PENTAIR

Schroff

# AIR FILTERED FANS

# Climate control – Air filtered fan



01105012

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



## 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




01108017
Air filtered fans


01108026
Outlet/inlet filters


01108016
Fluted filters

### Air filtered fans

- Airflow capacity of 25 $m^3/h$ ... 770 $m^3/h$ (FL 100 ... FL 600)
- 3 supply voltages (230 $V_{AC}$, 115 $V_{AC}$, 24 $V_{DC}$)
- 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



30407004

### ServicePLUS

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

www.schroff.biz/ServicePLUS

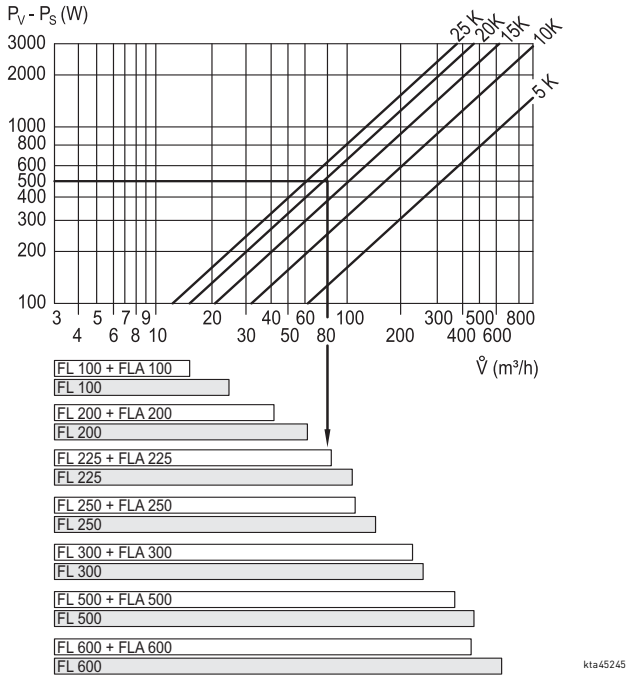
## Air filtered fan calculations

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:

**$V = f \times (P_V - P_S) / \Delta T$ with**

V = airflow volume
f = air constant = 3.3 m³ 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)
ΔT = temperature difference between the air drawn in (ambient temperature $T_u$) and the exhaust air (internal cabinet temperature $T_i$), $\Delta T = T_i - T_u$



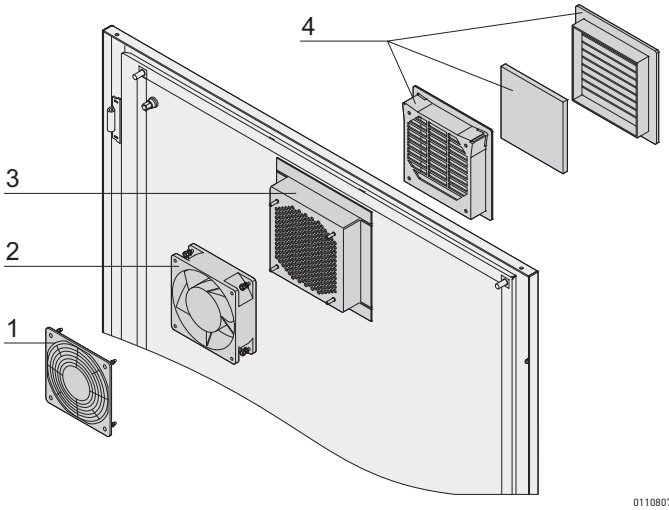

kta45245

## Reading example

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?

1. $P_V$ = 840 W, $P_S$ = 340 W, read-off point $P_V$ - $P_S$ = 500 W
2. $\Delta T = T_i - T_a$ = 40 °C - 20 °C = 20 °C = 20 K
3. 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.
4. 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.

