

CONNECT AND PROTECT

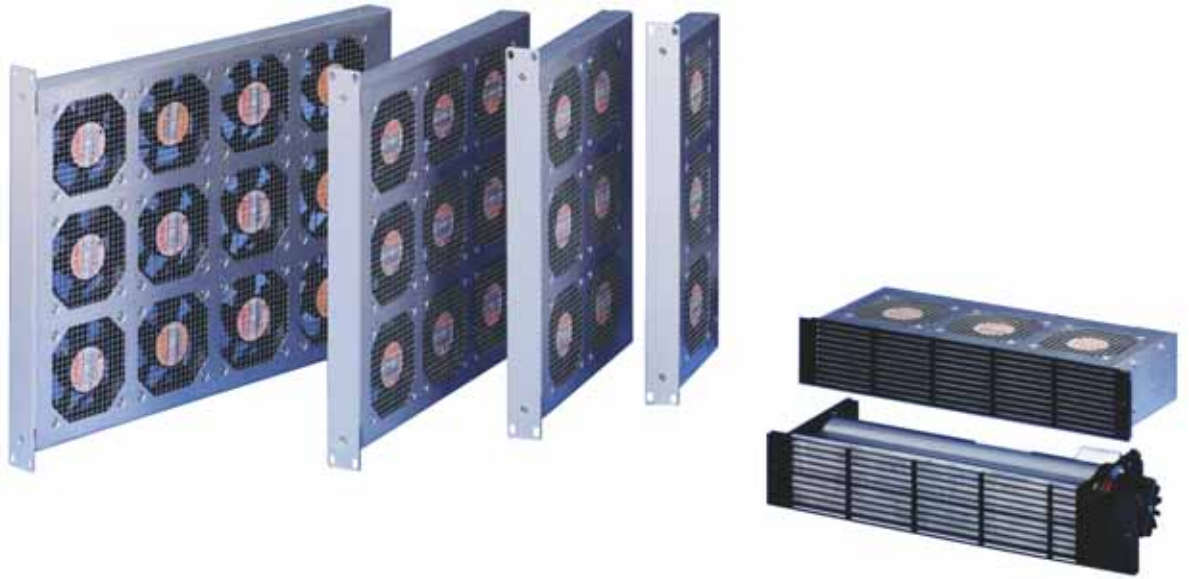
19"-Fan Trays

Climate control – 19" fan trays

OVERVIEW

MAIN KATALOG

Cabinets	1
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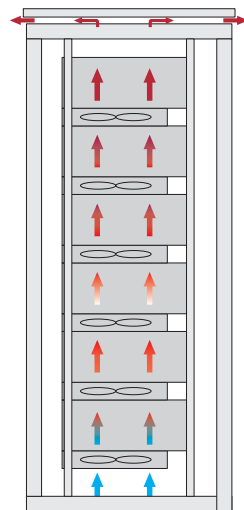
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STANDARDS/APPROVALS

- 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

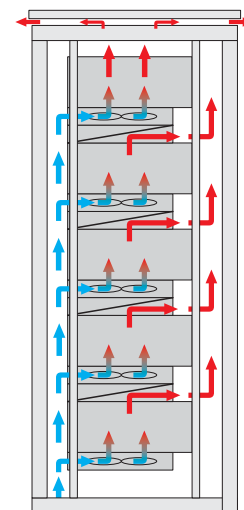
VERTICAL AIRFLOW (CONTINUAL WARMING)



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

DIVERTED AIRFLOW (EFFECTIVE COOLING)



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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_{AC}, 115 V_{AC} or 24 V_{DC}
- CE- approvals



19" FANS

- 19" circulation fan, height 1 U
- 230 V_{AC}, 115 V_{AC} and 24 V_{DC}
- Up to 1000 m³/h
- With/without mains switch or with temperature-dependent speed control

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19" PUSHER FANS

- Tangential fan, height 2 U
- 230 V_{AC} and 115 V_{AC}
- Up to 320 m³/h

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- 19" pusher fan, height 2 U
- 230 V_{AC} and 115 V_{AC}
- Up to 530 m³/h

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- 19" pusher fan, height 3 U
- 230 V_{AC} and 115 V_{AC}
- Up to 570 m³/h
- Variable air outlet with/without pipe connection, upward or to rear

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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

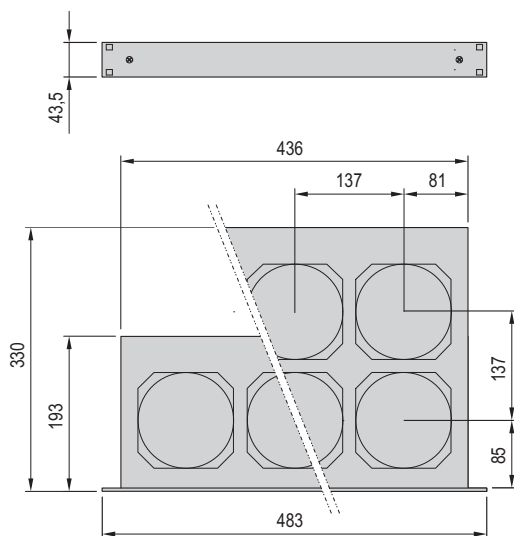
Pusher fan, 3 U . . . 4.12

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



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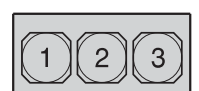
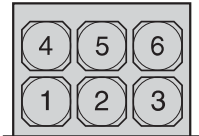
- Mechanical strain relief for mains cables
- Can be adapted to subracks
- Contact protection in accordance with DIN EN ISO 13857



