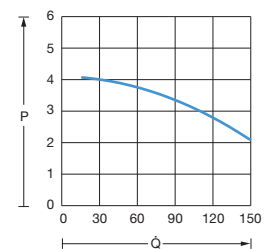


SK 3335.890

#### 50 Hz



#### 60 Hz

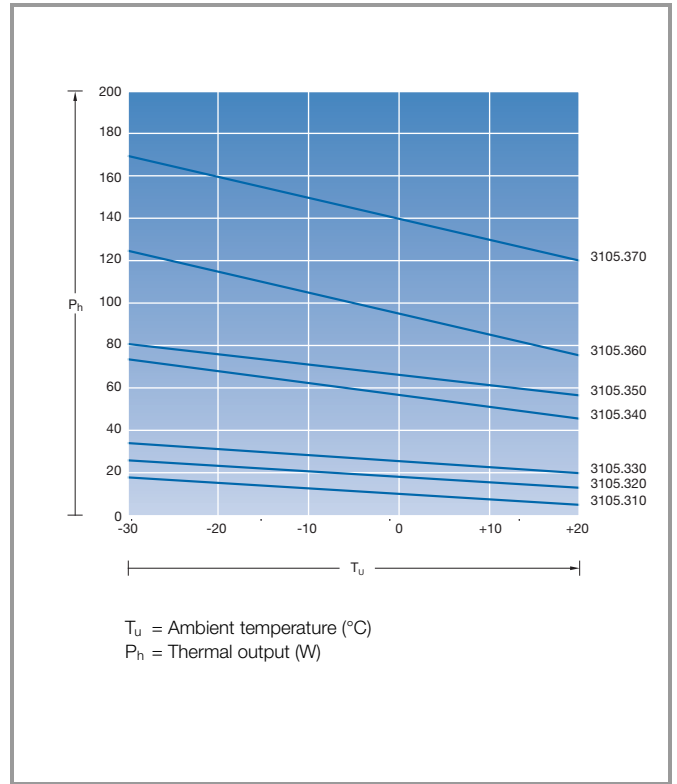
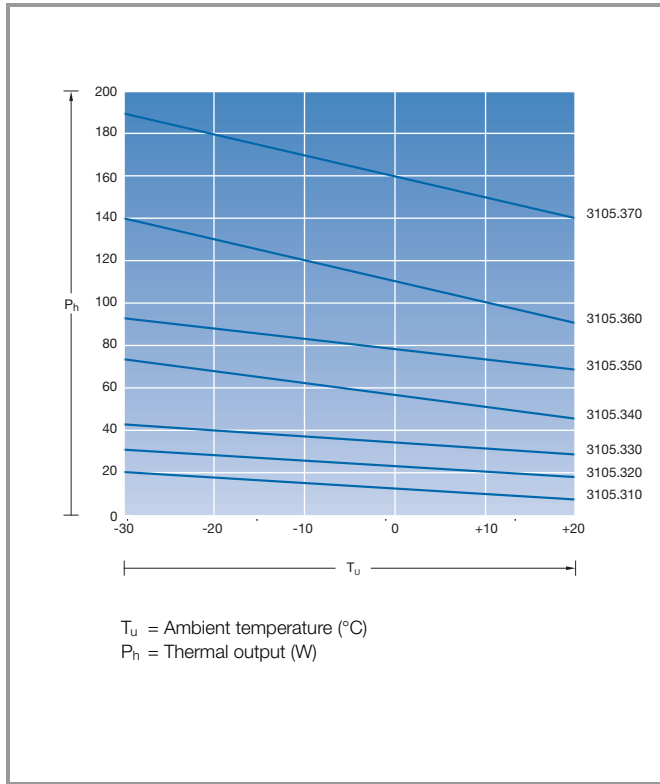


$P$  = External static pressure [bar]  
 $\dot{Q}$  = Delivery flow  $Q$  [l/min]

