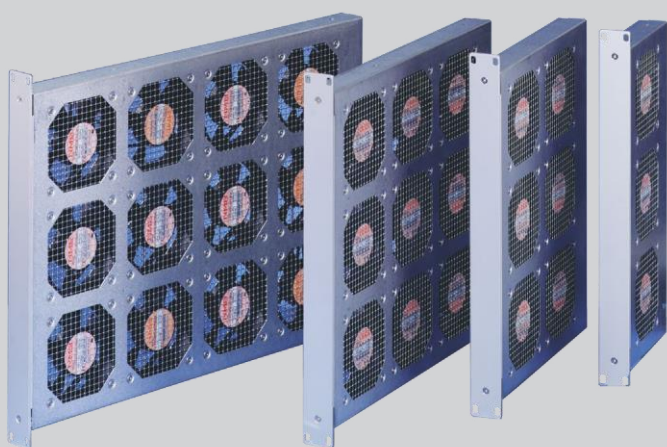
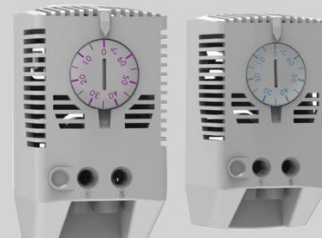


**CONNECT AND PROTECT**

**Climate Control**

02/2025

## OVERVIEW

### MAIN KATALOG

Cabinets.....1

Wall mounted cases.....2

Accessories for cabinets and wall mounted cases.....3

Climate control.....4

Electronics cases.....5

Subracks/  
19" chassis .....6

Front panels,  
plug-in units .....7

Systems .....8

Power supply  
units .....9

Backplanes.....10

Connectors, front  
panel component  
system.....11

Appendix.....12

## 19" FANS

- Pusher fans
- Circulation fans
- Cooling capacity up to 2000 W



## AIR FILTERED FANS

- Simple to fit - just clips in
- Protection type up to IP 55
- Airflow volume up to 770 m³/h

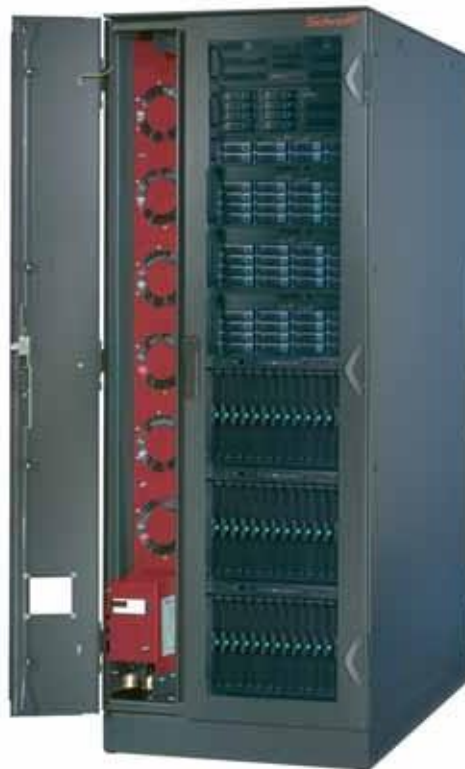
## ACCESSORIES

- Heaters
- Speed control
- Thermostats
- Hygrostats



## AIR/WATER HEAT EXCHANGERS

- Complete cabinet solutions
- For industry and data centers
- Cooling capacities up to 40 kW



Overview ..... 4.0

Cooling concepts ..... 4.2

19" fan trays ... 4.4

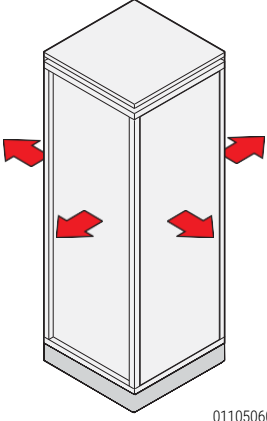
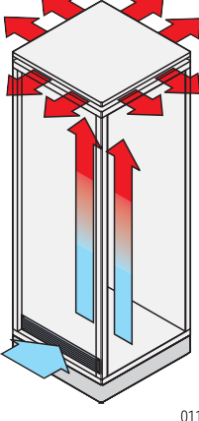
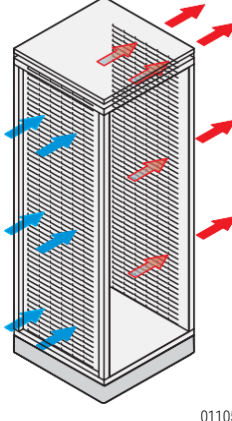
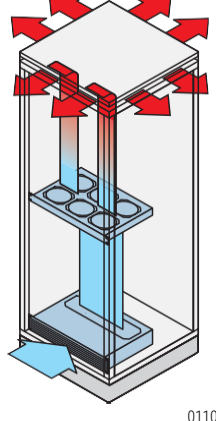
Air filtered fans ..... 4.20

Accessories  
Heaters..... 4.56  
Fans ..... 4.59  
Speed control ..... 4.60  
Thermostats..... 4.61  
Hygrostats ..... 4.64

Air/water heat exchangers ..... 1.224

# Climate control – Service

## PRODUCTS / COOLING CONCEPTS

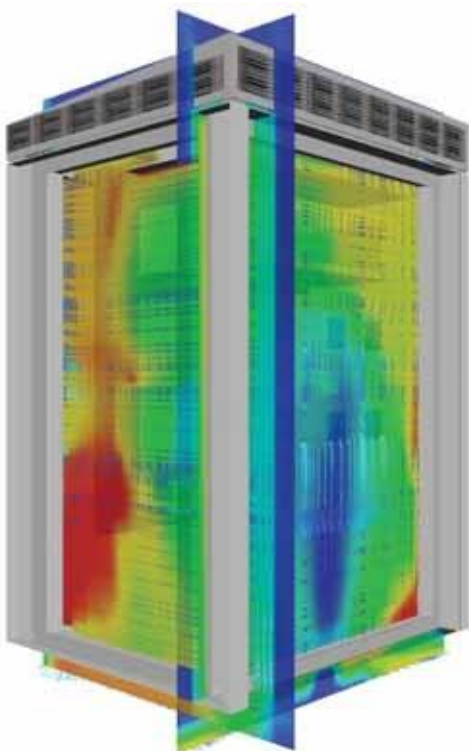
| Product                                | Closed cabinet                                                                                                                                | Raised cover, ventilation slots                                                                                                      | Perforated doors                                                                                                                                        | 19" circulation fan, top cover fan                                                                                  |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Description                            | <br>Natural convection through thermal radiation<br>01105060 | <br>Free convection through top opening<br>01105058 | <br>Free convection through openings in doors/rear panels<br>01105056 | <br>Cooling with air<br>01105057 |
| Type of protection                     | ≤ IP 55                                                                                                                                       | ≤ IP 20                                                                                                                              | ≤ IP 20                                                                                                                                                 | ≤ IP 20                                                                                                             |
| Noise level approx.                    | 0                                                                                                                                             | 0                                                                                                                                    | 55 ... 65 dB(A)                                                                                                                                         | 34 ... 67 dB(A)                                                                                                     |
| Environmental conditions               | $T_i > T_a$                                                                                                                                   | $T_i > T_a$                                                                                                                          | $T_i > T_a$                                                                                                                                             | $T_i > T_a$                                                                                                         |
| Cooling capacity approx. <sup>1)</sup> | < 500 W                                                                                                                                       | 500 W ... 800 W                                                                                                                      | 500 W ... 6000 W <sup>2)</sup>                                                                                                                          | < 2000 W                                                                                                            |

<sup>1)</sup> depending on cabinet size, electronic components, location and room cooling concept

<sup>2)</sup> > 800 W are only possible with own, active cooling through components like servers, etc.

$T_i$  = cabinet inner temperature  $T_a$  = cabinet ambient temperature

## THERMAL SIMULATION



01103050

### Project support through state-of-the-art simulation technology

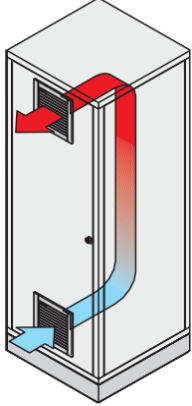
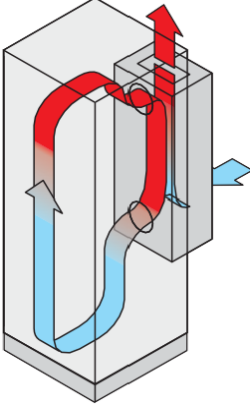
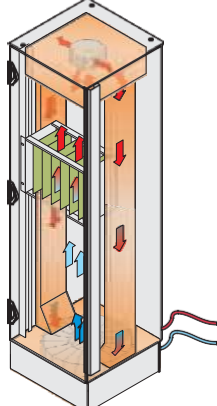
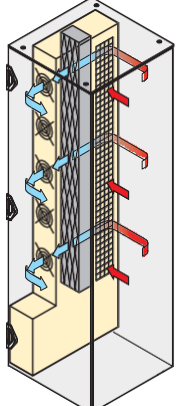
As the packing density and integration density of components increases, the transport of waste heat rapidly becomes more difficult. Analyzing heat transport through thermal paste, flow and heat radiation makes it possible to identify hot spots as early as the design phase. We use state-of-the-art numerical analyses and simulation methods to accomplish this. This allows the analysis and optimization of cooling concepts for anything from an assembly to an entire cabinet system at the preliminary stage. Our cooling specialists would be happy to assist you in finding the right cooling concept for your project

### Your advantage:

- Analyzing in detail to eliminate thermal problems at the preliminary stage
- Ensuring the high efficiency and reliability of your systems
- Reducing the number of expensive prototypes and tests
- Reducing expenses and development costs

# Climate control – Service

## PRODUCTS/COOLING CONCEPTS

| Product                                | Air filtered fans                                                                                                 | Air conditioners                                                                                                      | Air/water heat exchanger (LHX 3)                                                                                      | Air/water heat exchanger (LHX 20/40)                                                                                  |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Description                            | <br>01102050<br>Cooling with air | <br>01105061<br>Cooling with coolant | <br>01007055<br>Cooling with water | <br>01005081<br>Cooling with water |
| Type of protection                     | $\leq$ IP 55                                                                                                      | $\geq$ IP 55                                                                                                          | $\geq$ IP 55                                                                                                          | $\geq$ IP 55                                                                                                          |
| Noise level                            | 39 ... 71 dB(A)                                                                                                   | 60 ... 81 dB(A)                                                                                                       | 45.2 dB(A)                                                                                                            | 50 ... 70 dB(A)                                                                                                       |
| Environmental conditions               | $T_i > T_a$                                                                                                       | $T_a \leq 55^\circ\text{C}$                                                                                           | $T_a \leq 70^\circ\text{C}$                                                                                           | $T_a \leq 70^\circ\text{C}$                                                                                           |
| Cooling capacity approx. <sup>1)</sup> | < 1500 W                                                                                                          | < 17000 W                                                                                                             | < 3000 W                                                                                                              | < 40000 W                                                                                                             |

1) depending on cabinet size, electronic components, location and room cooling concept  
 $T_i$  = cabinet inner temperature  $T_a$  = cabinet ambient temperature

## OPTIMAL TEST EQUIPMENT



Climate bay testing

Being part of the Pentair group, Schroff and McLean look back on 50 years of experience and are renowned around the world for their expertise in efficient cooling of industrial facilities and equipment.

Based on our own laboratory test chambers with the most modern equipment in Europe, America and Asia:

- Walk-in climate chamber to test and optimize completely integrated cabinets and systems under different conditions
- Smaller climate chambers to test components
- Airflow and air resistance measurements in a wind tunnel
- Noise level measurements
- Tests in accordance with DIN EN 60529 to determine the type of protection (IP)

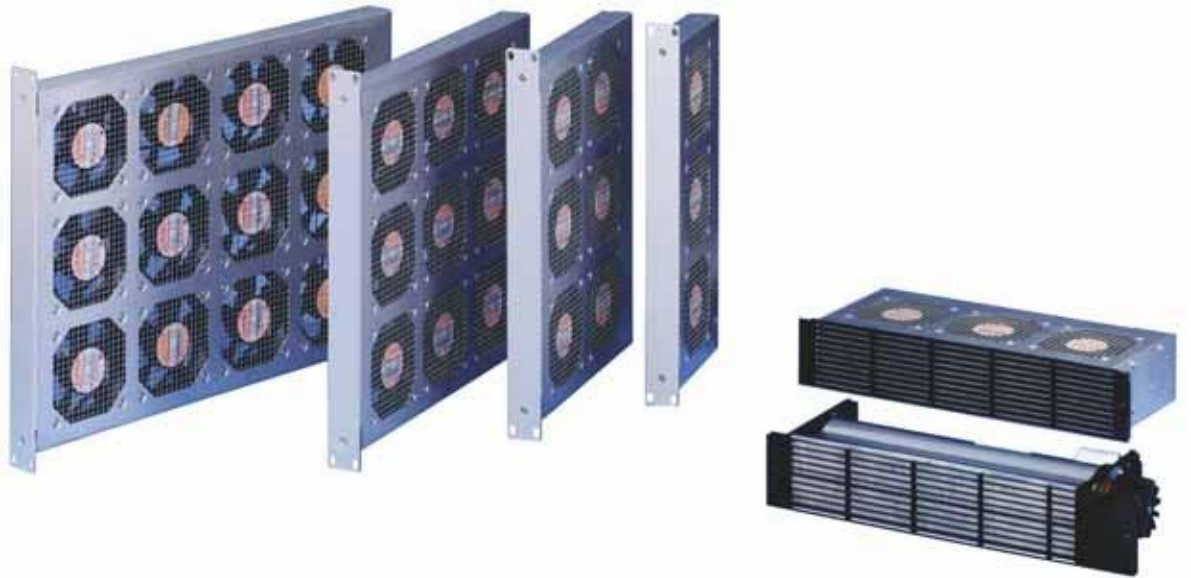
Outstanding standard products, flexible custom solutions, global technical support and service add up to a 'cool' combination!

# Climate control – 19" fan trays

## OVERVIEW

### MAIN KATALOG

|                                                      |    |
|------------------------------------------------------|----|
| Cabinets.....                                        | 1  |
| Wall mounted cases.....                              | 2  |
| Accessories for cabinets and wall mounted cases..... | 3  |
| Climate control.....                                 | 4  |
| Electronics cases.....                               | 5  |
| Subracks/ 19" chassis .....                          | 6  |
| Front panels, plug-in units .....                    | 7  |
| Systems .....                                        | 8  |
| Power supply units .....                             | 9  |
| Backplanes.....                                      | 10 |
| Connectors, front panel component system.....        | 11 |
| Appendix.....                                        | 12 |



01102012

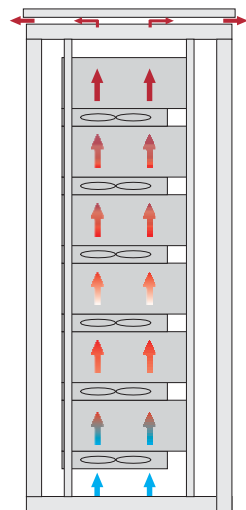
## STANDARDS/APPROVALS

- 19" assembly area in accordance with: IEC 60297-3-101

- Mechanical protection to DIN EN ISO 13857
- Contact protection to DIN EN ISO 13857
- Electrical safety to EN 60335 part 1
- Plastics self-extinguishing to UL 94 V0

## AIRFLOW

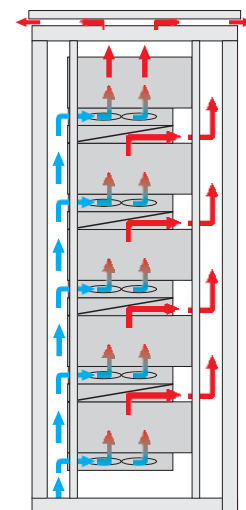
### VERTICAL AIRFLOW (CONTINUAL WARMING)



01109055

With vertical airflow the air becomes steadily warmer as it rises through the cabinet.

### DIVERTED AIRFLOW (EFFECTIVE COOLING)



01109054

By using the 1 U airflow element, air is introduced from the front and extracted to the rear. Now all sub-assemblies receive the same cooling air.

# Climate control – 19" fan trays

## OVERVIEW

### 19" FAN TRAYS

- To cool single components and assemblies in 19" cabinets
- High airflow rate for directed heat removal
- With axial or radial fans
- For voltages 230 V<sub>AC</sub>, 115 V<sub>AC</sub> or 24 V<sub>DC</sub>
- CE- approvals



#### 19" FANS

- 19" circulation fan, height 1 U
- 230 V<sub>AC</sub>, 115 V<sub>AC</sub> and 24 V<sub>DC</sub>
- Up to 1000 m<sup>3</sup>/h
- With/without mains switch or with temperature-dependent speed control

01194003



#### 19" PUSHER FANS

- Tangential fan, height 2 U
- 230 V<sub>AC</sub> and 115 V<sub>AC</sub>
- Up to 320 m<sup>3</sup>/h

01192009



- 19" pusher fan, height 2 U
- 230 V<sub>AC</sub> and 115 V<sub>AC</sub>
- Up to 530 m<sup>3</sup>/h

01194005



- 19" pusher fan, height 3 U
- 230 V<sub>AC</sub> and 115 V<sub>AC</sub>
- Up to 570 m<sup>3</sup>/h
- Variable air outlet with/without pipe connection, upward or to rear

01102017

#### SERVICEPLUS

- e.g. other airflow capacities
- e.g. supply voltages
- e.g. other dimensions
- e.g. custom solutions

Overview ..... 4.4

19" fans  
1 U with/without  
front switch..... 4.6  
1 U speed-controlled  
and monitored . . . . . 4.8  
..