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## 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 |

# Climate control – Air filtered fans

## Air filtered fan FL 100

01108018

- Airflow volume 25 $m^3/h$
- 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 $V_{DC}$ Part no. | 115 $V_{AC}$ Part no. | 230 $V_{AC}$ Part no. |
|---|---|---|---|
| Air filtered fan FL 100 | 60715-142 | 60715-141 | **60715-140** |
| **Air outlet/inlet filter FLA 100** (items 1 + 2 included), 1 piece | | | **60715-156** |
| **Replacement filter IP 54** for FL 100 and FLA 100, filter class G 3 (EN 779), PU 5 pieces | | | **60715-182** |

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Air outlet/inlet filter FLA 100

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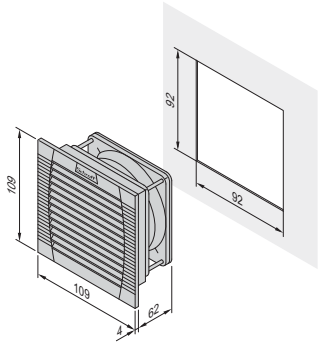
Replacement filter IP 54

### Technical data

| Voltage | 230 VAC | 115 VAC | 24 VDC |
|---|---|---|---|
| Frequency | 50/60 Hz | 50/60 Hz | DC |
| Airflow volume with filter (free blowing) | 25/29 $m^3/h$ | 25/29 $m^3/h$ | 25 $m^3/h$ |
| Combination FL + FLA | 16/18 $m^3/h$ | 16/18 $m^3/h$ | 16 $m^3/h$ |
| 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 | 11/11 W | 2.4 W |
| Filter efficiency | 88 % | 88 % | 88 % |
| MTBF at 40 °C | 40000 h | 40000 h | 80000 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

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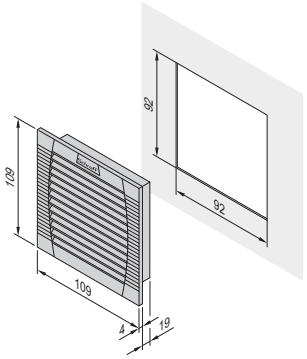
Air filtered fan FL 100

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Air outlet/inlet filter FLA 100

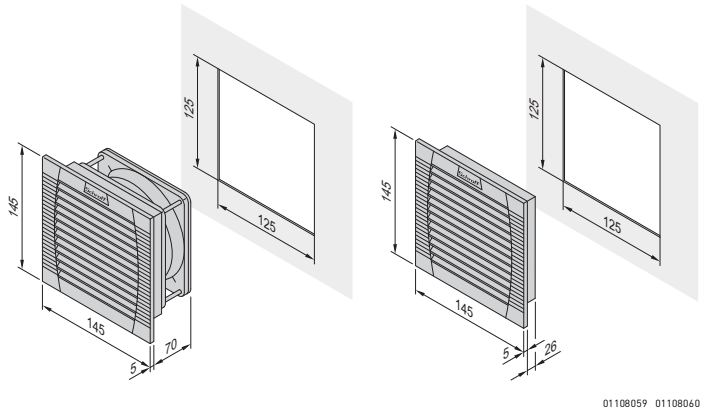
Sheet thicknesses 1 ... 2 mm - cut-out 92 x 92 mm;
Sheet thicknesses >2 ... 3 mm - cut-out 93 x 93 mm

## Air filtered fan FL 200



Air outlet/inlet filter FLA 200 Fluted filter IP 55


Replacement filter IP 54




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

- Airflow volume 61 $m^3/h$
- 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 $V_{DC}$ Part no. | 115 $V_{AC}$ Part no. | 230 $V_{AC}$ Part no. |
|---|---|---|---|
| Air filtered fan FL 200 | 60715-145 | 60715-144 | **60715-143** |
| **Air outlet/inlet filter FLA 200** (items 1 + 2 included), 1 piece | | | **60715-157** |
| **Replacement filter IP 54** for FL 200 and FLA 200, filter class G 3 (EN 779), PU 5 pieces | | | **60715-183** |
| **Fluted filter IP 55** for FL 200 and FLA 200, filter class G 4 (EN 779), PU 5 pieces | | | **60715-187** |