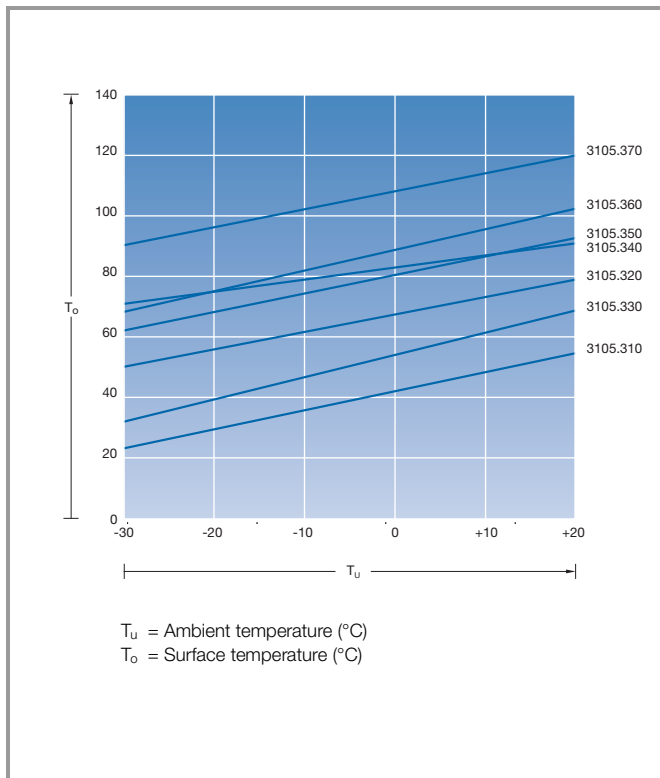
## Enclosure Heaters without Fan

230 V

110 V



## Maximum surface temperature



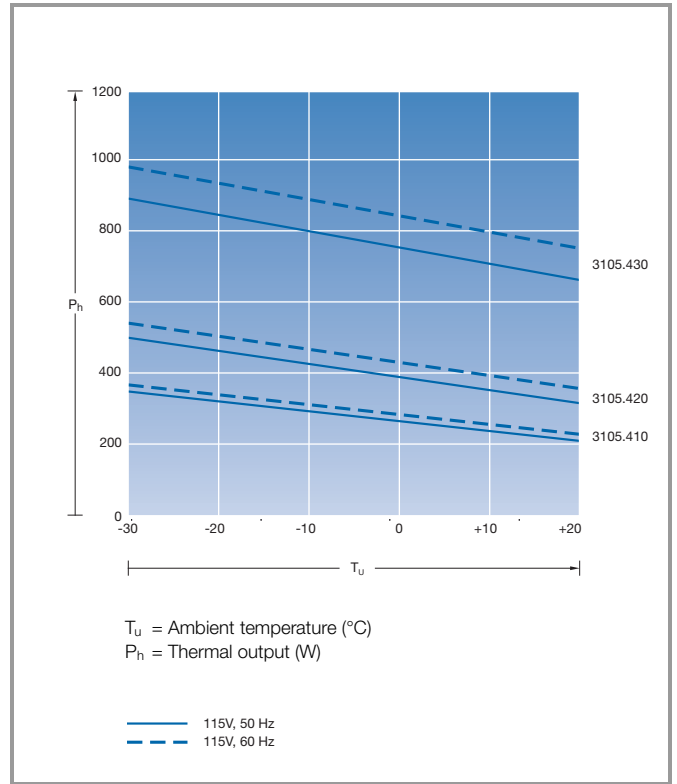
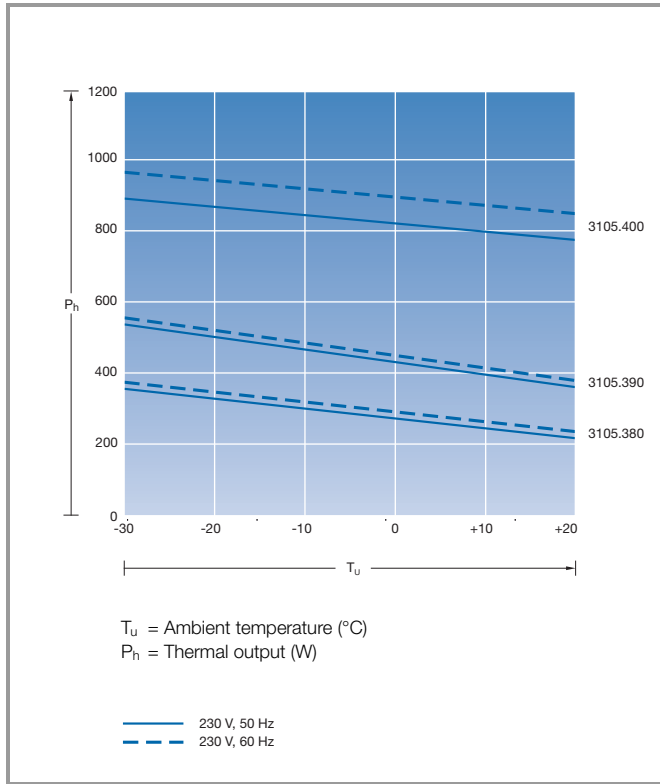


# Enclosure Heaters

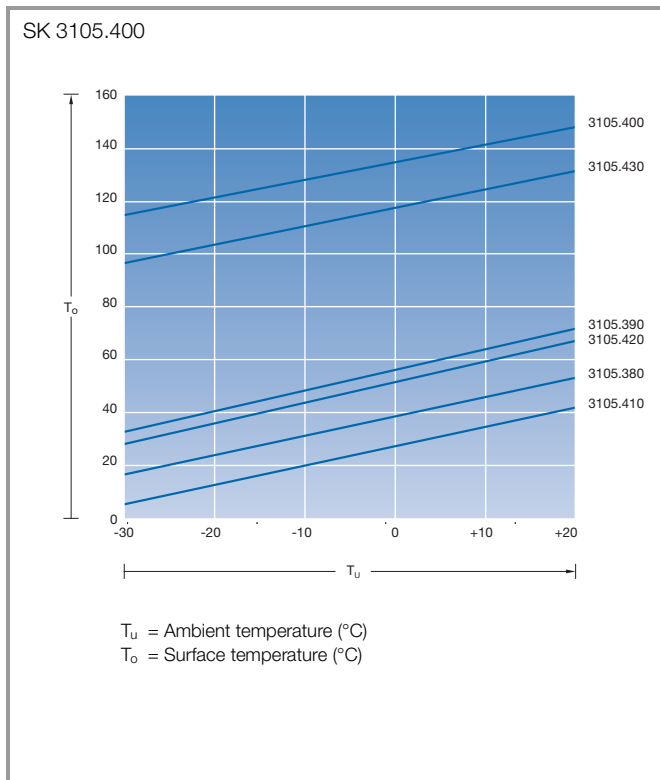
## Enclosure Heaters with Fan

230 V, 50/60 Hz

115 V, 50/60 Hz



## Maximum surface temperature



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