19" blower units  
Pusher fan, 2 U with  
tangential blower . . 4.9

Pressure fan, 2 U,  
(160, 220 mm deep) 4.10

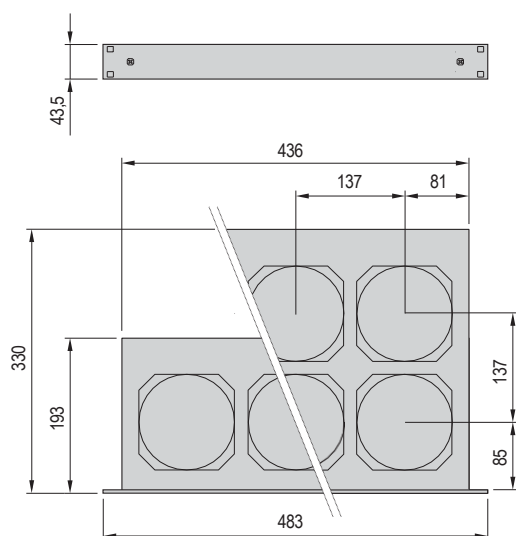
Pusher fan, 3 U. . . 4.12

ServicePLUS  
configuration..... 4.14

Accessories  
19" airf ..... 4.15  
AC fans ..... 4.16  
DC fans..... 4.16

# Climate control – 19" fan trays

## 19" FAN 1 U



01194002

KTAA4306

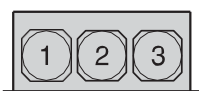
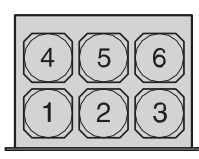
- Mechanical strain relief for mains cables
- Can be adapted to subracks
- Contact protection in accordance with DIN EN ISO 13857



### DELIVERY COMPRISES (ready to connect)

| Item | Qty   | Description                                                                                                              |
|------|-------|--------------------------------------------------------------------------------------------------------------------------|
| 1    | 1     | 19" circulation fan, 1 U, cover/base plate, St, 1 mm, finish AlZn, with perforation; front panel 1 U, Al, 3 mm, anodised |
| 2    | 3 / 6 | Fan, see Order Information                                                                                               |
| 3a   | 1     | AC with IEC connector (mains input IEC 60320), incl. safety clamp for mechanical strain relief                           |
| b3   | 1     | DC version with connecting cable, cable length 2.5 m                                                                     |

### ORDER INFORMATION

|                                                                                                              | 24 V <sub>DC</sub><br>Part no. | 115 V <sub>AC</sub><br>Part no. | 230 V <sub>AC</sub><br>Part no. |
|--------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------|---------------------------------|
|                            | <b>10713-103</b>               | <b>10713-102</b>                | <b>10713-100</b>                |
|                           | <b>10713-107</b>               | <b>10713-106</b>                | <b>10713-104</b>                |
| Replacement fan 1 piece                                                                                      | <b>20713-240</b>               | <b>20713-244</b>                | <b>20713-243</b>                |
| Side panel connecting bracket between europacPRO subrack and fan, including fixing material kit, PU 4 pieces |                                |                                 | <b>21101-954</b>                |
| Equipment cable SCHUKO/UTE SCHUKO/UTE plug, IEC 60320 C13 socket, 2.5 m, 1 piece                             |                                |                                 | <b>60103-131</b>                |
| Equipment cable, BS British Standard plug, IEC 60320 C13 socket, 2.5 m, 1 piece                              |                                |                                 | <b>60103-137</b>                |
| Equipment cable, USA USA plug, IEC 60320 socket, 2 m, 1 piece                                                |                                |                                 | <b>60103-141</b>                |

### TECHNICAL DATA

| Voltage                                        | 230 V <sub>AC</sub> | 115 V <sub>AC</sub> | 24 V <sub>DC</sub> |
|------------------------------------------------|---------------------|---------------------|--------------------|
| Frequency in Hz                                | 50                  | 60                  | -                  |
| Number of fans                                 | 3/6                 | 3/6                 | 3/6                |
| Airflow volume in m <sup>3</sup> /h (3/6 fans) | 440/845             | 520/1000            | 506/970            |
| Noise level in dB(A) (3/6 fans)                | 56.5/59.4           | 60.2/62.9           | 60.5/63.3          |
| Power consumption in W (3/6 fans)              | 45/90               | 42/84               | 24/48              |
| Max. stat. pressure in Pa                      | 73                  | 88                  | 68                 |
| Permissible ambient temperature in °C          | -40 ... +70 °C      |                     |                    |
| Lifespan in h L <sub>10</sub> 40 °C            | 43500               |                     |                    |
| Lifespan in h L <sub>10</sub> 55 °C            | 20000               |                     |                    |

### NOTE

- Fan dimensioning see page 4.18
- Replacement fans see chapter Climate control - Accessories
- Versions with multiple fans see ServicePLUS configuration page 4.14

# Climate control – 19" fan trays

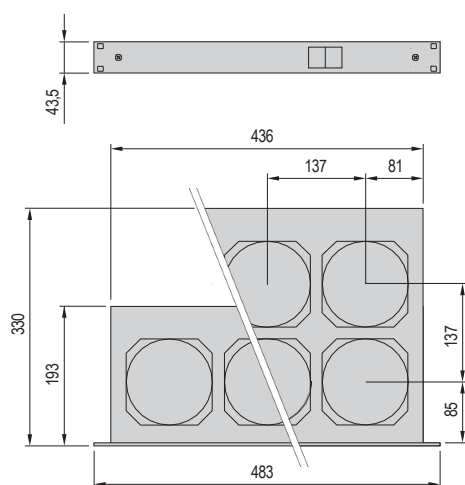
## 19" FAN 1 U WITH FRONT SWITCH



01194003



01197002



KTA45963

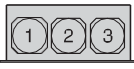
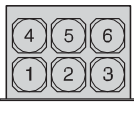
- Front-mounted illuminated mains switch on AC devices, coupled with additional rear mains outlet; mechanical strain relief for mains input and mains output cables
- Can be adapted to subracks
- Contact protection in accordance with DIN EN ISO 13857



### DELIVERY COMPRISES (ready to connect)

| Item | Qty   | Description                                                                                                                                                            |
|------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | 1     | 19" circulation fan, 1 U, top/base plate, St, 1 mm, finish AlZn, with perforation; front panel 1 U, Al, 3 mm, anodised                                                 |
| 2    | 3 / 6 | Fan, see Order Information                                                                                                                                             |
| 3a   | 1     | AC version with mains switch, illuminated green; plug (mains input IEC 60320) incl. safety clamp for mechanical strain relief; coupled mains output socket (IEC 60320) |
| b3   | 1     | DC version with mains switch and connecting cable, cable length 2.5 m                                                                                                  |

### ORDER INFORMATION

|                                                                                                              | 24 V <sub>DC</sub><br>Part no. | 115 V <sub>AC</sub><br>Part no. | 230 V <sub>AC</sub><br>Part no. |
|--------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------|---------------------------------|
|                           | <b>10713-111</b>               | <b>10713-110</b>                | <b>10713-108</b>                |
|                           | <b>10713-115</b>               | <b>10713-114</b>                | <b>10713-112</b>                |
| Replacement fan 1 piece                                                                                      | <b>20713-240</b>               | <b>20713-244</b>                | <b>20713-243</b>                |
| Side panel connecting bracket between europacPRO subrack and fan, including fixing material kit, PU 4 pieces |                                |                                 | <b>21101-954</b>                |
| Equipment cable SCHUKO/UTE SCHUKO/UTE plug, IEC 60320 C13 socket, 2.5 m, 1 piece                             |                                |                                 | <b>60103-131</b>                |
| Equipment cable, BS British Standard plug, IEC 60320 C13 socket, 2.5 m, 1 piece                              |                                |                                 | <b>60103-137</b>                |
| Equipment cable, USA USA plug, IEC 60320 socket, 2 m, 1 piece                                                |                                |                                 | <b>60103-141</b>                |
| Mains cable, IEC IEC 60320 C14 plug, IEC 60320 C13 socket, 2.5 m, 1 piece                                    |                                |                                 | <b>60197-053</b>                |

### TECHNICAL DATA

| Voltage                                        | 230 V <sub>AC</sub> |           | 115 V <sub>AC</sub> |           | 24 V <sub>DC</sub> |
|------------------------------------------------|---------------------|-----------|---------------------|-----------|--------------------|
| Frequency in Hz                                | 50                  | 60        | 50                  | 60        | -                  |
| Number of fans                                 | 3/6                 |           | 3/6                 |           | 3/6                |
| Airflow volume in m <sup>3</sup> /h (3/6 fans) | 440/845             | 520/1000  | 440/845             | 520/1000  | 506/970            |
| Noise level in dB(A) (3/6 fans)                | 56.5/59.4           | 60.2/62.9 | 56.5/59.4           | 60.2/62.9 | 60.5/63.3          |
| Power consumption in W (3/6 fans)              | 45/90               | 42/84     | 46.5/93             | 43.5/87   | 24/48              |
| Max. stat. pressure in Pa                      | 73                  | 88        | 73                  | 88        | 68                 |
| Permissible ambient temperature in °C          | -40 ... +70 °C      |           |                     |           |                    |
| Lifespan in h L <sub>10</sub> 40 °C            | 43500               |           |                     |           |                    |
| Lifespan in h L <sub>10</sub> 55 °C            | 20000               |           |                     |           |                    |

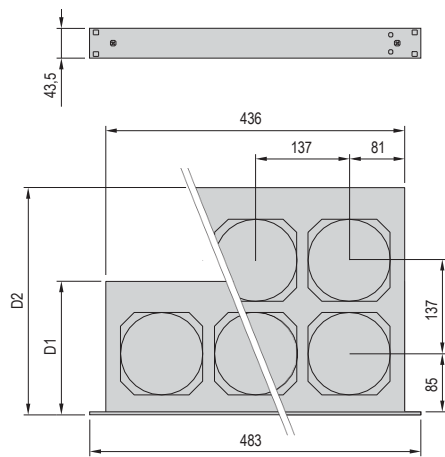
- Fan dimensioning, see page 4.18
- Replacement fans, see chapter Climate control - Accessories
- Versions with multiple fans see ServicePLUS configuration page 4.14

# Climate control – 19" fan trays

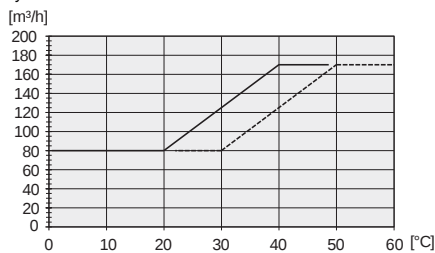
## 19" FAN 1 U, WITH SPEED CONTROL AND FUNCTION MONITORING



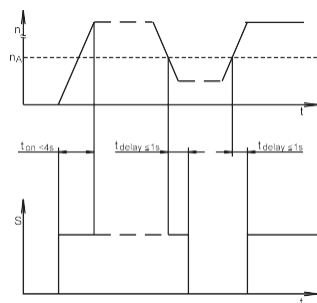
Photo shows 19" fan unit with 3 fans, without switch



Airflow capacity with one fan



Monitoring signal



n = rotating speed, S = signal,  $n_A$  = speed threshold value "Alarm"

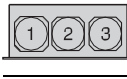
- Low noise through temperature dependent airflow volume
- Range selectable: 20 ... 40 °C and 30 ... 50 °C
- External sensor, at sensor breakage max speed will be set automatically
- Function control with LEDs and via potential-free contact
- Contact protection in accordance with DIN EN ISO 13857
- 2 versions, 24 V<sub>DC</sub> or 230 V<sub>AC</sub>



### DELIVERY COMPRISES (ready for connection)

| Item | Qty   | Description                                                                                                              |
|------|-------|--------------------------------------------------------------------------------------------------------------------------|
| 1    | 1     | 19" circulation fan, 1 U; cover/base plate, St, 1 mm, finish Al-Zn, with perforation front panel 1 U, Al, 3 mm, anodised |
| 2    | 3 / 6 | DC fan, see Order information                                                                                            |
| 3    | 1     | Connecting cable, length 2.5 m, open-ended                                                                               |
| 4    | 1     | Temperature sensor for speed control, NTC resistor, cable length 1.5 m                                                   |

### ORDER INFORMATION

|                                                                                                    | 24 V <sub>DC</sub><br>Without switch<br>D mm Part No. | 230 V <sub>AC</sub><br>With switch<br>D mm Part No. | Without switch<br>Part No. |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------|-----------------------------------------------------|----------------------------|
|  D1<br>KTA44857 | 193 <b>10713-099</b>                                  | 250 19713-121                                       | –                          |
|  D2<br>KTA44858 | 330 <b>10713-098</b>                                  | 397 –                                               | <b>19713-006</b>           |

### Accessories

|                                               |                  |
|-----------------------------------------------|------------------|
| Filter mat, class G 2 for 3 fans, PU 3 pieces | <b>60713-169</b> |
| Filter mat, class G 2 for 6 fans, PU 3 pieces | <b>60713-170</b> |

### TECHNICAL DATA

| Voltage AC version (fans 24 V <sub>DC</sub> ) | 86 ... 260 V <sub>AC</sub><br>24 V <sub>DC</sub> (21 ... 27) |        |
|-----------------------------------------------|--------------------------------------------------------------|--------|
| Number of fans                                | 3                                                            | 6      |
| Max. airflow volume in m³/h                   | 467                                                          | 895    |
| Noise level in dB(A)                          | 63.5                                                         | 66.4   |
| Max. stat. pressure in Pa                     | 70                                                           | 70     |
| Power consumption in W                        | 15.9                                                         | 31.8 W |
| Permissible ambient temperature °C            | –20 ... +65 °C                                               |        |
| Life in h L <sub>10</sub> 40 °C               | 70000                                                        |        |

### Technical data Regulation/monitoring

|                  |                                                                                                                                        |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Control range    | Changeover switch between 20 ... 40 °C and 30 ... 50 °C                                                                                |
| Sensor           | External NTC resistor, cable length 1.5 m                                                                                              |
| Sensor connector | Rear-mounted plug contact, max. rotation speed in case of sensor breakage                                                              |
| Signal at        | Speed < 30 % nominal speed; switch-on delay < 4 s, signal delay < 1 s (see monitoring signal)                                          |
| Signalling       | Display via LEDs; potential-free contact (changeover), switching capacity 5 W, max. switching voltage 170 V, open collector on request |

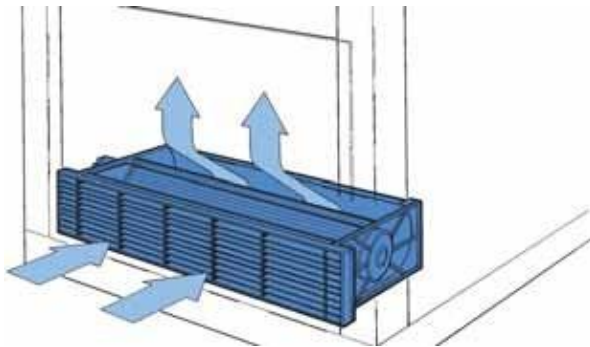
- Fan dimensioning see page 4.18

# Climate control – 19" fan trays

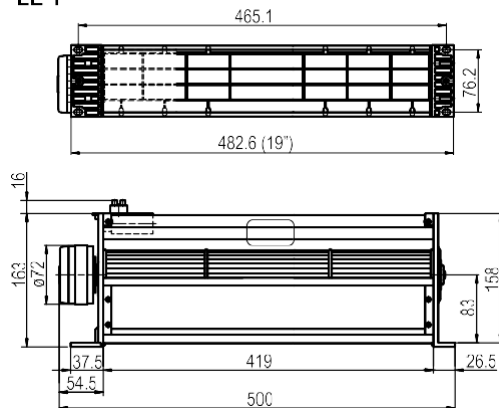
## PUSHER FAN, 2 U, WITH TANGENTIAL FAN



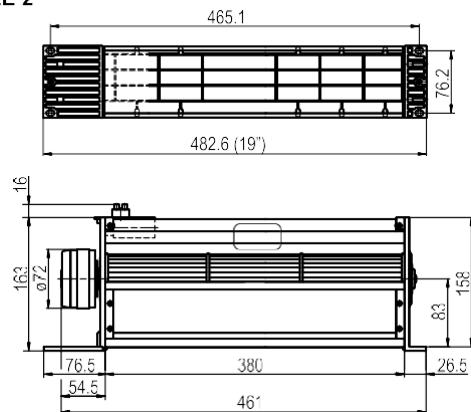
01192009



LE 1



LE 2



01103056

- High airflow volume
- Integrated filter mat
- 2 versions:
  - LE1: 19" bolt-on dimension, fan unit is wider than 19"
  - LE2: 19" reduced width, for easy assembly



### DELIVERY COMPRISES (ready to connect)

| Item | Qty | Description                                                                                                                      |
|------|-----|----------------------------------------------------------------------------------------------------------------------------------|
| 1    | 1   | Blower unit 2 U, with grille, PA 6.6, UL 94 V-0, front grille 2 U, PPO, UL 94 V-0; filter mat, synthetic fibre, filter class G 2 |
| 2    | 1   | Fan                                                                                                                              |
| 3    | 1   | Terminal block                                                                                                                   |

### ORDER INFORMATION

| Description                            | 115 V <sub>AC</sub><br>Part no. | 230 V <sub>AC</sub><br>Part no. |
|----------------------------------------|---------------------------------|---------------------------------|
| LE1: Pusher fan 2 U, tangential blower | <b>60713-003</b>                | <b>60713-001</b>                |
| LE2: Pusher fan 2 U, tangential blower | <b>60713-004</b>                | <b>60713-002</b>                |
| Spare filter mat PU 10 pieces          |                                 | <b>20705-008</b>                |

### DIMENSIONS

| Voltage                               | 115 V <sub>AC</sub> | 230 V <sub>AC</sub> |
|---------------------------------------|---------------------|---------------------|
| Frequency in Hz                       | 50 60               | 50 60               |
| Airflow volume in m <sup>3</sup> /h   | 320 330             | 320 330             |
| Noise level in dB(A)                  | 59 62               | 59 62               |
| Max. stat. pressure in Pa             | 65 70               | 65 70               |
| Power consumption in W                | 30 40               | 37 46               |
| Permissible ambient temperature in °C | -20 ... +65 °C      |                     |
| Lifespan in h                         | 30000               |                     |

### NOTE

- 24 V<sub>DC</sub> on request
- Fan dimensioning, see page 4.18

# Climate control – 19" fan trays

## 19" PUSHER FAN 2 U (DEPTH 160 MM OR 220 MM)



- Integrated air deflector prevents heat buildup in the assemblies mounted below
- Optionally with rear additional fan, 2 U, for active cooling of assemblies beneath the pusher fan
- Can be adapted to subracks
- Contact protection in accordance with DIN EN ISO 13857

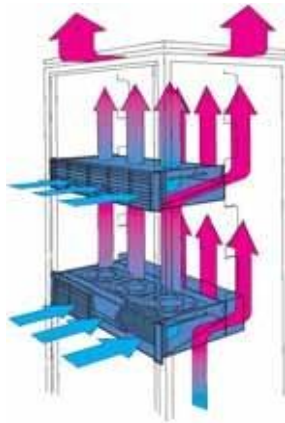
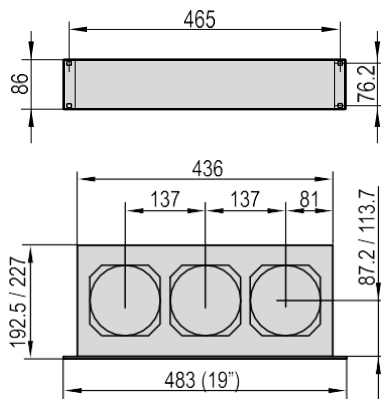