### Technical data

| Voltage | 230 VAC | 115 VAC | 24 VDC |
|---|---|---|---|
| Frequency | 50/60 Hz | 50/60 Hz | DC |
| Airflow volume with IP 54 filter (free blowing) | 61/70 $m^3/h$ | 61/70 $m^3/h$ | 61 $m^3/h$ |
| Airflow volume with IP 55 filter (free blowing) | 56/64 $m^3/h$ | 56/64 $m^3/h$ | 56 $m^3/h$ |
| Combination FL + FLA IP 54 | 44/52 $m^3/h$ | 44/52 $m^3/h$ | 44 $m^3/h$ |
| Combination FL + FLA IP 55 | 40/46 $m^3/h$ | 40/46 $m^3/h$ | 40 $m^3/h$ |
| 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 | 20/20 W | 5 W |
| Filter efficiency IP 54 | 83 % | 83 % | 83 % |
| Filter efficiency IP 55 | 91 % | 91 % | 91 % |
| MTBF at 40 °C | 40000 h | 40000 h | 80000 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


- Airflow volume 110 $m^3/h$
- 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 $V_{AC}$ Part no. | 230 $V_{AC}$ Part no. |
|---|---|---|
| Air filtered fan FL 225 | 60715-147 | **60715-146** |
| **Air outlet/inlet filter FLA 225** (items 1 + 2 included), 1 piece | | **60715-158** |
| **Replacement filter IP 54** for FL 225 and FLA 225, filter class G 3 (EN 779), PU 5 pieces | | **60715-184** |
| **Fluted filter IP 55** for FL 225 and FLA 225, filter class G 4 (EN 779), PU 5 pieces | | **60715-188** |


Air outlet/inlet filter FLA 225 Fluted filter IP 55

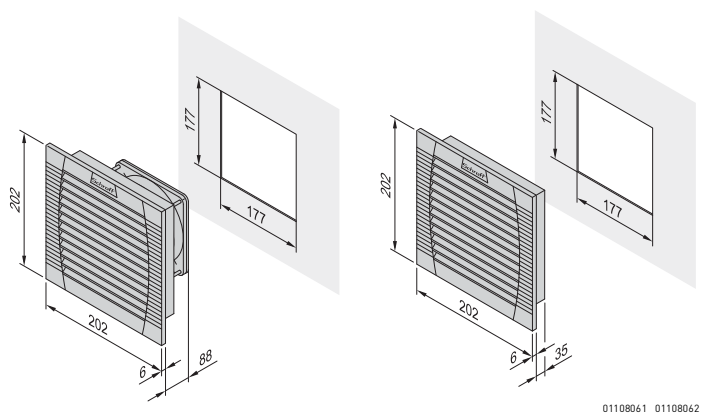

Replacement filter IP 54

### Technical data

| Voltage | 230 VAC | 115 VAC |
|---|---|---|
| Frequency | 50/60 Hz | 50/60 Hz |
| Airflow volume with IP 54 filter (free blowing) | 110/125 $m^3/h$ | 110/125 $m^3/h$ |
| Airflow volume with IP 55 filter (free blowing) | 100/110 $m^3/h$ | 100/110 $m^3/h$ |
| Combination FL + FLA IP 54 | 82/93 $m^3/h$ | 83/92 $m^3/h$ |
| Combination FL + FLA IP 55 | 55/64 $m^3/h$ | 55/64 $m^3/h$ |
| 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 | 20/20 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




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

## Air filtered fan FL 250


- Airflow volume 156 $m^3/h$
- 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)

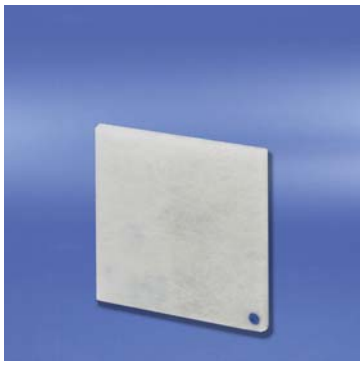
### Delivery comprises (completely assembled)

| 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 $V_{AC}$ Part no. | 230 $V_{AC}$ Part no. |
|---|---|---|
| Air filtered fan FL 250 | 60715-149 | **60715-148** |
| **Air outlet/inlet filter FLA 250/300** (items 1 + 2 included), 1 piece | | **60715-159** |
| **Replacement filter IP 54** for FL 250/300 and FLA 250/300, filter class G 3 (EN 779), PU 5 pieces | | **60715-185** |
| **Fluted filter IP 55** for FL 250/300 and FLA 250/300, filter class G 4 (EN 779), PU 5 pieces | | **60715-189** |