### DELIVERY COMPRISES (ready to connect)

| Item | Qty | Description                                                                                                                                                        |
|------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | 1   | 19" pusher fan 2 U, case, St, 1 mm, finish Al-Zn; front grille 2 U, PPO, UL 94 V-0 Filter mat, synthetic fibre, filter class G 2                                   |
| 2    | 3   | Fan                                                                                                                                                                |
| 3a   | 1   | AC-version with plug (mains input, IEC 60320), incl. safety clamp, mechanical strain relief for mains input cable; socket to connect an optional supplementary fan |
| 3b   | 1   | Wide AC input range with DC fans, version as 3 a, additionally speed-controlled and monitored                                                                      |
| 3c   | 1   | DC version with connecting cable, cable length 2.5 m                                                                                                               |

### NOTE

- Supplementary fan for AC version see page 4.11
- Fan dimensioning, see page 4.18



01103054A3527V

### ORDER INFORMATION

| Description                                                                                                  | Front panel Al, anodised                             | Front panel, plastic, black |                     |                     |                     |                     |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-----------------------------|---------------------|---------------------|---------------------|---------------------|
|                                                                                                              | 86 ... 260 V <sub>AC</sub> (fan 24 V <sub>DC</sub> ) | 24 V <sub>DC</sub>          | 115 V <sub>AC</sub> | 115 V <sub>AC</sub> | 230 V <sub>AC</sub> | 230 V <sub>AC</sub> |
|                                                                                                              | 515 m³/h                                             | 515 m³/h                    | 300/330 m³/h        | 445/530 m³/h        | 300/330 m³/h        | 445/530 m³/h        |
|                                                                                                              | Part no.                                             | Part no.                    | Part no.            | Part no.            | Part no.            | Part no.            |
| For board depth 160 mm                                                                                       | 19713-540                                            | <b>10713-537</b>            | 10713-520           | <b>10713-536</b>    | <b>10713-518</b>    | <b>10713-534</b>    |
| For board depth 220 mm                                                                                       | –                                                    | <b>10713-529</b>            | –                   | –                   | –                   | <b>10713-526</b>    |
| Replacement fan piece                                                                                        | <b>20713-240</b>                                     | <b>20713-240</b>            | <b>20713-147</b>    | <b>20713-244</b>    | <b>20700-001</b>    | <b>20713-243</b>    |
| Equipment cable SCHUKO/UTE SCHUKO/UTE plug, IEC 60320 C13 socket, 2.5 m, 1 piece                             |                                                      |                             |                     |                     |                     | <b>60103-131</b>    |
| Equipment cable BS British Standard plug, IEC 60320 C13 socket, 2.5 m, 1 piece                               |                                                      |                             |                     |                     |                     | <b>60103-137</b>    |
| Equipment cable USA USA plug, IEC 60320 socket, 2 m, 1 piece                                                 |                                                      |                             |                     |                     |                     | <b>60103-141</b>    |
| Side panel connecting bracket between europac subrack, including fixing material kit                         |                                                      |                             |                     |                     |                     | <b>21101-104</b>    |
| Side panel connecting bracket between europacPRO subrack and fan, including fixing material kit, PU 4 pieces |                                                      |                             |                     |                     |                     | <b>21101-954</b>    |
| Spare filter mat PU 3 pieces                                                                                 |                                                      |                             |                     |                     |                     | <b>60713-501</b>    |

| Technical data with 3 fans                                |                     |                     |                     |                     |                     |                     |                                         |
|-----------------------------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-----------------------------------------|
| Voltage                                                   | 24 V <sub>DC</sub>  | 24 V <sub>DC</sub>  | 115 V <sub>AC</sub> |                     | 230 V <sub>AC</sub> |                     |                                         |
| Frequency in MHz                                          | –                   | –                   | 50                  | 60                  | 50                  | 60                  | 50 60                                   |
| Airflow volume in m³/h                                    | 515                 | 515                 | 300                 | 330                 | 445                 | 530                 | 300 330 445 530                         |
| Noise level in dB(A)                                      | 59.8                | 59.8                | 52.2                | 56.1                | 55.2                | 58.2                | 52.2 56.1 55.2 58.5                     |
| Max. stat. pressure in Pa                                 | 68                  | 68                  | 41                  | 41                  | 78                  | 88                  | 41 41 78 88                             |
| Power consumption in W                                    | 24                  | 24                  | 42                  | 33                  | 46.5                | 43.5                | 42 33 45 42                             |
| Permissible ambient temperature in °C                     | –20 ... +70 °C      | –20 ... +70 °C      | –40 ... +70 °C      |                     | –40 ... +70 °C      |                     |                                         |
| Life in h, <sup>1)</sup> at 40 °C, <sup>2)</sup> at 55 °C | 20000 <sup>2)</sup> | 20000 <sup>2)</sup> | 50000 <sup>1)</sup> | 20000 <sup>2)</sup> | 50000 <sup>1)</sup> | 20000 <sup>2)</sup> | 50000 <sup>1)</sup> 20000 <sup>2)</sup> |

# Climate control – 19" fan trays

## SUPPLEMENTARY FANS WITH HOUSING FOR PUSHER FAN 2 U



- Extra 2 U useable space:  
By using a built-on fan, components mounted below the 19" pusher fan can be cooled
- No additional voltage supply necessary: connection is via 19" pusher fan, 2 U
- Contact protection in accordance with DIN EN ISO 13857



### DELIVERY COMPRISES (ready to fit and connect)

| Item | Qty | Description                                                                                                                         |
|------|-----|-------------------------------------------------------------------------------------------------------------------------------------|
| 1    | 1   | Housing with grille, St, 1 mm, finish AlZn                                                                                          |
| 2    | 4   | Fan                                                                                                                                 |
| 3    | 1   | Cable with plug (electrical connection via socket on 19" blower fan); safety clamp (mechanical strain relief for mains input cable) |

### ORDER INFORMATION

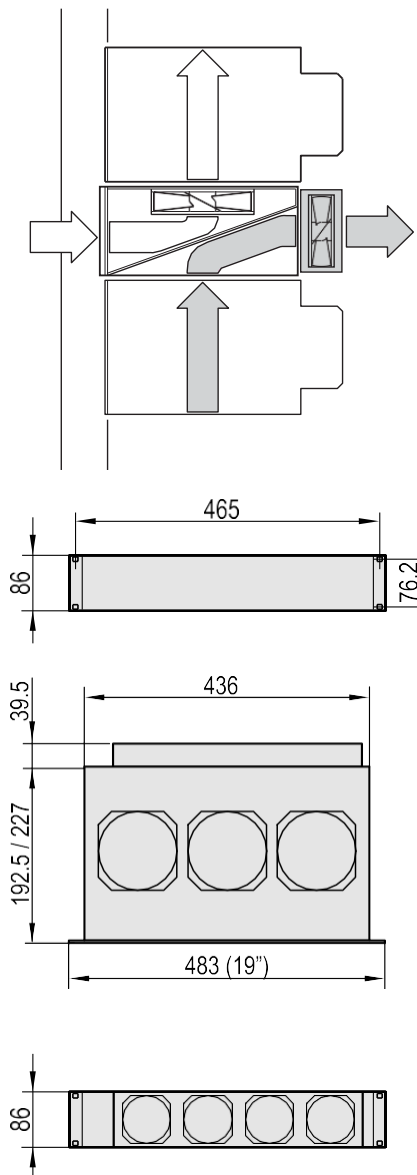
| Description                                       | 115 V <sub>AC</sub><br>Part no. | 230 V <sub>AC</sub><br>Part no. |
|---------------------------------------------------|---------------------------------|---------------------------------|
| Supplementary fans with housing for pusher fan 2U | <b>10713-532</b>                | <b>10713-530</b>                |

### TECHNICAL DATA with 3 fans

| Voltage                               | 115 VAC     |     | 230 VAC     |     |
|---------------------------------------|-------------|-----|-------------|-----|
| Frequency in MHz                      | 50          | 60  | 50          | 60  |
| Airflow volume in m <sup>3</sup> /h   | 130         | 155 | 130         | 155 |
| Noise level in dB(A)                  | 51          | 54  | 51          | 54  |
| Max. stat. pressure in Pa             | 44          | 62  | 44          | 62  |
| Permissible ambient temperature in °C | -40 ... +70 |     | -40 ... +70 |     |
| Power consumption in W                | 30          | 24  | 27          | 21  |
| Life in h at 55 °C                    | 20000       |     | 20000       |     |

### NOTE

- 24 V<sub>DC</sub> version available on request
- Fan dimensioning see page 4.18

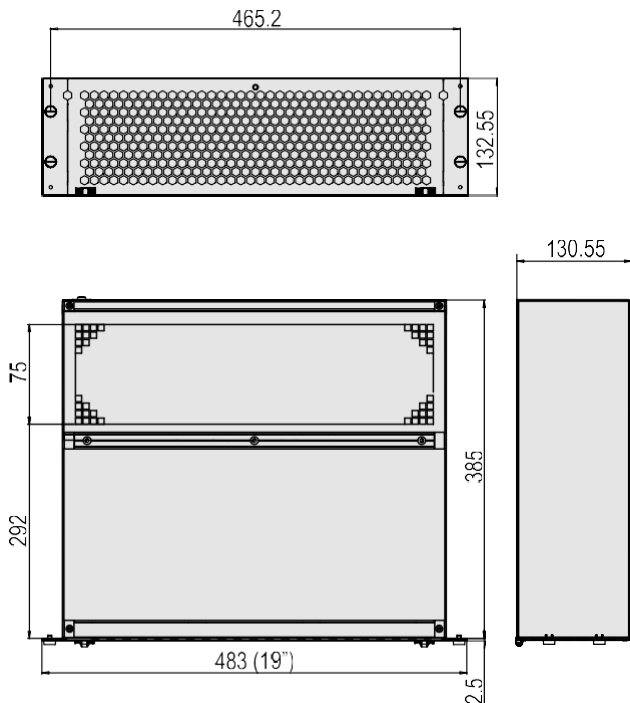


# Climate control – 19" fan trays

## 19" PUSHER FAN 3 U



01102017



01103052

With cover plates, this pusher fan can be re-fitted to different cooling concepts

- Ventilation directed accurately to the electronics
- Air infeed from front, air exits at the top rear of cabinet (guided upwards by cover plates or via hoses to rear and upwards)
- Contact protection in accordance with DIN EN ISO 13857



### DELIVERY COMPRISES (ready for connection)

| Item | Qty | Description                                                                                                                                  |
|------|-----|----------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | 1   | Case, St, 1 mm, AlZn; perforated hinged front panel, Al, 2.5 mm; filter mat, synthetic fibre, filter class G 2 in accordance with DIN EN 779 |
| 2    | 1   | Radial fan with mains fuse                                                                                                                   |
| 3    | 1   | Plug (mains input, IEC 60320); safety clamp, mechanical strain relief for mains input cable                                                  |

### ORDER INFORMATION

| Description        | 115 V <sub>AC</sub><br>Part no. | 230 V <sub>AC</sub><br>Part no. |
|--------------------|---------------------------------|---------------------------------|
| 19" pusher fan 3 U | <b>10713-547</b>                | <b>10713-546</b>                |

#### Accessories

|                                                                                                              |                  |
|--------------------------------------------------------------------------------------------------------------|------------------|
| Equipment cable SCHUKO/UTE SCHUKO/UTE plug, IEC 60320 C13 socket, 2.5 m, 1 piece                             | <b>60103-131</b> |
| Equipment cable, BS British Standard plug, IEC 60320 C13 socket, 2.5 m, 1 piece                              | <b>60103-137</b> |
| Equipment cable, USA USA plug, IEC 60320 socket, 2 m, 1 piece                                                | <b>60103-141</b> |
| Side panel connecting bracket between europac subrack and fan, including fixing material kit, PU 4 pieces    | <b>21101-958</b> |
| Side panel connecting bracket between europacPRO subrack and fan, including fixing material kit, PU 4 pieces | <b>21101-954</b> |
| Spare filter mat PU 3 pieces                                                                                 | <b>60713-868</b> |

### TECHNICAL DATA

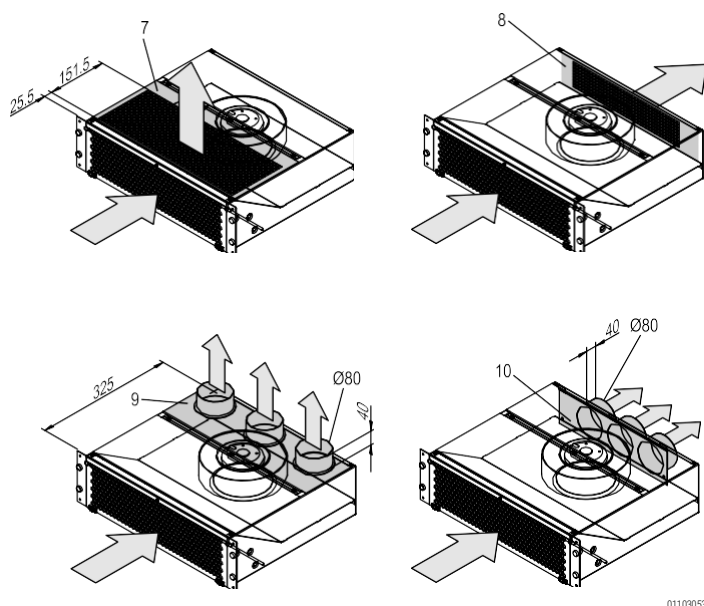
| Voltage                             | 115 V <sub>AC</sub> | 230 V <sub>AC</sub> |
|-------------------------------------|---------------------|---------------------|
| Frequency in MHz                    | 50 60               | 50 60               |
| Airflow volume in m <sup>3</sup> /h | 510 570             | 510 570             |
| Noise level per fan in dB(A)        | 62 64               | 62 64               |
| Max. stat. pressure in Pa           | 320 410             | 320 410             |
| Power consumption in W              | 55 65               | 58 75               |
| Max. ambient temperatures in °C     | -20 ... +50         | -20 ... +50         |
| Life in h at 55 °C                  | 20000               | 20000               |

### NOTE

- Wide input voltage range 90 V .... 260 V<sub>AC</sub> available on request
- Temperature control and function monitoring (alarm via RS 232) on request
- Air deflector plates for other cooling concepts see page 4.13
- Fan dimensioning see page 4.18

# Climate control – 19" fan trays

## AIR DEFLECTOR PLATE FOR 19" PUSHER FAN 3 U

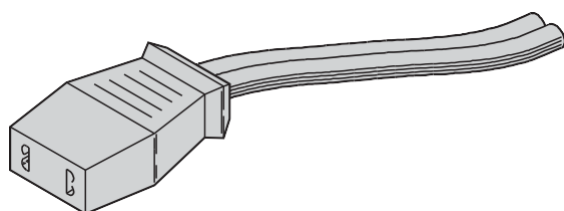


- For 19" pusher fan 3 U

### ORDER INFORMATION

| Item | Description                                                                                            | Qty/PU | Part no.  |
|------|--------------------------------------------------------------------------------------------------------|--------|-----------|
| 7    | Air deflector plate to front, St, 1 mm, finish AlZn                                                    | 1      | 20713-504 |
| 8    | Air outlet to rear: upper cover plate,                                                                 | 1      | 20713-505 |
| 9    | Air deflector plate with hose connection on upper rear, external diameter 80 mm, St, 1 mm, finish AlZn | 1      | 20713-503 |
| 10   | Air deflector plate with hose connection to rear,                                                      | 1      | 20713-502 |

## CONNECTING CABLE WITH CONNECTOR SOCKET



- Connecting cable with connector for AC fans (25 mm and 38 mm height) and DC fans (38 mm height), cable length 1 m

### DELIVERY COMPRISES

| Item | Qty | Description                                                                                           |
|------|-----|-------------------------------------------------------------------------------------------------------|
| 1    | 1   | Cable, PVC (2 x 0.75 mm <sup>2</sup> ), 1 m long, with 2 FASTON connectors 2.8 x 0.5 mm, DIN 46343 T1 |

### ORDER INFORMATION

| Description                | Part no.         |
|----------------------------|------------------|
| Connecting cable with plug | <b>21101-246</b> |

# Climate control – 19" fan trays

## SERVICEPLUS: CONFIGURATION WITH ASSEMBLY



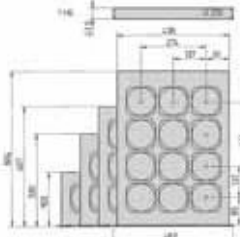
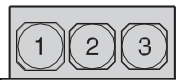
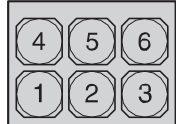
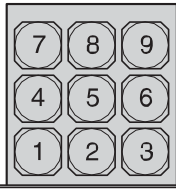
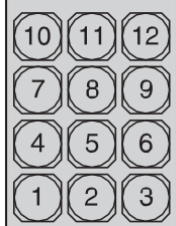
01102012

- You can plan and build up your product yourself using the order information table below
- Dimensions of fan trays
  - Height 1 U
  - Width 19"
  - Depth 193, 300, 467, 604 mm for 3, 6, 9 or 12 fans
- Create your 19" fan trays from individual parts (assembled within 10 working days)

### Example configuration

| Qty | Description                                                  | Order no.    |
|-----|--------------------------------------------------------------|--------------|
| 1   | Housing, 1 piece                                             | 20713-213    |
| 1   | Front panel with switch, AC, 1 piece                         | 20713-231/05 |
| 1   | Filter mat, 1 piece                                          | 60713-246/05 |
| 6   | Fan, AC, height 25 mm; mounted at position 1, 3, 5, 7, 9, 11 | 20700-001/05 |

## ORDER INFORMATION

|                                                                                    | Fan height | Fan housing 1)<br>cover/base plate, St, 1 mm, finish AlZn, with perforation | Front panel without switch |              | Front panel with switch |              | Filter mat G 2<br>can only be fitted where fan height is 25 mm | Fans     |
|------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------|----------------------------|--------------|-------------------------|--------------|----------------------------------------------------------------|----------|
|                                                                                    |            |                                                                             | AC (230 V)                 | DC           | AC (230 V)              | DC           |                                                                |          |
|   | mm         | 1 piece                                                                     | 1 piece                    | 1 piece      | 1 piece                 | 1 piece      | PU 3 pieces                                                    | see page |
|  | 25         | 20713-212                                                                   | 20713-220/05               | 20713-224/05 | 20713-228/05            | 20713-236/05 | <b>60713-243</b>                                               | 4.16     |
|                                                                                    | 38         | 20713-216                                                                   | 20713-220/05               | 20713-224/05 | 20713-228/05            | 20713-236/05 | –                                                              | 4.16     |
|  | 25         | 20713-213                                                                   | 20713-221/05               | 20713-225/05 | 20713-229/05            | 20713-237/05 | <b>60713-244</b>                                               | 4.16     |
|                                                                                    | 38         | 20713-217                                                                   | 20713-221/05               | 20713-225/05 | 20713-229/05            | 20713-237/05 | –                                                              | 4.16     |
|  | 25         | 20713-214                                                                   | 20713-222/05               | 20713-226/05 | 20713-230/05            | 20713-238/05 | <b>60713-245</b>                                               | 4.16     |
|                                                                                    | 38         | 20713-218                                                                   | 20713-222/05               | 20713-226/05 | 20713-230/05            | 20713-238/05 | –                                                              | 4.16     |
|  | 25         | 20713-215                                                                   | 20713-223/05               | 20713-227/05 | 20713-231/05            | 20713-239/05 | <b>60713-246</b>                                               | 4.16     |
|                                                                                    | 38         | 20713-219                                                                   | 20713-223/05               | 20713-227/05 | 20713-231/05            | 20713-239/05 | –                                                              | 4.16     |

1) Fan housing cannot be ordered without fans

### NOTE

- Unused fan mounting positions are covered with foam material
- Versions for 115 V or with switch available on request
- Fan dimensioning see page 4.18

# Climate control – 19" fan trays

## 1 U AIR DEFLECTOR CHASSIS FOR 19" FAN TRAYS

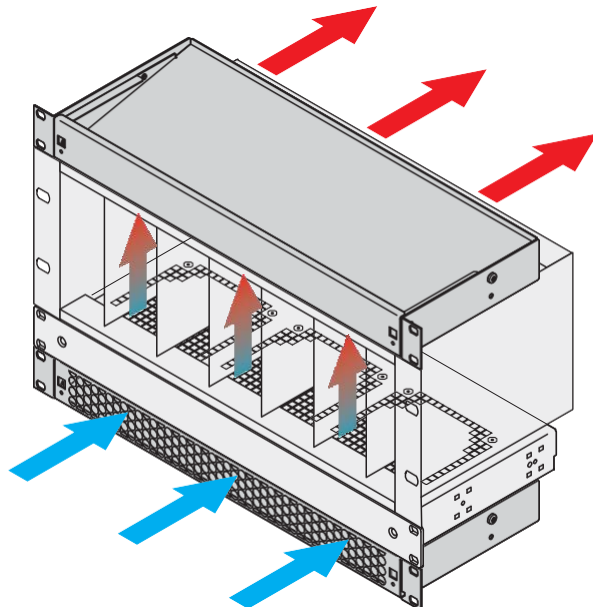


01109001



01109002

1 U air deflector chassis (bottom) with 1 U fan tray (top)



011090051

Application: air deflector chassis mounted below 19" fan tray, guides the cool air upwards from front; second air deflector chassis at top guides the warm air to the rear

- Optimised cooling together with 19" fan trays
- Vertical buildup of heat is avoided by means of improved airflow
- Fitting options:
  - One fan tray: cool air is drawn in from the front and guided upwards
  - Two fan trays: cool air is drawn in from the front, directed upwards and guided to the rear (see application diagram)
- Versions:
  - With solid front panel to direct airflow
  - With perforated front panel to allow air to flow in/out
- Optional filter mat, simple to swap during operation

### DELIVERY COMPRISES (assembled)

| Item | Qty | Description                                                                                                                              |
|------|-----|------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | 1   | Air deflector plate, St, 1 mm, finish Zincor, width 432.8 mm (without side panel)                                                        |
| 2    | 2   | Side panel, St, 1.5 mm, finish Zincor; with 19" mounting bracket, powder-coated (see Order information for colour)                       |
| 3a   | 1   | Front panel, perforated, St, 1.5 mm, finish Zincor, powder-coated (see Order information for colour); two quick-release fasteners, black |
| 3b   | 1   | Front panel, solid, St, 1.5 mm, finish Zincor, powder-coated (see Order information for colour); two quick-release fasteners, black      |
| 4    | 1   | Assembly kit                                                                                                                             |

### ORDER INFORMATION

| 1 U air deflector chassis for 19" fan trays | Depth mm | Colour   | Part no. Front panel, perforated | Part no. Front panel, solid |
|---------------------------------------------|----------|----------|----------------------------------|-----------------------------|
| for single-row fan trays (3 fans)           | 193      | RAL 7035 | 10713-140                        | 10713-146                   |
|                                             | 193      | RAL 9005 | 10713-142                        | 10713-148                   |
|                                             | 193      | RAL 9006 | 10713-144                        | 10713-150                   |
| for double-row fan trays (6 fans)           | 330      | RAL 7035 | 10713-141                        | 10713-147                   |
|                                             | 330      | RAL 9005 | 10713-143                        | 10713-149                   |
|                                             | 330      | RAL 9006 | 10713-145                        | 10713-151                   |

### Accessories

|                                               |                  |
|-----------------------------------------------|------------------|
| Filter mat, class G 2 for 3 fans, PU 3 pieces | <b>60713-169</b> |
| Filter mat, class G 2 for 6 fans, PU 3 pieces | 60713-331        |

# Climate control – 19" fan trays

## AC FANS/REPLACEMENT FANS



01108005

### DELIVERY COMPRISES

| Item | Qty | Description                      |
|------|-----|----------------------------------|
| 1    | 1   | Fan (width 119 mm, depth 119 mm) |

### ORDER INFORMATION

| Description                   | Height mm | Airflow volume m³/h | 115 V <sub>AC</sub> Part no. | 230 V <sub>AC</sub> Part no. |
|-------------------------------|-----------|---------------------|------------------------------|------------------------------|
| Type A                        | 25        | 84                  | <b>20713-146</b>             | <b>20713-142</b>             |
| Type B                        | 25        | 108                 | <b>20713-147</b>             | <b>20700-001</b>             |
| Type C                        | 38        | 162                 | <b>20713-244</b>             | <b>20713-243</b>             |
| Assembly kit for fan PU 1 kit |           |                     |                              | <b>21102-013</b>             |

### DIMENSIONS AC fans

| Type                                                   | Type A |    | Type B |     | Type C |     |
|--------------------------------------------------------|--------|----|--------|-----|--------|-----|
| Frequency in Hz                                        | 50     | 60 | 50     | 60  | 50     | 60  |
| Airflow volume in m³/h                                 | 84     | 90 | 108    | 120 | 162    | 192 |
| Noise level per fan in dB(A)                           | 29     | 30 | 34     | 38  | 37     | 41  |
| Max. static pressure in Pa                             | 23     | 21 | 41     | 41  | 73     | 88  |
| Max. ambient temperature in °C                         | 70     | 70 | 70     | 70  | 70     | 70  |
| Power consumption in W                                 | 8      | 7  | 14     | 11  | 15     | 14  |
| Dimensions: height in mm (width 119 mm x depth 119 mm) | 25     |    | 25     |     | 38     |     |

- Please order connecting cable separately, see page 4.13
- Please order protective grille separately, see page 4.17

## DC FANS/REPLACEMENT FANS



U11UR8002

### DELIVERY COMPRISES

| Item | Qty | Description                                                                                              |
|------|-----|----------------------------------------------------------------------------------------------------------|
| 1a   | 1   | Fan, height 38 mm, with plug connection                                                                  |
| 1b   | 1   | Fan, height 25.5 mm, connecting cable, length 55 mm, connector with 2 x FASTON connectors (2.8 x 0.8 mm) |

### ORDER INFORMATION

| Height mm                     | Airflow volume m³/h | Power consumption W | Input voltage V | Part no.         |
|-------------------------------|---------------------|---------------------|-----------------|------------------|
| 25.5                          | 171                 | 5.3                 | 24              | <b>20713-172</b> |
| 38                            | 184                 | 8                   | 12              | <b>20713-241</b> |
| 38                            | 184                 | 8                   | 24              | <b>20713-240</b> |
| 38                            | 184                 | 8                   | 48              | <b>20713-242</b> |
| Assembly kit for fan PU 1 kit |                     |                     |                 | <b>21102-013</b> |

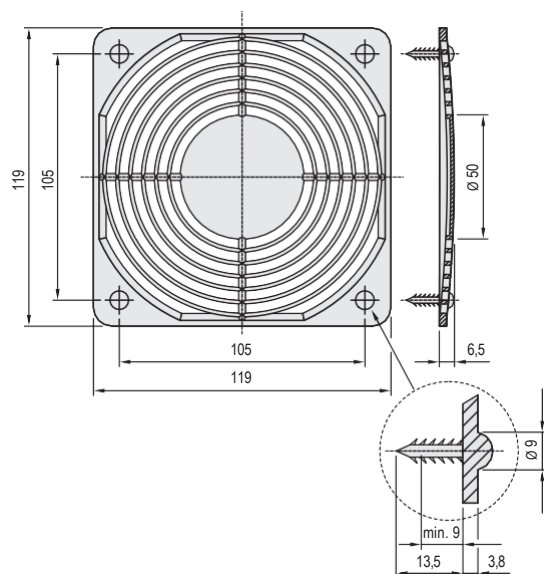
### TECHNICAL DATA DC fans

| Voltage in VDC                                         | 24   | 12  | 24  | 48  |
|--------------------------------------------------------|------|-----|-----|-----|
| Dimensions: height in mm (width 119 mm x depth 119 mm) | 25   | 38  | 38  | 38  |
| Airflow volume in m³/h                                 | 171  | 184 | 184 | 184 |
| Noise level per fan in dB(A)                           | 41.5 | 42  | 42  | 42  |
| Max. stat. pressure in Pa                              | 50.5 | 68  | 68  | 68  |
| Max. ambient temperature in °C                         | 70   | 70  | 70  | 70  |
| Power consumption in W                                 | 7    | 8   | 8   | 8   |

- Please order connecting cable for 38 mm high fans separately, see page 4.13
- Please order protective grille separately, see page 4.17

# Climate control – 19" fan trays

## PROTECTIVE GRILLE TO SNAP-IN



01108053

- Protective grille for direct mounting on AC and DC fans

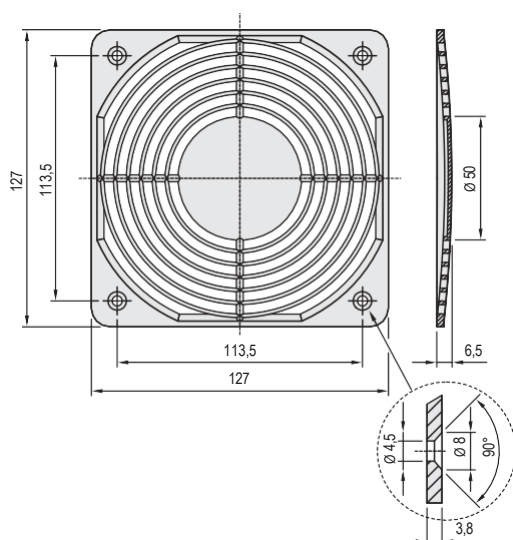
### DELIVERY COMPRISES

| Item | Qty | Description                                                                         |
|------|-----|-------------------------------------------------------------------------------------|
| 1    | 1   | Fibre glass reinforced plastic (PA), black, in accordance with DIN 31001, UL 94 V-0 |

### ORDER INFORMATION

| Description                            | Part no.         |
|----------------------------------------|------------------|
| Protective grille, plastic, to snap-in | <b>60225-052</b> |

## PROTECTIVE GRILLE, PLASTIC, TO SCREW-ON



01108054

- Protective grille for AC and DC fans
- Grille may be mounted on a front panel or the wall of the housing

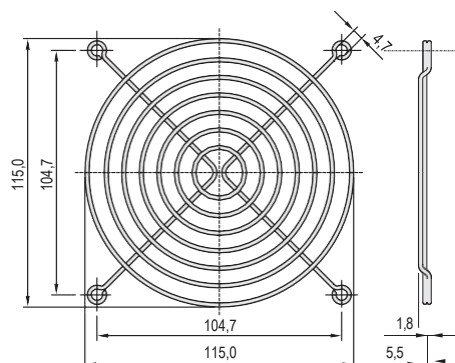
### DELIVERY COMPRISES

| Item | Qty | Description                                                                         |
|------|-----|-------------------------------------------------------------------------------------|
| 1    | 1   | Fibre glass reinforced plastic (PA), black, in accordance with DIN 31001, UL 94 V-0 |

### ORDER INFORMATION

| Description                                                                | Part no.         |
|----------------------------------------------------------------------------|------------------|
| Protective grille, plastic, to screw-on                                    | <b>60225-053</b> |
| Assembly kit for plastic grille (4 screws, 4 washers, 4 nuts M4), PU 1 set | <b>21102-014</b> |

## PROTECTIVE GRILLE, METAL, TO SCREW-ON



01109050

- Protective grille for direct mounting on AC and DC fans
- Optimised noise level and air resistance

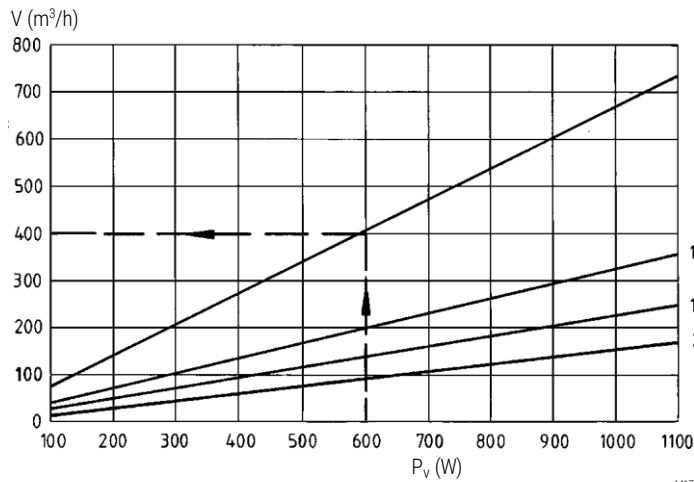
### DELIVERY COMPRISES

| Item | Qty | Description |
|------|-----|-------------|
| 1    | 1   | St, 1 mm    |

### ORDER INFORMATION

| Description                                                              | Part no.         |
|--------------------------------------------------------------------------|------------------|
| Protective grille, metal, to screw-on                                    | <b>60197-019</b> |
| Assembly kit for metal grille (4 screws, 4 washers, 4 nuts M4), PU 1 set | <b>21102-015</b> |

# Climate control – 19" fan trays



For local heat dissipation, the airflow volume required to expel the heat produced is calculated.

## Note

The cabinet ventilation is not taken into account here.

The required airflow volume is calculated as follows:

$$V = (f \times P_v) / \Delta T$$

The air constant  $f = 3.3 \text{ m}^3\text{K}/\text{Wh}$ .

$\Delta T$  is the temperature difference between the ambient temperature of the sub-assembly and that of the air drawn in.

## Example of readings

- $P_v = 600 \text{ W}$
- air sucked in:  $25^\circ\text{C}$
- permissible ambient temperature of the sub-assembly =  $30^\circ\text{C}$

1.  $\Delta T = T_i - T_u = 30^\circ\text{C} - 25^\circ\text{C} = 5 \text{ K}$
2. From  $P_v = 600 \text{ W}$  to the curve for  $\Delta T = 5 \text{ K}$
3. From the intersection point to the airflow volume  $V = 400 \text{ m}^3/\text{h}$

## Climate control – 19" fan trays

# Climate control – Air filtered fan

## OVERVIEW

### MAIN KATALOG

|                                                      |    |
|------------------------------------------------------|----|
| Cabinets.....                                        | 1  |
| Wall mounted cases.....                              | 2  |
| Accessories for cabinets and wall mounted cases..... | 3  |
| Climate control.....                                 | 4  |
| Electronics cases.....                               | 5  |
| Subracks/ 19" chassis .....                          | 6  |
| Front panels, plug-in units .....                    | 7  |
| Systems .....                                        | 8  |
| Power supply units .....                             | 9  |
| Backplanes.....                                      | 10 |
| Connectors, front panel component system.....        | 11 |
| Appendix.....                                        | 12 |



01108012



01108014

Simple to fit without tools by clipping in (can also be bolted)



01108015

Easy tool-less change of filter mat



01108016

Fluted filter to increase degree of ingress protection from IP 54 to IP 55



01108013

Easy tool-less wiring with spring clamp connector

# Climate control – Air filtered fan

## OVERVIEW

### AIR FILTERED FANS, INGRESS PROTECTION FROM IP 54 TO IP 55 IN ACCORDANCE WITH IEC 60529

- Simple to fit without tools by clipping in (can also be bolted)
- Easy conversion from pressure to suction operation
- Easy tool-less change of filter mat
- 7 performance classes with 6 different assembly dimensions



Air filtered fans

01108017

#### AIR FILTERED FANS

- Airflow capacity of 25 m<sup>3</sup>/h ... 770 m<sup>3</sup>/h (FL 100 ... FL 600)
- 3 supply voltages (230 V<sub>AC</sub>, 115 V<sub>AC</sub>, 24 V<sub>DC</sub>)
- Outlet/inlet filter
- Fluted filter to increase degree of ingress protection from IP 54 to IP 55
- Side by side mounting of several air filtered fans is possible



Outlet/inlet filters

01108026



Fluted filters

01108016

#### SERVICEPLUS

- e.g. special colours
- e.g. other cabinet dimensions
- e.g. EMC solutions
- e.g. custom solutions

30407004

Overview .....4.20

How to dimension  
air filtered fans . . 4.22  
Reading example . 4.22  
EMC solutions . . . 4.22

Air filtered fans  
FL 100 .....4.23  
FL 200 .....4.24  
FL 225 .....4.25  
FL 250 .....4.26  
FL 300 .....4.27  
FL 500 .....4.28  
FL 600 .....4.29

# Climate control – Air filtered fans

## AIR FILTERED FAN CALCULATIONS



01108017

To establish the size of the air-filtered fan required, calculate the air throughput necessary to dissipate the amount of heat contained in the cabinet. The necessary airflow volume (at sea level) is calculated thus:

$$V = f \times (P_V - P_S) / \Delta T \text{ with}$$

$V$  = airflow volume

$f$  = air constant = 3.3 m<sup>3</sup> K/Wh

$P_V$  = thermal power loss

(sum of heat emitted by the equipment in the cabinet)

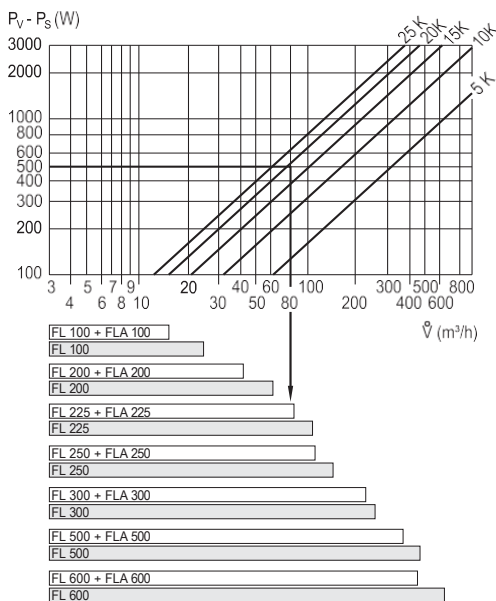
$P_S$  = radiant power

(heat that is radiated from the cabinet without additional ventilation)

$\Delta T$  = temperature difference between the air drawn in (ambient temperature  $T_u$ ) and the exhaust air (internal cabinet temperature  $T_i$ ),

$$\Delta T = T_i - T_u$$

## READING EXAMPLE



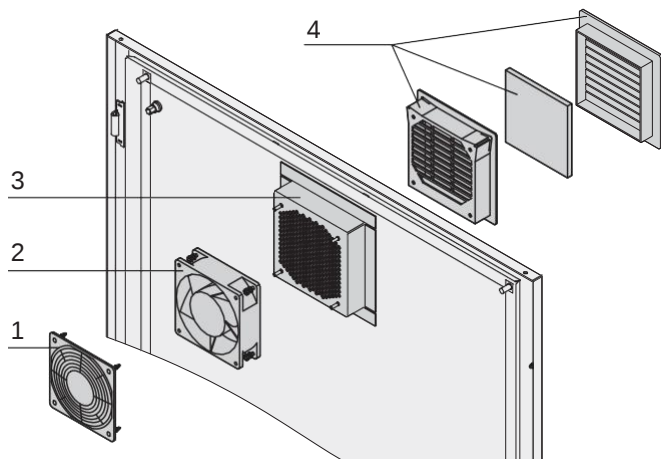
kit45245

The devices in the cabinet produce e.g. a power loss of 840 W. Of these 840 W, the cabinet releases 340 W to the environment via its surfaces. The air sucked in from outside the cabinet has a temperature of 20 °C. A maximum temperature of 40 °C is to be permitted in the cabinet.