Air outlet/inlet filter FLA 250/300 Fluted filter IP 55



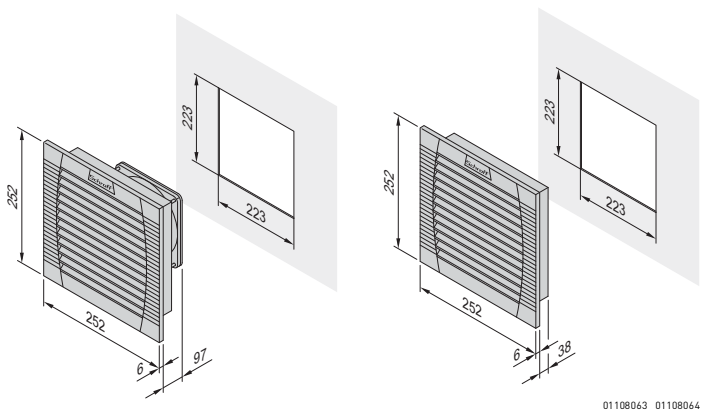

Replacement filter IP 54

### Technical data

| Voltage | 230 VAC | 115 VAC |
|---|---|---|
| Frequency | 50/60 Hz | 50/60 Hz |
| Airflow volume with IP 54 filter (free blowing) | 156/171 $m^3/h$ | 151/170 $m^3/h$ |
| Airflow volume with IP 55 filter (free blowing) | 145/160 $m^3/h$ | 140/160 $m^3/h$ |
| Combination FL + FLA IP 54 | 116/127 $m^3/h$ | 116/127 $m^3/h$ |
| Combination FL + FLA IP 55 | 109/113 $m^3/h$ | 109/113 $m^3/h$ |
| 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




Air filtered fan FL 250 Air outlet/inlet filter FLA 250/300
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 300


- Airflow volume 256 $m^3/h$
- 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

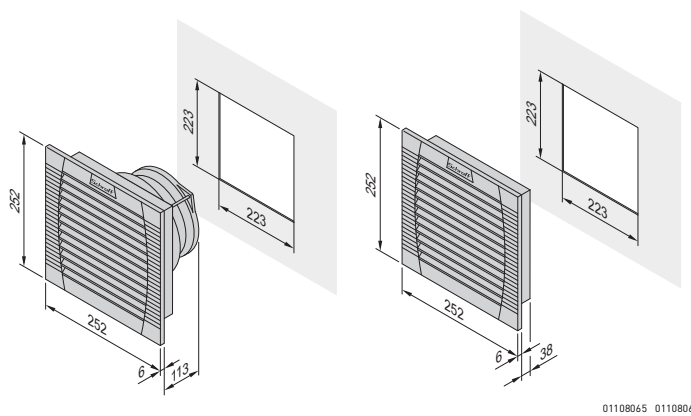
| Description | 115 $V_{AC}$ Part no. | 230 $V_{AC}$ Part no. |
|---|---|---|
| Air filtered fan FL 300 | 60715-151 | **60715-150** |
| **Air outlet/inlet filter FLA 250/300** (items 1 + 2 included), 1 piece | | **60715-159** |
| **Replacement filter IP 54** for FL 250/300 and FLA 250/300, filter class G 3 (EN 779), PU 5 pieces | | **60715-185** |
| **Fluted filter IP 55** for FL 250/300 and FLA 250/300, filter class G 4 (EN 779), PU 5 pieces | | **60715-189** |


Air outlet/inlet filter FLA 250/300 Fluted filter IP 55


Replacement filter IP 54

### Technical data

| Voltage | 230 VAC | 115 VAC |
|---|---|---|
| Frequency | 50/60 Hz | 50/60 Hz |
| Airflow volume with IP 54 filter (free blowing) | 256/292 $m^3/h$ | 256/292 $m^3/h$ |
| Airflow volume with IP 55 filter (free blowing) | 233/265 $m^3/h$ | 233/265 $m^3/h$ |
| Combination FL + FLA IP 54 | 231/265 $m^3/h$ | 231/265 $m^3/h$ |
| Combination FL + FLA IP 55 | 180/207 $m^3/h$ | 180/207 $m^3/h$ |
| 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 | 40/40 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 | |




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

### Note

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

## Air filtered fan FL 500


- Airflow volume 480 $m^3/h$
- 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

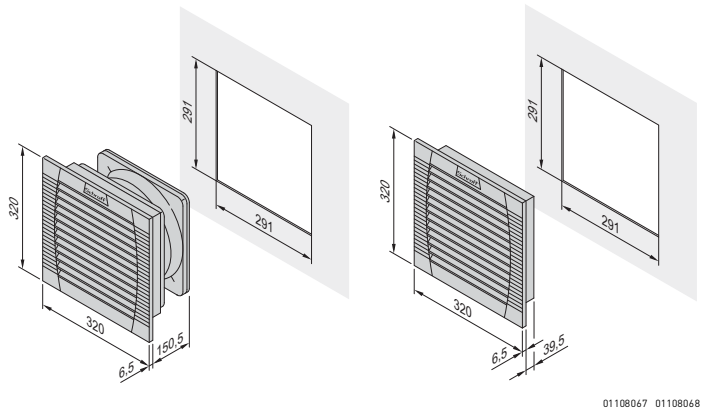
| Description | 115 $V_{AC}$ Part no. | 230 $V_{AC}$ Part no. |
|---|---|---|
| Air filtered fan FL 500 | 60715-153 | **60715-152** |
| **Air outlet/inlet filter FLA 500/600** (items 1 + 2 included), 1 piece | | **60715-160** |
| **Replacement filter IP 54** for FL 500/600 and FLA 500/600, filter class G 3 (EN 779), PU 5 pieces | | **60715-186** |
| **Fluted filter IP 55** for FL 500/600 and FLA 500/600, filter class G 4 (EN 779), PU 5 pieces | | **60715-190** |


Air outlet/inlet filter FLA 500/600 Fluted filter IP 55


Replacement filter IP 54

### Technical data

| Voltage | 230 VAC | 115 VAC |
|---|---|---|
| Frequency | 50/60 Hz | 50/60 Hz |
| Airflow volume with IP 54 filter (free blowing) | 505/505 $m^3/h$ | 505/505 $m^3/h$ |
| Airflow volume with IP 55 filter (free blowing) | 480/480 $m^3/h$ | 480/480 $m^3/h$ |
| Combination FL + FLA IP 54 | 380/380 $m^3/h$ | 380/380 $m^3/h$ |
| Combination FL + FLA IP 55 | 370/370 $m^3/h$ | 370/370 $m^3/h$ |
| 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 | 65/80 W | 75/90 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 | |




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

### 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


- Airflow volume 640 $m^3/h$
- 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

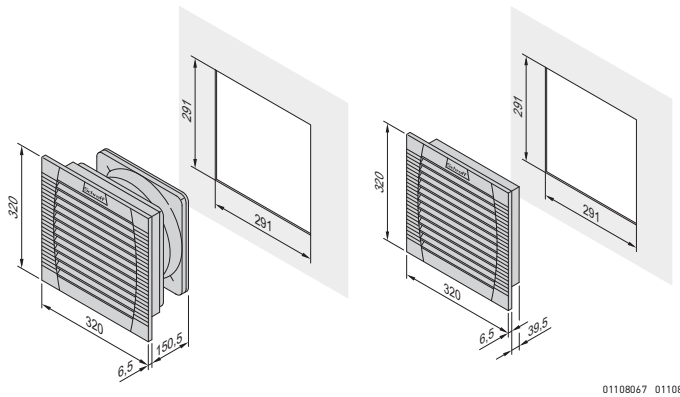
| Description | 115 $V_{AC}$ Part no. | 230 $V_{AC}$ Part no. |
|---|---|---|
| Air filtered fan FL 600 | 60715-155 | **60715-154** |
| **Air outlet/inlet filter FLA 500/600** (items 1 + 2 included), 1 piece | | **60715-160** |
| **Replacement filter IP 54** for FL 500/600 and FLA 500/600, filter class G 3 (EN 779), PU 5 pieces | | **60715-186** |
| **Fluted filter IP 55** for FL 500/600 and FLA 500/600, filter class G 4 (EN 779), PU 5 pieces | | **60715-190** |