So which air filtered fan should be employed?

- $P_V = 840$  W,  $P_S = 340$  W, read-off point  $P_V - P_S = 500$  W
- $\Delta T = T_i - T_a = 40$  °C - 20 °C = 20 °C = 20 K
- On the characteristic for 20 K we obtain, at  $P_V - P_S = 500$  W, a minimum necessary airflow volume of  $V = 80$  m³/h.
- An FL 250 air filtered fan should be used that gives an airflow volume of 131 m³/h or, if used in combination with the FLA 250 exhaust filter, of 95 m³/h.

## EMC SOLUTIONS



- EMC shielding in accordance with your requirements
- Customised developments

### DELIVERY COMPRISES

| Item | Description             |
|------|-------------------------|
| 1    | Protective fan grille   |
| 2    | Fan                     |
| 3    | EMC hood                |
| 4    | FLA outlet/inlet filter |

01108070

# Climate control – Air filtered fans

## AIR FILTERED FAN FL 100



01108018

- Airflow volume 19 m³/h
- Converts simply from push to pull operation
- Ingress protection IP 54, NEMA type 12
- Simple to fit without tools by clipping in



### DELIVERY COMPRISES (completely assembled)

| Item | Qty | Description                                                                  |
|------|-----|------------------------------------------------------------------------------|
| 1    | 1   | Front grille and case, plastic, ABS, RAL 7035, self-extinguishing, UL 94 V-0 |
| 2    | 1   | Filter, filter class G 3 (EN 779)                                            |
| 3    | 1   | Fan                                                                          |
| 4    | 1   | 2 wire connection, length 310 mm                                             |

### ORDER INFORMATION

| Description                                                                             | 24 V <sub>DC</sub> | 115 V <sub>AC</sub> | 230 V <sub>AC</sub> |
|-----------------------------------------------------------------------------------------|--------------------|---------------------|---------------------|
|                                                                                         | Part no.           | Part no.            | Part no.            |
| Air filtered fan FL 100                                                                 | EF100-24R5         | EF100-115R 5        | <b>EF100R5</b>      |
| Air outlet/inlet filter FLA 100 (items 1 + 2 included), 1 piece                         |                    |                     | <b>EFA100R5</b>     |
| Replacement filter IP 54 for FL 100 and FLA 100, filter class G 3 (EN 779), PU 5 pieces |                    |                     | <b>EFM100</b>       |

### TECHNICAL DATA

| Voltage                                             | 230 VAC           | 115 VAC        | 24 VDC         |
|-----------------------------------------------------|-------------------|----------------|----------------|
| Frequency                                           | 50/60 Hz          | 50/60 Hz       | DC             |
| Airflow volume with filter (free blowing)           | 19/24 m³/h        | 19/24 m³/h     | 19 m³/h        |
| Combination FL + FLA                                | 12/14 m³/h        | 12/14 m³/h     | 12 m³/h        |
| Max. static pressure                                | 38 Pa             | 38 Pa          | 38 Pa          |
| Noise level (in accordance with EN ISO 3741, 50 Hz) | 33 dB(A)          | 33 dB(A)       | 33 dB(A)       |
| Operating temperatures                              | -15 ... +55 °C    | -15 ... +55 °C | -15 ... +55 °C |
| Power consumption                                   | 12/11 W           | 12/11 W        | 2.4 W          |
| Filter efficiency                                   | 88 %              | 88 %           | 88 %           |
| MTBF at 40 °C                                       | 52000 h           | 52000 h        | 70000 h        |
| Approvals                                           | CE, UL, cUL, GOST |                |                |

01108019

Air outlet/inlet filter FLA 100

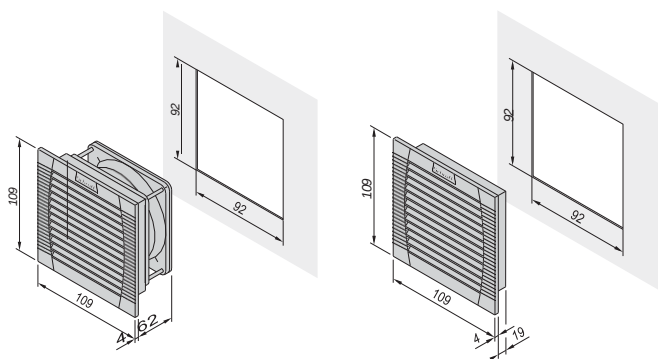


Replacement filter IP 54

01108020

### NOTE

- Mounting for sheet thicknesses from 1 to 3 mm
- Multiple fan solution on request
- Dimensions, cut-outs and tolerances see user manual



01108057

01108058

Air filtered fan FL 100  
Sheet thicknesses 1 ... 2 mm - cut-out 92 x 92 mm;  
Sheet thicknesses >2 ... 3 mm - cut-out 93 x 93 mm

# Climate control – Air filtered fans

## AIR FILTERED FAN FL 200



01108018



Air outlet/inlet filter FLA 200

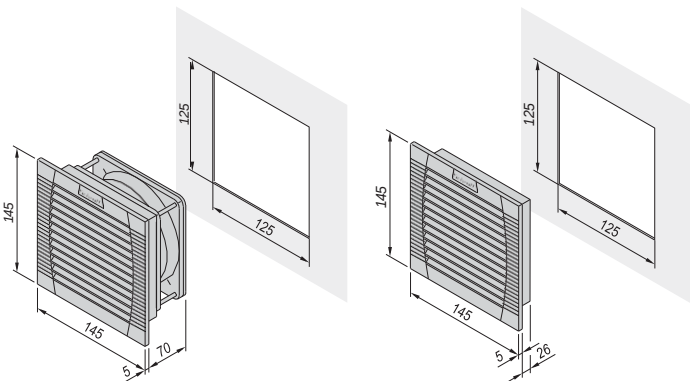
Fluted filter IP 55

01108019 01108021



Replacement filter IP 54

01108020



01108059 01108060

Air filtered fan FL 200  
Sheet thicknesses 1 ... 2 mm - cut-out 125 x 125 mm;  
Sheet thicknesses >2 ... 3 mm - cut-out 126 x 126 mm

Air outlet/inlet filter FLA 200

- Airflow volume 60 m<sup>3</sup>/h
- Converts simply from push to pull operation
- Ingress protection IP 54, with fluted filter IP 55, NEMA type 12
- Simple to fit without tools by clipping in (can also be bolted)



### DELIVERY COMPRISES (Completely assembled)

| Item | Qty | Description                                                                  |
|------|-----|------------------------------------------------------------------------------|
| 1    | 1   | Front grille and case, plastic, ABS, RAL 7035, self-extinguishing, UL 94 V-0 |
| 2    | 1   | Filter, filter class G3 (EN 779)                                             |
| 3    | 1   | Fan                                                                          |
| 4    | 1   | Connection AC (terminal strip), connection DC (2 wires, 310 mm long)         |

### ORDER INFORMATION

| Description                                                                             | 24 V <sub>DC</sub><br>Part no. | 115 V <sub>AC</sub><br>Part no. | 230 V <sub>AC</sub><br>Part no. |
|-----------------------------------------------------------------------------------------|--------------------------------|---------------------------------|---------------------------------|
| Air filtered fan FL 200                                                                 | EF200-24R5                     | EF200-115R5                     | <b>EF200R5</b>                  |
| Air outlet/inlet filter FLA 200 (items 1 + 2 included), 1 piece                         |                                |                                 | <b>EFA200R5</b>                 |
| Replacement filter IP 54 for FL 200 and FLA 200, filter class G 3 (EN 779), PU 5 pieces |                                |                                 | <b>EFM200</b>                   |
| Fluted filter IP 55 for FL 200 and FLA 200, filter class G 4 (EN 779), PU 5 pieces      |                                |                                 | <b>EFMP200</b>                  |

### TECHNICAL DATA

| Voltage                                            | 230 V <sub>AC</sub>     | 115 V <sub>AC</sub>     | 24 V <sub>DC</sub>   |
|----------------------------------------------------|-------------------------|-------------------------|----------------------|
| Frequency                                          | 50/60 Hz                | 50/60 Hz                | DC                   |
| Airflow volume with IP 54 filter (free blowing)    | 60/66 m <sup>3</sup> /h | 60/66 m <sup>3</sup> /h | 60 m <sup>3</sup> /h |
| Airflow volume with IP 55 filter (free blowing)    | 56/64 m <sup>3</sup> /h | 56/64 m <sup>3</sup> /h | 56 m <sup>3</sup> /h |
| Combination FL + FLA IP 54                         | 38/42 m <sup>3</sup> /h | 38/42 m <sup>3</sup> /h | 38 m <sup>3</sup> /h |
| Combination FL + FLA IP 55                         | 40/46 m <sup>3</sup> /h | 40/46 m <sup>3</sup> /h | 40 m <sup>3</sup> /h |
| Max. static pressure IP 54                         | 60 Pa                   | 60 Pa                   | 60 Pa                |
| Max. static pressure IP 55                         | 57 Pa                   | 57 Pa                   | 61 Pa                |
| Noise level in accordance with EN ISO 3741, 50 Hz) | 44 dB(A)                | 44 dB(A)                | 44 dB(A)             |
| Max. ambient temperature                           | 15 ... +55 °C           | -5 ... +55 °C           | -25 ... +55 °C       |
| Power consumption                                  | 19/18 W                 | 19/18 W                 | 5 W                  |
| Filter efficiency IP 54                            | 83 %                    | 83 %                    | 83 %                 |
| Filter efficiency IP 55                            | 91 %                    | 91 %                    | 91 %                 |
| MTBF at 40 °C                                      | 37000 h                 | 37000 h                 | 62000 h              |
| Approvals                                          | CE, UL, cUL, GOST       |                         |                      |

### NOTE

- Mounting for sheet thicknesses from 1 to 3 mm
- Multiple fan solution on request
- Dimensions, cut-outs and tolerances see user manual

# Climate control – Air filtered fans

## AIR FILTERED FAN FL 225



01108022

- Airflow volume 98 m<sup>3</sup>/h
- Converts simply from push to pull operation
- Ingress protection IP 54, with fluted filter IP 55, NEMA type 12



### DELIVERY COMPRISES (completely assembled)

| Item | Qty | Description                                                                  |
|------|-----|------------------------------------------------------------------------------|
| 1    | 1   | Front grille and case, plastic, ABS, RAL 7035, self-extinguishing, UL 94 V-0 |
| 2    | 1   | Filter, filter class G 3 (EN 779)                                            |
| 3    | 1   | Fan                                                                          |
| 4    | 1   | Connection AC (terminal block), DC (spring terminal strip)                   |

### ORDER INFORMATION

| Description                                                                             | 115 V <sub>AC</sub><br>Part no. | 230 V <sub>AC</sub><br>Part no. |
|-----------------------------------------------------------------------------------------|---------------------------------|---------------------------------|
| Air filtered fan FL 225                                                                 | EF220-115R5                     | <b>EF220R5</b>                  |
| Air outlet/inlet filter FLA 225 (items 1 + 2 included), 1 piece                         |                                 | <b>EFA220R5</b>                 |
| Replacement filter IP 54 for FL 225 and FLA 225, filter class G 3 (EN 779), PU 5 pieces |                                 | <b>EFM220</b>                   |
| Fluted filter IP 55 for FL 225 and FLA 225, filter class G 4 (EN 779), PU 5 pieces      |                                 | <b>EFMP220</b>                  |



01108019 01108021

Air outlet/inlet filter FLA 225

Fluted filter IP 55



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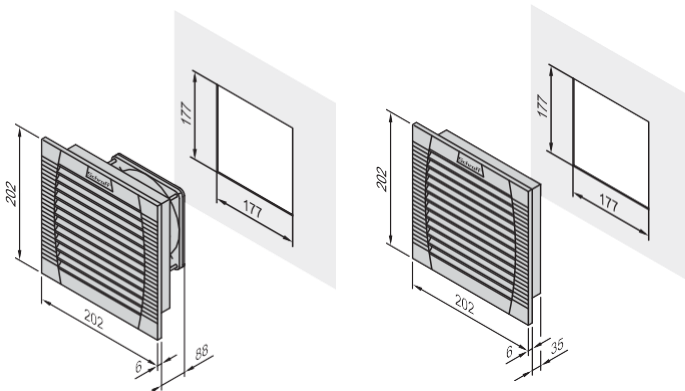
Replacement filter IP 54

### TECHNICAL DATA

| Voltage                                             | 230 V <sub>AC</sub>       | 115 V <sub>AC</sub>       |
|-----------------------------------------------------|---------------------------|---------------------------|
| Frequency                                           | 50/60 Hz                  | 50/60 Hz                  |
| Airflow volume with IP 54 filter (free blowing)     | 98/108 m <sup>3</sup> /h  | 98/108 m <sup>3</sup> /h  |
| Airflow volume with IP 55 filter (free blowing)     | 100/110 m <sup>3</sup> /h | 100/110 m <sup>3</sup> /h |
| Combination FL + FLA IP 54                          | 73/80 m <sup>3</sup> /h   | 73/80 m <sup>3</sup> /h   |
| Combination FL + FLA IP 55                          | 55/64 m <sup>3</sup> /h   | 55/64 m <sup>3</sup> /h   |
| Max. static pressure IP 54                          | 66 Pa                     | 66 Pa                     |
| Max. static pressure IP 55                          | 61 Pa                     | 61 Pa                     |
| Noise level (in accordance with EN ISO 3741, 50 Hz) | 40 dB(A)                  | 40 dB(A)                  |
| Max. ambient temperature                            | -15 ... +55 °C            | -15 ... +55 °C            |
| Power consumption                                   | 19/18 W                   | 19/18 W                   |
| Filter efficiency IP 54                             | 88 %                      | 88 %                      |
| Filter efficiency IP 55                             | 91 %                      | 91 %                      |
| MTBF at 40 °C                                       | 37000 h                   | 37000 h                   |
| Approvals                                           | CE, UL, cUL, GOST         |                           |

### NOTE

- Mounting for sheet thicknesses from 1 to 3 mm
- Multiple fan solution on request
- Dimensions, cut-outs and tolerances see user manual



01108061 01108062

Air filtered fan FL 225

Air outlet/inlet filter FLA 225

Sheet thicknesses 1 ... 2 mm - cut-out 177 x 177 mm;  
Sheet thicknesses >2 ... 3 mm - cut-out 178 x 178 mm

# Climate control – Air filtered fans

## AIR FILTERED FAN FL 250

- Airflow volume 125 m<sup>3</sup>/h
- Converts simply from push to pull operation
- Ingress protection IP 54, with fluted filter IP 55, NEMA type 12
- Simple to fit without tools by clipping in (can also be bolted)



### DELIVERY COMPRISES (completely assembled)

| Item | Qty | Description                                                                  |
|------|-----|------------------------------------------------------------------------------|
| 1    | 1   | Front grille and case, plastic, ABS, RAL 7035, self-extinguishing, UL 94 V-0 |
| 2    | 1   | Filter, filter class G 3 (EN 779)                                            |
| 3    | 1   | Fan                                                                          |
| 4    | 1   | Connection spring terminal strip                                             |

### ORDER INFORMATION

| Description                                                                                        | 115 V <sub>AC</sub><br>Part no. | 230 V <sub>AC</sub><br>Part no. |
|----------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------|
| Air filtered fan FL 250                                                                            | EF250-115R5                     | <b>EF250R5</b>                  |
| Air outlet/inlet filter FLA 250/300<br>(items 1 + 2 included), 1 piece                             |                                 | <b>FFA250-300R5</b>             |
| Replacement filter IP 54 for FL 250/300 and<br>FLA 250/300, filter class G 3 (EN 779), PU 5 pieces |                                 | <b>EFM250-300</b>               |
| Fluted filter IP 55 for FL 250/300 and FLA 250/300, filter class G 4<br>(EN 779), PU 5 pieces      |                                 | <b>FFMP250-300</b>              |



01108022



Air outlet/inlet filter FLA 250/300

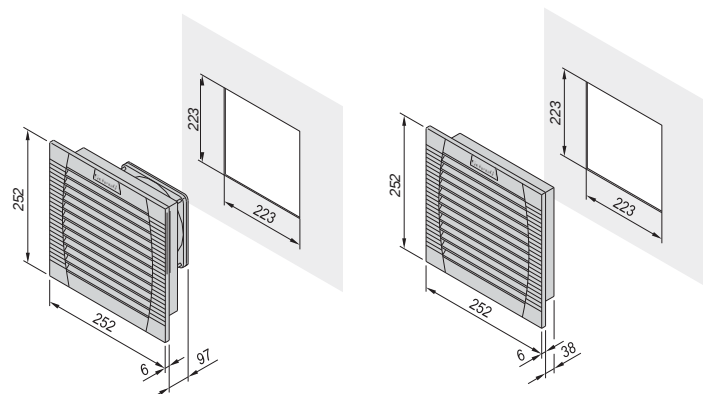
Fluted filter IP 55

01108019 01108021



Replacement filter IP 54

01108020



01108063 01108064

Air filtered fan FL 250  
Sheet thicknesses 1 ... 2 mm - cut-out 223 x 223 mm;  
Sheet thicknesses >2 ... 3 mm - cut-out 224 x 224 mm

### TECHNICAL DATA

| Voltage                                             | 230 V <sub>AC</sub>       | 115 V <sub>AC</sub>       |
|-----------------------------------------------------|---------------------------|---------------------------|
| Frequency                                           | 50/60 Hz                  | 50/60 Hz                  |
| Airflow volume with IP 54 filter (free blowing)     | 125/138 m <sup>3</sup> /h | 125/138 m <sup>3</sup> /h |
| Airflow volume with IP 55 filter (free blowing)     | 145/160 m <sup>3</sup> /h | 145/160 m <sup>3</sup> /h |
| Combination FL + FLA IP 54                          | 93/102 m <sup>3</sup> /h  | 93/102 m <sup>3</sup> /h  |
| Combination FL + FLA IP 55                          | 109/113 m <sup>3</sup> /h | 109/113 m <sup>3</sup> /h |
| Max. static pressure IP 54                          | 52 Pa                     | 52 Pa                     |
| Max. static pressure IP 55                          | 49 Pa                     | 49 Pa                     |
| Noise level (in accordance with EN ISO 3741, 50 Hz) | 40 dB(A)                  | 40 dB(A)                  |
| Max. ambient temperature                            | -15 ... +55 °C            | -15 ... +55 °C            |
| Power consumption                                   | 18/17 W                   | 18/17 W                   |
| Filter efficiency IP 54                             | 88 %                      | 88 %                      |
| Filter efficiency IP 55                             | 91 %                      | 91 %                      |
| MTBF at 40 °C                                       | 40000 h                   | 40000 h                   |
| Approvals                                           | CE, UL, cUL, GOST         |                           |

### NOTE

- Mounting for sheet thicknesses from 1 to 3 mm
- Multiple fan solution on request
- Dimensions, cut-outs and tolerances see user manual

# Climate control – Air filtered fans

## AIR FILTERED FAN FL 300



01108024

- Airflow volume 223 m³/h
- Converts simply from push to pull operation
- Ingress protection IP 54, with fluted filter IP 55, NEMA type 12
- Simple to fit without tools by clipping in (can also be bolted)



### DELIVERY COMPRISES (completely assembled)

| Item | Qty | Description                                                                 |
|------|-----|-----------------------------------------------------------------------------|
| 1    | 1   | Front grille and case, plastic ABS, RAL 7035, self-extinguishing, UL 94 V-0 |
| 2    | 1   | Filter, filter class G 3 (EN 779)                                           |
| 3    | 1   | Fan                                                                         |
| 4    | 1   | Connection spring terminal strip                                            |

### ORDER INFORMATION

| Description                                                                                     | 115 V <sub>AC</sub><br>Part no. | 230 V <sub>AC</sub><br>Part no. |
|-------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------|
| Air filtered fan FL 300                                                                         | EF300-115R5                     | <b>EF300R5</b>                  |
| Air outlet/inlet filter FLA 250/300 (items 1 + 2 included), 1 piece                             |                                 | <b>EFA250-300R5</b>             |
| Replacement filter IP 54 for FL 250/300 and FLA 250/300, filter class G 3 (EN 779), PU 5 pieces |                                 | <b>EFM250-300</b>               |
| Fluted filter IP 55 for FL 250/300 and FLA 250/300, filter class G 4 (EN 779), PU 5 pieces      |                                 | <b>EFMP250-300</b>              |



Air outlet/inlet filter FLA 250/300



Fluted filter IP 55

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Replacement filter IP 54

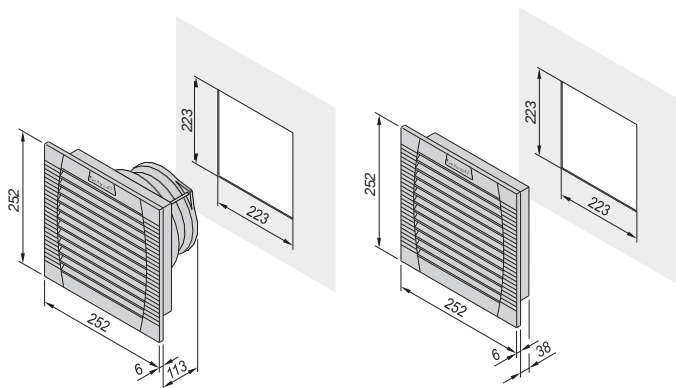
01108020

### TECHNICAL DATA

| Voltage                                             | 230 V <sub>AC</sub> | 115 V <sub>AC</sub> |
|-----------------------------------------------------|---------------------|---------------------|
| Frequency                                           | 50/60 Hz            | 50/60 Hz            |
| Airflow volume with IP 54 filter (free blowing)     | 223/247 m³/h        | 223/247 m³/h        |
| Airflow volume with IP 55 filter (free blowing)     | 233/265 m³/h        | 233/265 m³/h        |
| Combination FL + FLA IP 54                          | 201/223 m³/h        | 201/223 m³/h        |
| Combination FL + FLA IP 55                          | 180/207 m³/h        | 180/207 m³/h        |
| Max. static pressure IP 54                          | 116 Pa              | 116 Pa              |
| Max. static pressure IP 55                          | 112 Pa              | 112 Pa              |
| Noise level (in accordance with EN ISO 3741, 50 Hz) | 42 dB(A)            | 42 dB(A)            |
| Max. ambient temperature                            | -15 ... +55 °C      | -15 ... +55 °C      |
| Power consumption                                   | 45/39 W             | 50/45 W             |
| Filter efficiency IP 54                             | 88 %                | 88 %                |
| Filter efficiency IP 55                             | 91 %                | 91 %                |
| MTBF at 40 °C                                       | 40000 h             | 40000 h             |
| Approvals                                           | CE, UL, cUL, GOST   |                     |

### NOTE

- Mounting for sheet thicknesses from 1 to 3 mm
- Multiple fan solution on request
- Dimensions, cut-outs and tolerances see user manual



01108065 01108064

Air filtered fan FL 300      Air outlet/inlet filter FLA 250/350  
Sheet thicknesses 1 ... 2 mm - cut-out 223 x 223 mm;  
Sheet thicknesses >2 ... 3 mm - cut-out 224 x 224 mm

# Climate control – Air filtered fans

## AIR FILTERED FAN FL 500

- Airflow volume 480 m<sup>3</sup>/h
- Converts simply from push to pull operation
- Ingress protection IP 54, with fluted filter IP 55, NEMA type 12
- Simple to fit without tools by clipping in (can also be bolted)



### DELIVERY COMPRISES (completely assembled)

| Item | Qty | Description                                                                 |
|------|-----|-----------------------------------------------------------------------------|
| 1    | 1   | Front grille and case, plastic, ABS, RAL 7035, self-extinguishing UL 94 V-0 |
| 2    | 1   | Filter, filter class G3 (EN 779)                                            |
| 3    | 1   | Fan                                                                         |
| 4    | 1   | Connection spring terminal strip                                            |

### ORDER INFORMATION

| Description                                                                                             | 115 V <sub>AC</sub><br>Part no. | 230 V <sub>AC</sub><br>Part no. |
|---------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------|
| Air filtered fan FL 500                                                                                 | EF500-115R5                     | <b>EF500R5</b>                  |
| Air outlet/inlet filter FLA 500/600 (items 1 + 2 included), 1 piece                                     |                                 | <b>EFA500-700R5</b>             |
| Replacement filter IP 54 for FL 500/600 and FLA 500/600, filter class G 3 (EN 779), PU 5 pieces         |                                 | <b>EFM500-700</b>               |
| Fluted filter IP 55 for FL 500/600 and FLA 500/600, FLA 500/600, filter class G 4 (EN 779), PU 5 pieces |                                 | <b>EFMP500-700</b>              |



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Air outlet/inlet filter FLA 500/600

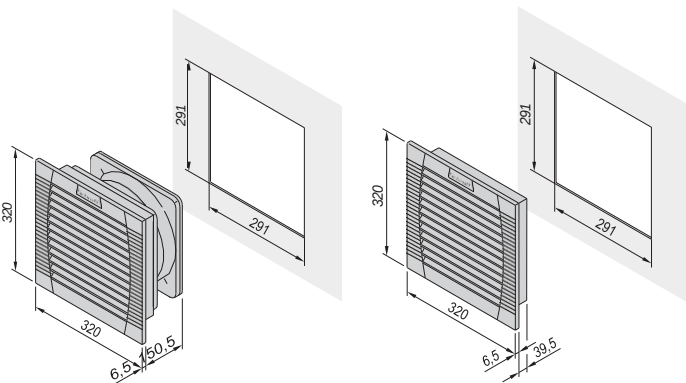
Fluted filter IP 55

01108019 01108021



Replacement filter IP 54

01108020



01108067 01108068

Air filtered fan FL 500/600      Air outlet/inlet filter FLA 500/600  
 Sheet thicknesses 1 ... 2 mm - cut-out 223 x 223 mm;  
 Sheet thicknesses >2 ... 3 mm - cut-out 224 x 224 mm

### TECHNICAL DATA

| Voltage                                             | 230 V <sub>AC</sub>       | 115 V <sub>AC</sub>       |
|-----------------------------------------------------|---------------------------|---------------------------|
| Frequency                                           | 50/60 Hz                  | 50/60 Hz                  |
| Airflow volume with IP 54 filter (free blowing)     | 480/480 m <sup>3</sup> /h | 480/480 m <sup>3</sup> /h |
| Airflow volume with IP 55 filter (free blowing)     | 505/505 m <sup>3</sup> /h | 505/505 m <sup>3</sup> /h |
| Combination FL + FLA IP 54                          | 370/370 m <sup>3</sup> /h | 370/370 m <sup>3</sup> /h |
| Combination FL + FLA IP 55                          | 380/380 m <sup>3</sup> /h | 380/380 m <sup>3</sup> /h |
| Max. static pressure IP 54                          | 76 Pa                     | 76 Pa                     |
| Max. static pressure IP 55                          | 74 Pa                     | 74 Pa                     |
| Noise level (in accordance with EN ISO 3741, 50 Hz) | 54 dB(A)                  | 54 dB(A)                  |
| Max. ambient temperature                            | -15 ... +55 °C            | -15 ... +55 °C            |
| Power consumption                                   | 80/100 W                  | 90/110 W                  |
| Filter efficiency IP 54                             | 88 %                      | 88 %                      |
| Filter efficiency IP 55                             | 91 %                      | 91 %                      |
| MTBF at 40 °C                                       | 40000 h                   | 40000 h                   |
| Approvals                                           | CE, UL, cUL, GOST         |                           |

### NOTE

- Mounting for sheet thicknesses from 1 to 3 mm
- Multiple fan solution on request
- Dimensions, cut-outs and tolerances see user manual

# Climate control – Air filtered fans

## AIR FILTERED FAN FL 600



01108025

- Airflow volume 640 m³/h
- Converts simply from push to pull operation
- Ingress protection IP 54, with fluted filter IP 55, NEMA type 12
- Simple to fit without tools by clipping in (can also be bolted)



### DELIVERY COMPRISES (completely assembled)

| Item | Qty | Description                                                                  |
|------|-----|------------------------------------------------------------------------------|
| 1    | 1   | Front grille and case, plastic, ABS, RAL 7035, self-extinguishing, UL 94 V-0 |
| 2    | 1   | Filter, filter class G 3 (EN 779)                                            |
| 3    | 1   | Fan                                                                          |
| 4    | 1   | Connection spring terminal strip                                             |

### ORDER INFORMATION

| Description                                                                                     | 115 V <sub>AC</sub><br>Part no. | 230 V <sub>AC</sub><br>Part no. |
|-------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------|
| Air filtered fan FL 600                                                                         | EF600-115R                      | <b>EF600R5</b>                  |
| Air outlet/inlet filter FLA 500/600 (items 1 + 2 included), 1 piece                             |                                 | <b>EFA500-700R5</b>             |
| Replacement filter IP 54 for FL 500/600 and FLA 500/600, filter class G 3 (EN 779), PU 5 pieces |                                 | <b>EFM500-700</b>               |
| Fluted filter IP 55 for FL 500/600 and FLA 500/600, filter class G 4 (EN 779), PU 5 pieces      |                                 | <b>EFMP500-700</b>              |



Air outlet/inlet filter FLA 500/600



Fluted filter IP 55

01108019 01108021



Replacement filter IP 54

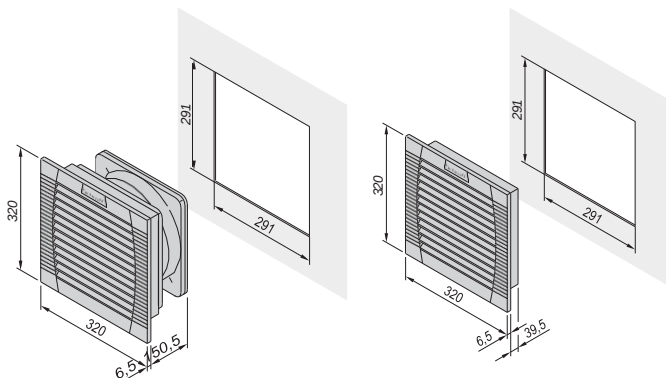
01108020

### TECHNICAL DATA

| Voltage                                            | 230 V <sub>AC</sub> | 115 V <sub>AC</sub> |
|----------------------------------------------------|---------------------|---------------------|
| Frequency                                          | 50/60 Hz            | 50/60 Hz            |
| Airflow volume with IP 54 filter (free blowing)    | 640/653 m³/h        | 640/653 m³/h        |
| Airflow volume with IP 55 filter (free blowing)    | 770/785 m³/h        | 770/785 m³/h        |
| Combination FL + FLA IP 54                         | 445/445 m³/h        | 445/445 m³/h        |
| Combination FL + FLA IP 55                         | 490/501 m³/h        | 490/501 m³/h        |
| Max. static pressure IP 54                         | 134 Pa              | 134 Pa              |
| Max. static pressure IP 55                         | 132 Pa              | 132 Pa              |
| Noise level in accordance with EN ISO 3741, 50 Hz) | 63 dB(A)            | 63 dB(A)            |
| Max. ambient temperature                           | -15 ... +55 °C      | -15 ... +55 °C      |
| Power consumption                                  | 120/160 W           | 130/170 W           |
| Filter efficiency IP 54                            | 88 %                | 88 %                |
| Filter efficiency IP 55                            | 91 %                | 91 %                |
| MTBF at 40 °C                                      | 40000 h             | 40000 h             |
| Approvals                                          | CE, UL, cUL, GOST   |                     |

### NOTE

- Mounting for sheet thicknesses from 1 to 3 mm
- Multiple fan solution on request
- Dimensions, cut-outs and tolerances see user manual



01108067 01108068

Air filtered fan FL 500/600      Air outlet/inlet filter FLA 500/600  
 Sheet thicknesses 1 ... 2 mm - cut-out 223 x 223 mm;  
 Sheet thicknesses >2 ... 3 mm - cut-out 224 x 224 mm

# Climate control – Accessories

## HEATERS FROM 10 W TO 150 W



10 / 20 W

Dimension drawing



50 / 100 / 150 W

- Compact heater without fan
- Simple and fast assembly with clip-on attachment
- Broad range voltage input AC/DC 120 ... 240 V
- Low surface temperature, protective insulation, and temperature limitation with PTC resistance



### DELIVERY INCLUDES (completely assembled)

| Item | Qty | Description                                                                                                         |
|------|-----|---------------------------------------------------------------------------------------------------------------------|
| 1    | 1   | Heater element, voltage AC/DC 100 ... 240 V; PTC resistor, self-regulating                                          |
| 2    | 1   | Heating body housing, plastic UL94 V-0; type of fixing: Clip for 35 mm DIN rail EN 60715                            |
| 3    | 1   | Connection: 2-pin (10 W, 20 W) and/or 4-pin (50 W, 100 W, 150 W) terminal, 2.5 mm <sup>2</sup> , torque 0.8 Nm max. |

### ORDER INFORMATION

| Description | Part no.         |
|-------------|------------------|
| 10 W        | <b>60715-220</b> |
| 20 W        | <b>60715-221</b> |
| 50 W        | <b>60715-222</b> |
| 100 W       | <b>60715-223</b> |
| 150 W       | <b>60715-224</b> |

### NOTE

- Thermostat for heating see page 4.65
- Hygrostat see page 4.68

### TECHNICAL DATA

|                             | 10 W                                             | 20 W         | 50 W                                   | 100 W         | 150 W         |
|-----------------------------|--------------------------------------------------|--------------|----------------------------------------|---------------|---------------|
| Heater output in W          | 10                                               | 20           | 50                                     | 100           | 150           |
| Max. switch-on current in A | 1.0                                              | 2.5          | 2.5                                    | 4.5           | 8.0           |
| Pre-fuse, delay-action in A | 2.0                                              | 4.0          | 4.0                                    | 8.0           | 10.0          |
| Type of protection          | IP 20                                            | IP 20        | IP 20                                  | IP 20         | IP 20         |
| Class of protection         | II                                               | II           | II                                     | II            | II            |
| Dimensions H × W × D in mm  | 98 × 38 × 75                                     | 98 × 38 × 75 | 110 × 60 × 90                          | 110 × 60 × 90 | 150 × 60 × 90 |
| Weight in kg                | 0.2                                              | 0.3          | 0.3                                    | 0.3           | 0.5           |
| Connection                  | 2-pin terminal, 2.5 mm², torque 0.8 Nm           |              | 4-pin terminal, 2.5 mm², torque 0.8 Nm |               |               |
| Surface temperature in °C   | < + 80°C, with exception of above mesh surface   |              |                                        |               |               |
| Test seal                   | CE, UL, VDE, EAC, RoHS                           |              |                                        |               |               |
| Mounting                    | Clip-on attachment for 35 mm DIN rail (EN 60715) |              |                                        |               |               |

# Climate control – Accessories

## HEATERS WITH HEATER FANS FROM 150 W TO 400 W



- Compact heater with fan, small, compact design with high heater output
- Simple and fast assembly with clip-on attachment or bolt fixing
- Dynamic heating up and temperature limitation by PTC technology
- Quiet