Air outlet/inlet filter FLA 500/600 Fluted filter IP 55


Replacement filter IP 54

### Technical data

| Voltage | 230 VAC | 115 VAC |
|---|---|---|
| Frequency | 50/60 Hz | 50/60 Hz |
| Airflow volume with IP 54 filter (free blowing) | 770/785 $m^3/h$ | 770/785 $m^3/h$ |
| Airflow volume with IP 55 filter (free blowing) | 640/653 $m^3/h$ | 640/653 $m^3/h$ |
| Combination FL + FLA IP 54 | 490/501 $m^3/h$ | 490/501 $m^3/h$ |
| Combination FL + FLA IP 55 | 445/445 $m^3/h$ | 445/445 $m^3/h$ |
| 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 | 115/150 W | 110/160 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 | |



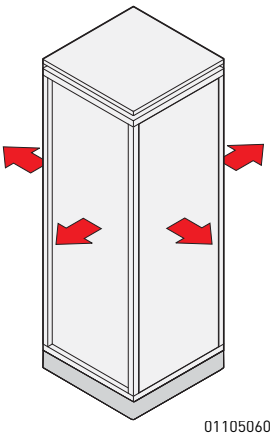
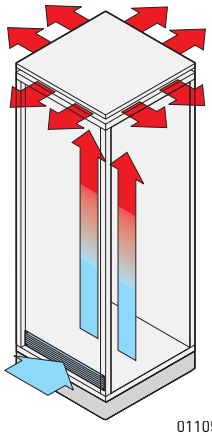
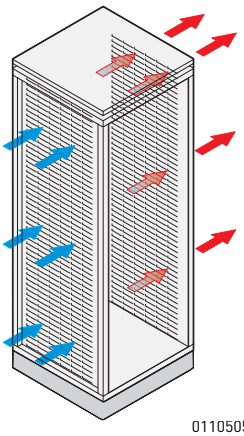
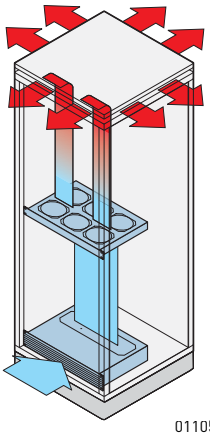

Air filtered fan FL 500/600 Air outlet/inlet filter FLA 500/600
Sheet thicknesses 1 ... 2 mm - cut-out 223 x 223 mm;
Sheet thicknesses >2 ... 3 mm - cut-out 224 x 224 mm

### Note

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

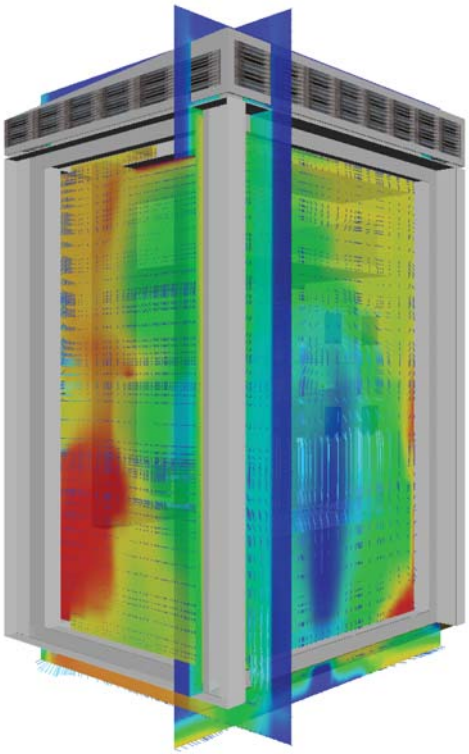
# Climate control – Service

## Products / cooling concepts

| Product | Closed cabinet | Raised cover, ventilation slots | Perforated doors | 19" circulation fan, top cover fan |
|---|---|---|---|---|
| Cooling principle |  01105060 |  01105058 |  01105056 |  01105057 |
| Description | Natural convection through thermal radiation | Free convection through top opening | Free convection through openings in doors/rear panels | Cooling with air |
| 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. [1] | < 500 W | 500 W ... 800 W | 500 W ... 6000 W [2] | < 2000 W |

1) depending on cabinet size, electronic components, location and room cooling concept
2) > 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