### DELIVERY INCLUDES (completely assembled)

| Item | Qty | Description                                                                              |
|------|-----|------------------------------------------------------------------------------------------|
| 1    | 1   | Heater element, voltage 230 V <sub>AC</sub> , resistor (PTC resistance) self-regulating  |
| 2    | 1   | Heating body housing, plastic UL94 V-0; type of fixing: Clip for 35 mm DIN rail EN 60715 |
| 3    | 1   | Axial fan, airflow from bottom to top                                                    |
| 4    | 1   | Connection: 2-pin terminal, 2.5 mm <sup>2</sup> , torque 0.8 Nm max.                     |

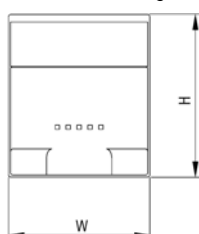
### ORDER INFORMATION

| Description | Part no.         |
|-------------|------------------|
| 150 W       | <b>60715-225</b> |
| 250 W       | <b>60715-226</b> |
| 400 W       | <b>60715-227</b> |

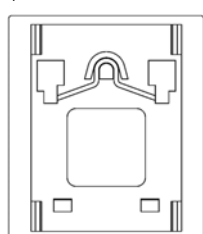
### NOTE

- Thermostat for heating see page 4.65
- Hygrostat see page 4.68

Dimension drawing



Clip attachment



01116050

01116051

### TECHNICAL DATA

|                                | 150 W                                                    | 250 W                | 400 W                                          |
|--------------------------------|----------------------------------------------------------|----------------------|------------------------------------------------|
| Heater output in W             | 150                                                      | 250                  | 400                                            |
| Max. switch-on current in A    | 9.0                                                      | 12                   | 15                                             |
| Pre-fuse, delay-action in A    | 10                                                       | 10                   | 16                                             |
| Axial fan, free blowing output | 13.8 m <sup>3</sup> /h                                   | 45 m <sup>3</sup> /h | 45 m <sup>3</sup> /h                           |
| Type of protection             | IP 20                                                    | IP 20                | IP 20                                          |
| Class of protection            | II                                                       | II                   | II                                             |
| Dimensions H × W × D in mm     | 75 × 65 × 90                                             | 90 × 85 × 111        | 90 × 85 × 111                                  |
| Weight in kg                   | 0.3                                                      | 0.5                  | 0.5                                            |
| Surface temperature in °C      | < + 50°C, with exception of above mesh surface           |                      | < + 65°C, with exception of above mesh surface |
| Connection                     | 2-pin terminal, 2.5 mm <sup>2</sup> , torque 0.8 Nm max. |                      |                                                |
| Test seal                      | CE, UL, VDE, EAC, RoHS                                   |                      |                                                |
| Mounting                       | Clip-on attachment for 35 mm DIN rail (EN 60715)         |                      |                                                |

# Climate control – Accessories

## HEATERS FROM 30 W TO 150 W

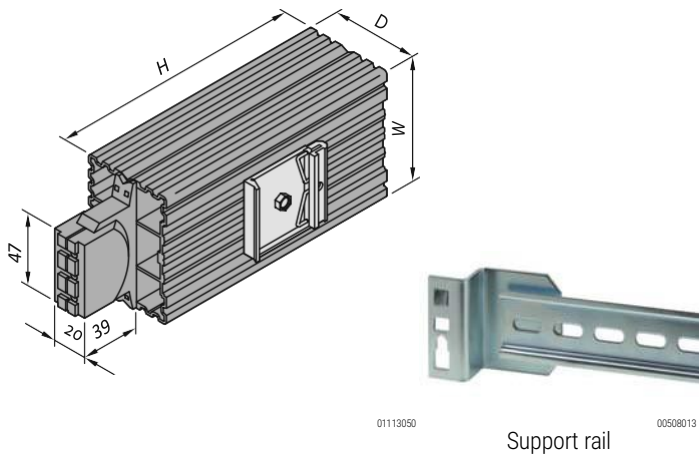


- Radiator heater (without fan)
- Simple and fast assembly with clip-on attachment and press-on terminal connection
- Wide input voltage range 110 ... 250 V<sub>AC</sub>
- Temperature limiting with PTC resistor



### DELIVERY COMPRISES (completely assembled)

| Item | Qty | Description                                                                                                                                                                                                             |
|------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | 1   | Heater element, voltage range 110 ... 250 V <sub>AC</sub> ; resistor (PTC) self-regulating                                                                                                                              |
| 2    | 1   | Heating body, Al extrusion, anodised<br>Fixing: clip for 35 mm DIN rail EN 50022                                                                                                                                        |
| 3    | 1   | Connection:<br>type 30, with connecting cable<br>(3 x 0.5 mm <sup>2</sup> , 300 mm long, black);<br>type 45, 100, 150 with press-on terminal connection<br>(for stranded/rigid wire 3 x 0.5 ..... 2.5 mm <sup>2</sup> ) |



### ORDER INFORMATION

| Description                                                    | 30<br>Part no.   | 45<br>Part no.   | 100<br>Part no.  | 150<br>Part no.  |
|----------------------------------------------------------------|------------------|------------------|------------------|------------------|
| Heaters from 30 W to 150 W                                     | <b>60715-020</b> | <b>60715-021</b> | <b>60715-023</b> | <b>60715-030</b> |
| Support rail DIN rail EN 50022 (35 mm), length 215 mm, 1 piece |                  |                  |                  | <b>20715-001</b> |

### TECHNICAL DATA

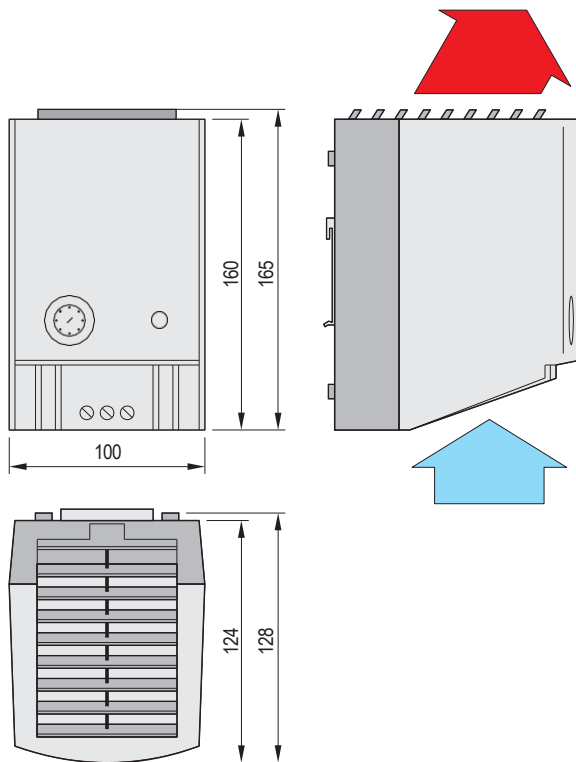
|                             | 30 W                                             | 45 W                  | 100 W                 | 150 W                 |
|-----------------------------|--------------------------------------------------|-----------------------|-----------------------|-----------------------|
| Heater output in W          | 30                                               | 45                    | 100                   | 150                   |
| Surface temperature in °C   | approx. 100                                      | approx. 105           | approx. 130           | approx. 140           |
| Max. switch-on current in A | 3,0                                              | 3,5                   | 4,0                   | 9,0                   |
| Type of protection          | IP 54                                            | IP 20                 | IP 20                 | IP 20                 |
| Class of protection         | I                                                | I                     | I                     | I                     |
| Dimensions H x W x D in mm  | 70 x 25 x 50                                     | 69 x 70 x 50          | 144 x 70 x 50         | 224 x 70 x 50         |
| Weight in kg                | 0.2                                              | 0.3                   | 0.5                   | 0.7                   |
| Test seal                   | VDE, CE, UL (File E150057)                       | CE, UL (File E150057) | CE, UL (File E150057) | CE, UL (File E150057) |
| Assembly                    | Clip-on attachment for 35 mm DIN rail (EN 50022) |                       |                       |                       |

### NOTE

- Thermostat for heating see page 4.65
- Hygrostat see page 4.68

# Climate control – Accessories

## HEATER FANS 475/550 W



Support rail

- Heater with fan and thermostat
- Simple and fast assembly with clip-on attachment
- 3-pin terminal clamp, separate heater/fan connection
- Thermostat from 0 ... 60 °C
- Temperature limiting with PTC resistor



### DELIVERY COMPRISES (completely assembled)

| Item | Qty | Description                                                                             |
|------|-----|-----------------------------------------------------------------------------------------|
| 1    | 1   | Plastic housing, polycarbonate (RAL 9002, grey white), clip for 35 mm DIN rail EN 50022 |
| 2    | 1   | Heater element, 230 V <sub>AC</sub> , resistor (PTC) self-regulating                    |
| 3    | 1   | Thermostat                                                                              |
| 4    | 1   | 230 V <sub>AC</sub> fan                                                                 |

### ORDER INFORMATION

| Description                                                    | Part no.         |
|----------------------------------------------------------------|------------------|
| Heater 475 W                                                   | <b>60715-017</b> |
| Heater 550 W                                                   | <b>60715-018</b> |
| Support rail DIN rail EN 50022 (35 mm), length 215 mm, 1 piece | <b>20715-001</b> |

### TECHNICAL DATA

|                                | 230 V <sub>AC</sub>                                                              |                      |                      |                      |
|--------------------------------|----------------------------------------------------------------------------------|----------------------|----------------------|----------------------|
|                                | 50 Hz                                                                            | 60 Hz                | 50 Hz                | 60 Hz                |
| Voltage range                  |                                                                                  |                      |                      |                      |
| Frequency                      | 50 Hz                                                                            | 60 Hz                | 50 Hz                | 60 Hz                |
| Heater output                  | <b>475 W</b>                                                                     | 550 W                | <b>550 W</b>         | 650 W                |
| Air capacity of axial fan      | 35 m <sup>3</sup> /h                                                             | 39 m <sup>3</sup> /h | 45 m <sup>3</sup> /h | 50 m <sup>3</sup> /h |
| Current at switch-on approx.   | 11 A                                                                             |                      | 13 A                 |                      |
| Weight                         | 0.9 kg                                                                           |                      | 1.1 kg               |                      |
| Heater element                 | Resistor (PTC), self-regulating                                                  |                      |                      |                      |
| Connection                     | 3-pin connecting terminal, 2.5 mm <sup>2</sup> , separate connection heating/fan |                      |                      |                      |
| Thermostat                     | Adjustment range 0 ... 60 °C                                                     |                      |                      |                      |
| Control lamp of control system | Glow lamp                                                                        |                      |                      |                      |
| Temperature control            | In the event of fan failure                                                      |                      |                      |                      |
| Type of protection             | IP 20                                                                            |                      |                      |                      |
| Class of protection            | II                                                                               |                      |                      |                      |
| Assembly                       | Clip-on attachment for 35 mm DIN rail (EN 50022)                                 |                      |                      |                      |
| Dimensions                     | Height 165 mm, width 100 mm, depth 128 mm                                        |                      |                      |                      |

# Climate control – Accessories

## HEATER FAN 400 W, MODULAR



Example of a complete heater unit: 1: heater, 2: fan, 3: protective grille, connection cable



Heater element



Support rail

- Modular system consisting of: heater element, fan, protective grille and connecting cable
- Fan not included in delivery extent; please order fan with desired air capacity separately
- Simple and fast assembly with clip-on attachment
- Overheating protection through thermal switch



### DELIVERY COMPRISES (completely assembled)

| Item | Qty | Description                                              |
|------|-----|----------------------------------------------------------|
| 1    | 1   | Heater element, high-performance cartridge               |
| 2    | 1   | Connecting cable fan - heating distributor, length 0.3 m |
| 3    | 1   | GND/earth cable, ring tag - open end, length 0.3 m       |
| 4    | 1   | Clip-on attachment for DIN rail with assembly kit        |

### ORDER INFORMATION

| Description                                                    | 230 V <sub>AC</sub><br>Part no. |
|----------------------------------------------------------------|---------------------------------|
| Heater fan 400 W, modular                                      | <b>60715-029</b>                |
| Support rail DIN rail EN 50022 (35 mm), length 215 mm, 1 piece | <b>20715-001</b>                |

### TECHNICAL DATA

|                                |                                  |
|--------------------------------|----------------------------------|
| Voltage range                  | 230 V <sub>AC</sub>              |
| Current at switch-on           | 1.8 A                            |
| Heater output                  | 400 W                            |
| Air capacity m <sup>3</sup> /h | Please choose desired fan        |
| Surface temperature with fan   | Approx. 140 °C                   |
| Type of protection             | IP 20                            |
| Class of protection            | I, with GND/earthing             |
| Dimensions:                    | 22 x 120 x 160                   |
| height x width x depth in mm   |                                  |
| Assembly                       | Clip for 35 mm DIN rail EN 50022 |

### NOTE

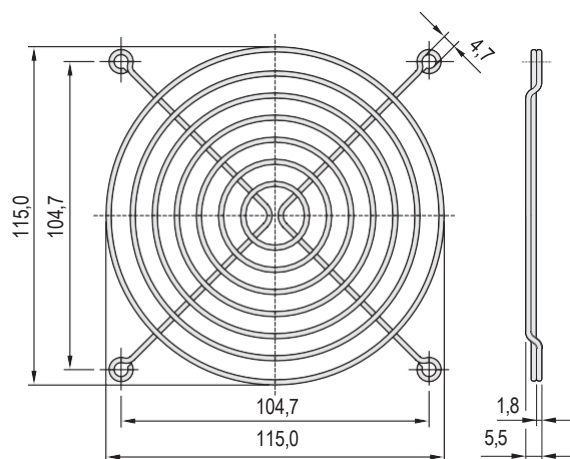
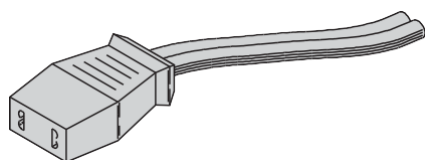
- **Attention:** Danger of overheating, never use heater without fan
- Fan see page 4.63
- Thermostat for heating see page 4.65
- Hygrostat see page 4.68

# Climate control – Accessories

## AC FANS FOR HEATING 400 W



Connecting cable



Protective grille

- The fan is screwed below the heater and the cable is connected to the heater (please order connecting cable and protective grille separately)

### DELIVERY COMPRISES

| Item | Qty | Description                      |
|------|-----|----------------------------------|
| 1    | 1   | Fan (width 119 mm, depth 119 mm) |

### ORDER INFORMATION

|                                                                                             | Height<br>mm | Airflow volume<br>m³/h | 115 V <sub>AC</sub><br>Part no. | 230 V <sub>AC</sub><br>Part no. |
|---------------------------------------------------------------------------------------------|--------------|------------------------|---------------------------------|---------------------------------|
| Type A                                                                                      | 25           | 84                     | <b>20713-146</b>                | <b>20713-142</b>                |
| Type B                                                                                      | 25           | 108                    | <b>20713-147</b>                | <b>20700-001</b>                |
| Type C                                                                                      | 38           | 162                    | <b>20713-244</b>                | <b>20713-243</b>                |
| PVC (2 x 0.75 mm²), 1 m long with 2 Faston connectors 2.8 x 0.5 mm to DIN 46343 T1, 1 piece |              |                        |                                 | <b>21101-246</b>                |
| Protective grille, metal, to screw-on                                                       |              |                        |                                 | <b>60197-019</b>                |

### DIMENSIONS AC fans

| Type                                                      | Type A |    | Type B |     | Type C |     |
|-----------------------------------------------------------|--------|----|--------|-----|--------|-----|
| Frequency in Hz                                           | 50     | 60 | 50     | 60  | 50     | 60  |
| Airflow volume in m³/h                                    | 84     | 90 | 108    | 120 | 162    | 192 |
| Noise level per fan in dB(A)                              | 29     | 30 | 34     | 38  | 37     | 41  |
| Max. static pressure in Pa                                | 23     | 21 | 41     | 41  | 73     | 88  |
| Max. ambient temperature in °C                            | 70     | 70 | 70     | 70  | 70     | 70  |
| Power consumption in W                                    | 8      | 7  | 14     | 11  | 15     | 14  |
| Dimensions: height in mm<br>(width 119 mm x depth 119 mm) | 25     |    | 25     |     | 38     |     |

### NOTE

- Please order connection cable and protective grille separately

# Climate control – Accessories

## SPEED CONTROL FOR FANS WITH C13 / C 14 PLUG



- Suitable for all AC fans and fan units (up to 300 W) with IEC 60320 C13 plug (plug & play). Suitable for DC fans with PWM signal and EC fans with PWM signal
- Simple to mount on the support rail provided
- Simple adjustment of switch-on temperature (with knob and digital display)
- External sensor can be fitted at a desired measurement point
- Open-collector output (parametrisable)
  - Alarm output (active/passive)
  - Remote display (via optional digital display with front panel)

### DELIVERY COMPRISES

| Item | Qty | Description                                                                              |
|------|-----|------------------------------------------------------------------------------------------|
| 1    | 1   | Speed controller; input/output voltages 115 ... 240 V <sub>AC</sub> , see Technical Data |
| 2    | 1   | Temperature sensor, cable length 1.9 m                                                   |
| 3    | 1   | Fan cable, with IEC 60320 socket, 2.0m                                                   |
| 4    | 1   | Mains cable, with IEC 60320 connecting plug, 0,5m                                        |
| 5    | 1   | Support rail, St, zinc-plated (EN 50022)                                                 |
| 6    | 1   | Assembly kit                                                                             |

Please order the connecting cables / main cables separately

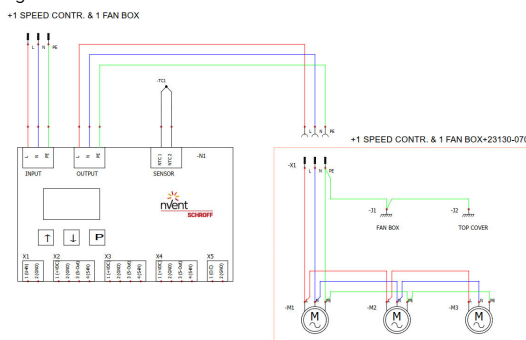
### ORDER INFORMATION

| Speed control for fans with C13 plug                                                                    | Part no.         |
|---------------------------------------------------------------------------------------------------------|------------------|
| Mains cable IEC 60320 C13 Plug                                                                          | <b>20118-900</b> |
| <b>Accessories</b>                                                                                      |                  |
| Thermostat with digital display 230 V <sub>AC</sub> , 1 piece                                           | <b>Page 4.67</b> |
| Thermostat with digital display 115 V <sub>AC</sub> , 1 piece                                           | <b>Page 4.67</b> |
| Connecting cable for alarm output and remote display, length 2 m, 2-wire (0.5mm <sup>2</sup> ), 1 piece | <b>24630-253</b> |
| Connection cable, SCHUKO/UTE connector IEC C13 plug                                                     | <b>62150-191</b> |
| Connection cable, IEC C13 plug / connector IEC C13                                                      | <b>60197-053</b> |
| Connection cable, BS connector IEC C13 plug                                                             | <b>60103-137</b> |
| Connecting cable for EC and DC fan with PWM/Tacho signal                                                | on request       |