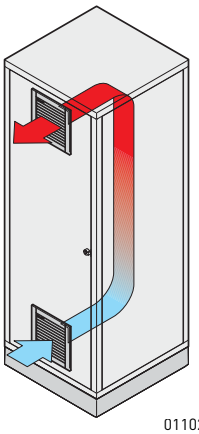
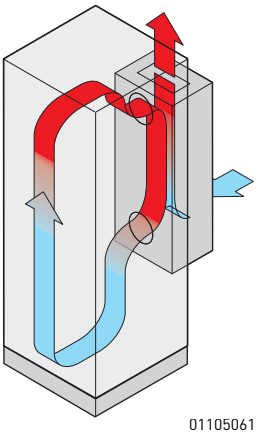
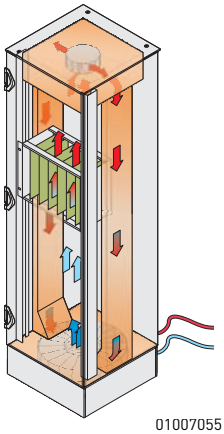
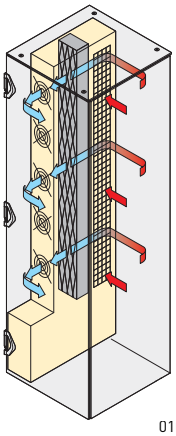

01103050

**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) |
|---|---|---|---|---|
| Cooling principle |  01102050 |  01105061 |  01007055 |  01005081 |
| Description | Cooling with air | Cooling with coolant | Cooling with water | Cooling with water |
| Type of protection | ⩽ IP 55 | ⩾ IP 55 | ⩾ IP 55 | ⩾ IP 55 |
| Noise level | 39 ... 71 dB(A) | 60 ... 81 dB(A) | 45.2 dB(A) | 50 ... 70 dB(A) |
| Environmental conditions | $T_i > T_a$ | $T_a \leqslant 55$ °C | $T_a \leqslant 70$ °C | $T_a \leqslant 70$ °C |
| Cooling capacity approx. [1] | < 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


01112001

Climate bay testing

Being part of the Pentair group, Schroff and McLean look back on 50 years of experience and are reknown 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 equipement 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!

# Appendix – Order notes

## Packaging units

A packaging unit (PU) - e.g. carton, bag - contains the stated quantity. If you order the quantity 1, you will automatically receive the quantity defined as PU.

Example: EMC textile gasket
See page 5.22
Part number 21101-853

Quantity (per part number): 10 pieces

Order quantity: . . . . . Delivery quantity:

1 . . . . . 10 pieces
2 . . . . . 20 pieces
3 . . . . . 30 pieces

## Standard pack quantity (SPQ)

Please take into consideration that deliveries may be carried out in the stated SPQs (SPQ, e.g. 5 pieces, 10 pieces, 50 pieces, etc.). Differing order quantities (e.g. 2 pieces) may be changed to the next possible delivery quantity = Standard Pack Quantity (in this case 10 pieces).

Example: Front horizontal rail
See page 5.31
Part number 34560-228

Quantity (per part number): 1 piece
Standard pack quantity (SPQ): 10 pieces

Order quantity:. . . . . Delivery quantity:

≤ 10. . . . . 10 pieces
> 10 ≤ 20 . . . . . 20 pieces
> 20 ≤ 30 . . . . . 30 pieces

## Price list

Our price list is available by e-mail from your customer consultant. Please find all contact details at www.schroff.biz/contact.

## Delivery times

Part numbers in bold face type are ready for despatch within 2 working days; part numbers in normal type are ready for despatch within 10 working days.

## Always up-to-date

Please visit our website www.schroff.biz where we continuously inform about news and technical changes.

## Business relations

Schroff is exclusively operating in Business to Business (B2B). Private individuals can buy Schroff products via our sales representatives (see www.schroff.biz/contact).

## Quick links

**Catalogue request:** www.schroff.biz/catalogues

**Product configurators:** www.schroff.biz/conf

**Contact details:** www.schroff.biz/contact

**Product search:** www.schroff.biz/oneclick

**Front Panel Express:** www.frontpanelexpress.eu

**VARISTAR:** www.varistar.co.uk

**Railway technology:** www.schroff.co.uk/railway

**IT Infrastructure:** www.schroff.co.uk/datacom

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