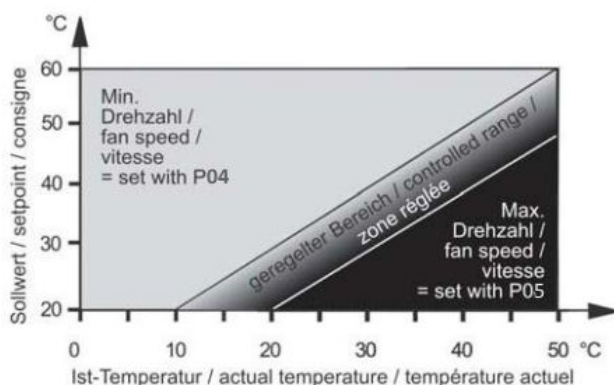
### TECHNICAL DATA

|                           |                                                                                                                          |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Voltage range             | 115 ... 240 V <sub>AC</sub> (90 ... 264 V <sub>AC</sub> ), 12-48 V <sub>DC</sub> ±5%                                     |
| Frequency                 | 48 ... 62 Hz                                                                                                             |
| Power consumption         | 0,5W (AC) <1W (DC)                                                                                                       |
| Display                   | LCD display, height 13 mm, red                                                                                           |
| Max. connection power     | 300 W (230 V <sub>AC</sub> ), 150 W (115 V <sub>AC</sub> )                                                               |
| Max. continuous current   | 1.3A (AC), 4A (DC) without fuse                                                                                          |
| Adjustment range          | +20 ... +60 °C                                                                                                           |
| Fan speed frequency       | 25 ... 100 % (AC fan); 15 ... 100% (DC/ EC fan)                                                                          |
| Sensor                    | External NTC resistor                                                                                                    |
| In case of sensor failure | Max. speed                                                                                                               |
| Fan connection            | Cable with C13 IEC 60320 socket, 2.0m                                                                                    |
| Open-collector output     | Mini Fit plus contact, Open Collector (potential free), max. 48V <sub>DC</sub> + 5%, max. 50mA (U <sub>low</sub> ≤ 0,5V) |
| Mains connection          | Cable with plug, 0.5m                                                                                                    |
| Mechanics                 | Case, IP 20, plastic, weight 0.5 kg, mounts on horizontal rail with lip DIN EN 50022                                     |
| Dimensions                | Width 90 mm, height 90 mm, depth 33 mm                                                                                   |
| Environmental conditions  | 0 ... 60°C, max. 85 % rel. humidity, non-condensing                                                                      |

### Block diagram



### Speed varies in relation to temperature



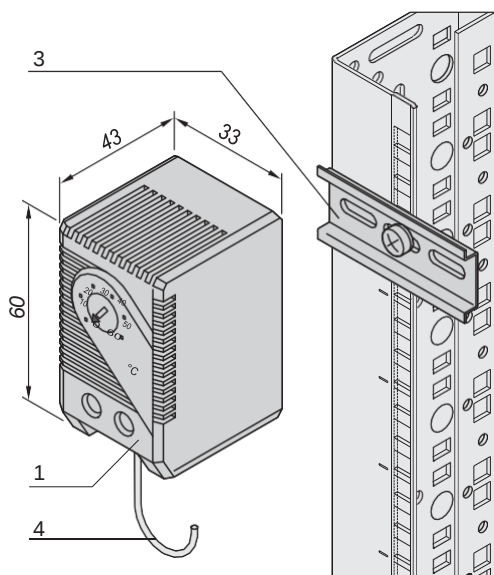
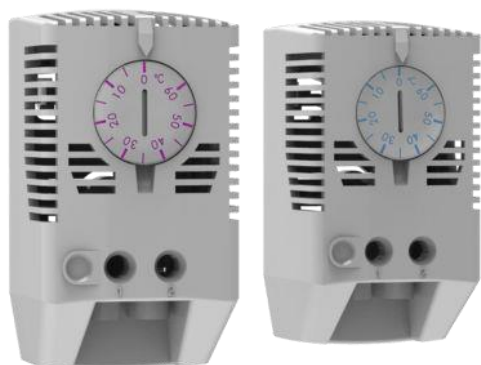
0111051

### NOTE

- Thermostat with digital display, see page 4.67

# Climate control – Accessories

## THERMOSTAT WITH INTEGRATED TEMPERATURE SENSOR



Connection cable: 2-pin, ferrules - IEC socket



Connection cable: 2-pin, ferrules - 3-pin, ferrules

- To control fans or heaters
- Adjustment range 0 ... 60 °C
- Individual adaptation with three separate components: thermostat (for cooling or heating), assembly material, connecting cable (IEC connector or ferrules)
- 2 versions
  - for heating
  - for cooling



### DELIVERY COMPRISES

| Item | Qty | Description                                                                                                                                      |
|------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | 1   | Thermostat, width 33 mm, height 60 mm, depth 43 mm; clip-on attachment for 35 mm DIN rail EN 50022, switched voltage 120 ... 250 V <sub>AC</sub> |
| 2    | 1   | User manual                                                                                                                                      |

### ORDER INFORMATION

| Description                                   | Part no.<br>for cooling | Part no.<br>for heating |
|-----------------------------------------------|-------------------------|-------------------------|
| Thermostat with integrated temperature sensor | <b>ETR201</b>           | <b>ETR202</b>           |

### Accessories

|                                                                                                                                                                            |                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Item 3 DIN rail (EN 50022) 35 mm; length 75 mm; with fixing materials kit, PU 1 set                                                                                        | <b>21120-178</b> |
| Item 4 Connection cable, SCHUKO/UTE connector, cable length 1.5 m; connection on thermostat/hygrostat, 2-pin, ferrules; connection on fan IEC socket; 1 piece              | <b>62150-201</b> |
| Item 4 Connection cable, SCHUKO/UTE connector, cable length 1.5 m; connection on thermostat/hygrostat, 2-pin, ferrules; connection on fan/heater, 3-pin, ferrules, 1 piece | <b>62150-264</b> |

### DIMENSIONS

| Thermostat                       | for cooling (make contact),<br>blue control button                                | for heating (break contact),<br>red control button |
|----------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------|
| Adjustment range                 | 0 ... 60 °C                                                                       |                                                    |
| Switching temperature difference | 7 K (± 4 K tolerance)                                                             |                                                    |
| Sensing element                  | Thermobimetal (snap-action contact)                                               |                                                    |
| Contact resistance               | <10 mΩ                                                                            |                                                    |
| Lifespan                         | >100000 cycles                                                                    |                                                    |
| Max. switch performance          | 10 A at 250 V <sub>AC</sub> , 15 A at 120 V <sub>AC</sub> ;<br>30 W at DC voltage |                                                    |
| Connection                       | 2-pin clamp, up to 2.5 mm <sup>2</sup> ,<br>torque max. 0.5 Nm                    |                                                    |
| Case                             | Plastic, in accordance with UL 94 V-0, light grey                                 |                                                    |
| Dimensions                       | Height 60 mm, width 33 mm, depth 43 mm                                            |                                                    |
| Assembly                         | Clip for 35 mm DIN rail, EN 50022                                                 |                                                    |
| Weight                           | 40 g                                                                              |                                                    |
| Operating/storage temperature    | -20 ... +80 °C/-45 ... +80 °C                                                     |                                                    |
| Protection class                 | IP 20                                                                             |                                                    |
| Plastic Material                 | UL94 V0, RAL 7035                                                                 |                                                    |

### ORDER INFORMATION

| Description                                                                                           | Part no.         |
|-------------------------------------------------------------------------------------------------------|------------------|
| Thermostat with integrated temperature sensor assembly material and cable (Schuko / UTE), 230V        | <b>24630-119</b> |
| Thermostat with integrated temperature sensor assembly material and cable (IEC 60320, C13 /C14), 230V | <b>24630-116</b> |

Part number in bold face type: ready for despatch within 2 working days

Part number in normal type: ready for despatch within 10 working days

# Climate control – Accessories

## THERMOSTAT WITH INTEGRATED TEMPERATURE SENSOR



01102008

- To control heaters or fans
- Adjustment range 5 ... 60 °C

### DELIVERY COMPRISES

| Item | Qty | Description                                                                                                                         |
|------|-----|-------------------------------------------------------------------------------------------------------------------------------------|
| 1    | 1   | Thermostat with clip-on attachment for 35 mm DIN rail EN 50022, voltage 200 ... 250 V <sub>AC</sub> and 100 ... 130 V <sub>AC</sub> |
| 2    | 1   | Support rail, length 200 mm                                                                                                         |
| 3    | 1   | Connection cable, length 1.5 m                                                                                                      |
| 4    | 1   | Strain relief                                                                                                                       |
| 5    | 1   | Assembly kit for cabinet assembly                                                                                                   |

### ORDER INFORMATION

| Description                                   | Part no.         |
|-----------------------------------------------|------------------|
| Thermostat with integrated temperature sensor | <b>20715-002</b> |

### TECHNICAL DATA

|                             |                                           |
|-----------------------------|-------------------------------------------|
| Dimensions                  | Height: 75 mm, width: 75 mm, depth: 25 mm |
| Adjustment range            | 5 ... 60 °C                               |
| Switch difference           | 0,5 K                                     |
| Supply voltage              | 200 ... 250 V <sub>AC</sub>               |
| Contact load                | Heat (terminals 1 - 2) 10 A / 4 A         |
| (ohmic load/inductive load) | Cool (terminals 1 - 3) 5 A / 2 A          |
| Contacts                    | Changeover contact, single pole           |
| Type of assembly            | Bolt-on, snap mounting for slide rail     |

## THERMOSTAT WITH EXTERNAL TEMPERATURE SENSOR



01102007

- To control heaters or fans
- External sensor can be positioned near the critical sub-assembly
- Adjustment range 20 ... 60 °C, switch difference 3 ... 10 K



### DELIVERY COMPRISES

| Item | Qty | Description                                                              |
|------|-----|--------------------------------------------------------------------------|
| 1    | 1   | Thermostat with external temperature sensor, sensor length approx. 1.7 m |
| 2    | 1   | Mounting plate for cabinet assembly, Al, 2.5 mm                          |
| 3    | 1   | Assembly kit                                                             |

### ORDER INFORMATION

| Description                                 | Part no.         |
|---------------------------------------------|------------------|
| Thermostat with external temperature sensor | <b>20715-003</b> |

### TECHNICAL DATA

|                                          |                            |
|------------------------------------------|----------------------------|
| Dimension (height x width x depth)       | 93 mm x 68 mm x 44 mm      |
| Adjustment range                         | 20 ... 60 °C               |
| Switching difference                     | 3 ... 10 K                 |
| Mains/line voltage                       | 90 ... 260 V <sub>AC</sub> |
| Contact load (ohmic load/inductive load) | 24 A/10 A                  |
| Contacts                                 | Change-over, single pin    |
| Assembly                                 | Screw-fixed                |

# Climate control – Accessories

## THERMOSTAT WITH DIGITAL DISPLAY



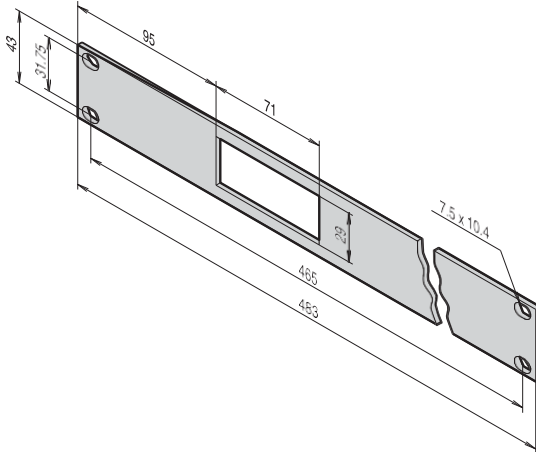
- Adjustment range from -50 to +100 °C (switch difference 0 ... 10 °C)
- Display switchable from °C to °F
- Programmable (secured against unauthorised operation)
- 3-character red segment display



### ORDER INFORMATION

| Description                                           | Part no.         |
|-------------------------------------------------------|------------------|
| Thermostat with digital display, 230 V <sub>AC</sub>  | <b>60715-132</b> |
| Thermostat with digital display, 115 V <sub>AC</sub>  | <b>60715-133</b> |
| Front panel 1 U, RAL 7035 with cut-out for thermostat | <b>30118-315</b> |
| Front panel 1 U, anodised with cut-out for thermostat | <b>30118-267</b> |
| Front panel 1 U, RAL 7021 with cut-out for thermostat | <b>30118-360</b> |

Front panel 1 U



### TECHNICAL DATA

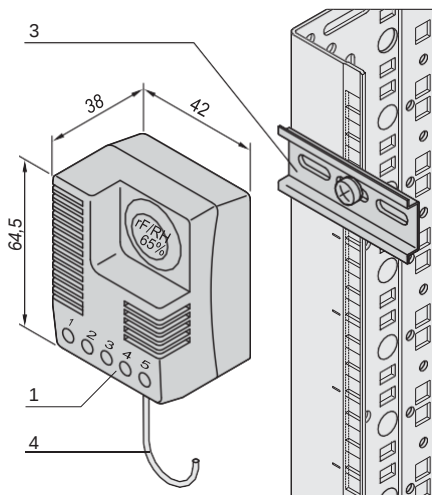
|                                          |                                                   |
|------------------------------------------|---------------------------------------------------|
| Operating voltage                        | 115 V <sub>AC</sub> or 230 V <sub>AC</sub>        |
| Power consumption                        | Approx. 3.5 W                                     |
| Dimensions                               | Height: 35 mm, width: 76 mm, depth: 59 mm         |
| Assembly cut-out                         | 28.8 × 70.5 mm                                    |
| Adjustment range                         | -50 ... +100 °C                                   |
| Switch difference                        | 0 ... 10 K selectable                             |
| Data safeguarding at power failure       | Non-volatile memory                               |
| Contact load (ohmic load/inductive load) | 8 A/3 A (ohmic/inductive load)                    |
| Input/sensor                             | PTC resistance, -55 ... +120 °C, cable length 3 m |
| Contacts                                 | Relay, changeover contact, single pin             |
| Protection class to front                | IP 54                                             |
| Connection                               | Screw-on terminals, 2.5 mm <sup>2</sup>           |
| Fixing                                   | With clamping bracket                             |
| Type of assembly                         | Can be screwed on                                 |

# Climate control – Accessories

## HYGROSTAT



Hygrostat with adjustable and permanently set relative humidity



connecting cable, connection cable, 2-pole, ferrule - IEC-(female) connector; input jack; bush; socket



connecting cable, connection cable, 2-pole, ferrules - ferrules

- Adjustable or fixed relative air humidity
- Switches fan or heaters when the set value is reached
- Visual display
- Integrated LED lights up when the connected consumer is switched on
- Individual adaptation with three separate components:  
Hygrostat, assembly material, connecting cable (input with SCHUKO/UTE connector; output with IEC connector or open end) please order separately



### DELIVERY INCLUDES (assembled)

| Item | Qty | Description                                                                                         |
|------|-----|-----------------------------------------------------------------------------------------------------|
| 1    | 1   | Hygrostat, width 42 mm, height 64.5 mm, depth 38 mm; clip-on attachment for 35 mm DIN rail EN 50022 |
| 2    | 1   | User manual                                                                                         |

### ORDER INFORMATION

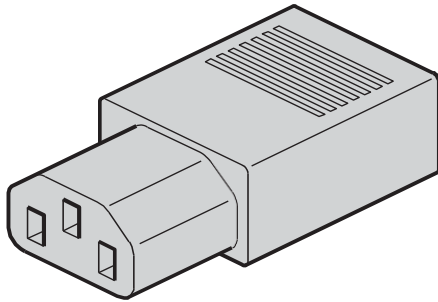
| Description                                                                                                                                                               | Part no.         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Hygrostat, fixed, 65 % air humidity                                                                                                                                       | <b>60715-138</b> |
| Hygrostat, adjustable, 40 ... 90 % air humidity                                                                                                                           | <b>60715-213</b> |
| <b>Accessories</b>                                                                                                                                                        |                  |
| DIN rail (EN 50022) Item 3 35 mm; length 75 mm; with fixing materials kit, PU 1 set                                                                                       | <b>21120-178</b> |
| Connection cable Item 4 SCHUKO/UTE connector, cable length 1.5 m; connection on thermostat/hygrostat, 2-pin, ferrules; connection on fan IEC socket; 1 piece              | <b>62150-201</b> |
| Connection cable Item 4 SCHUKO/UTE connector, cable length 1.5 m; connection on thermostat/hygrostat, 2-pin, ferrules; connection on fan/heater, 3-pin, ferrules, 1 piece | <b>62150-264</b> |

### TECHNICAL DATA

|                                           |                                                                |                                |
|-------------------------------------------|----------------------------------------------------------------|--------------------------------|
| <b>Supply voltage</b>                     | <b>230 V<sub>AC</sub>, 50/60 Hz</b>                            |                                |
| Default setting for relative air humidity | 65 % fixed                                                     | 40 ... 90% adjustable humidity |
| Switch difference                         | 5 % air humidity (w 1 % air humidity tolerance at 25 °C)       |                                |
| Switch contact                            | Changeover contact (relay)                                     |                                |
| Lifespan                                  | > 50,000 cycles                                                |                                |
| Max. switching capacity                   | 8 A (16 A for 10 s)                                            |                                |
| Mains supply                              | 2-pin terminal, up to 2.5 mm <sup>2</sup> , torque max. 0.5 Nm |                                |
| Output change-over relay                  | 3-pin terminal, up to 2.5 mm <sup>2</sup> , torque max. 0.5 Nm |                                |
| Case                                      | Plastic, in accordance with UL 94 V-0, light gray              |                                |
| Dimensions                                | Height 64.5 mm, width 42 mm, depth 38 mm                       |                                |
| Type of assembly                          | Clip for 35 mm DIN rail, EN 50022                              |                                |
| Weight                                    | 65 g                                                           |                                |
| Operating/storage temperature             | 0 ... +60 °C/-20 ... +70 °C                                    |                                |
| Max. storage humidity                     | 90 % air humidity (non-condensing)                             |                                |
| Type of protection                        | IP 20                                                          |                                |

# Climate control – Accessories

## IEC INPUT PLUG



- For connection of fans
- Bolted housing made of heat-resistant plastic (UL 94 V-0)
- 10 A/250 V<sub>AC</sub>, protection class I

### ORDER INFORMATION

| Description    | Part no.         |
|----------------|------------------|
| IEC input plug | <b>60715-046</b> |

KTA45246

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