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 _{DC} Part no.	115 V _{AC} Part no.	230 V _{AC} Part no.
 KTAA4857	10713-103	10713-102	10713-100
 KTAA4858	10713-107	10713-106	10713-104
Replacement fan 1 piece	20713-240	20713-244	20713-243
Side panel connecting bracket between europacPRO subrack and fan, including fixing material kit, PU 4 pieces			21101-954
Equipment cable SCHUKO/UTE SCHUKO/UTE plug, IEC 60320 C13 socket, 2.5 m, 1 piece			60103-131
Equipment cable, BS British Standard plug, IEC 60320 C13 socket, 2.5 m, 1 piece			60103-137
Equipment cable, USA USA plug, IEC 60320 socket, 2 m, 1 piece			60103-141

TECHNICAL DATA

Voltage	230 V _{AC}		115 V _{AC}		24 V _{DC}
Frequency in Hz	50	60	50	60	-
Number of fans	3/6		3/6		3/6
Airflow volume in m ³ /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 ₁₀ 40 °C	43500				
Lifespan in h L ₁₀ 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

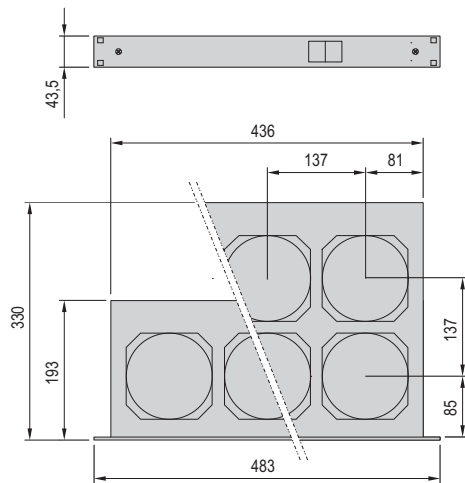
19" FAN 1 U WITH FRONT SWITCH



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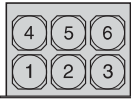
- Front-mounted illuminated mains switch on AC devices, coupled with additional rear mains outlet; mechanical strain relief for mains input and mains output cables
- Can be adapted to subracks
- Contact protection in accordance with DIN EN ISO 13857



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

TECHNICAL DATA

Voltage	230 VAC		115 VAC		24 VDC
Frequency in Hz	50	60	50	60	-
Number of fans	3/6		3/6		3/6
Airflow volume in m ³ /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 ₁₀ 40 °C	43500				
Lifespan in h L ₁₀ 55 °C	20000				

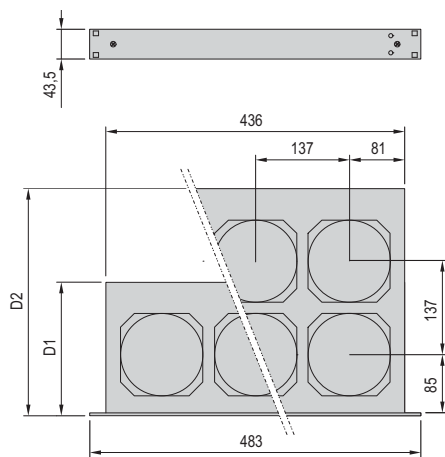
- Fan dimensioning, see page 4.18
- Replacement fans, see chapter Climate control - Accessories
- Versions with multiple fans see ServicePLUS configuration page 4.14

Climate control – 19" fan trays

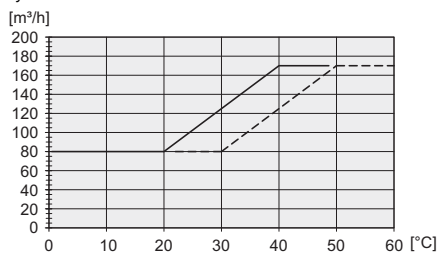
19" FAN 1 U, WITH SPEED CONTROL AND FUNCTION MONITORING



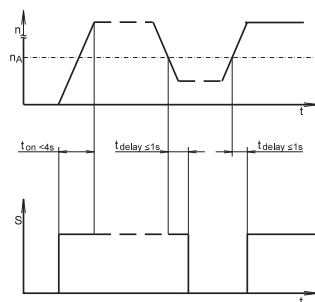
Photo shows 19" fan unit with 3 fans, without switch



Airflow capacity with one fan



Monitoring signal



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

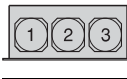
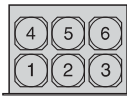
- Low noise through temperature dependent airflow volume
- Range selectable: 20 ... 40 °C and 30 ... 50 °C
- External sensor, at sensor breakage max speed will be set automatically
- Function control with LEDs and via potential-free contact
- Contact protection in accordance with DIN EN ISO 13857
- 2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



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 _{DC}	230 V _{AC}
	D Without switch	D With switch Without switch
	mm Part No.	mm Part No. Part No.
 D1	193 10713-099	250 19713-121 –
 D2	330 10713-098	397 – 19713-006

Accessories

Filter mat, class G 2 for 3 fans, PU 3 pieces	60713-169
Filter mat, class G 2 for 6 fans, PU 3 pieces	60713-170

TECHNICAL DATA

Voltage AC version (fans 24 V _{DC})	86 ... 260 V _{AC}
Voltage DC version	24 V _{DC} (21 ... 27)
Number of fans	3
Max. airflow volume in m³/h	467
Noise level in dB(A)	63.5
Max. stat. pressure in Pa	70
Power consumption in W	15.9
Permissible ambient temperature °C	–20 ... +65 °C
Life in h L ₁₀ 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

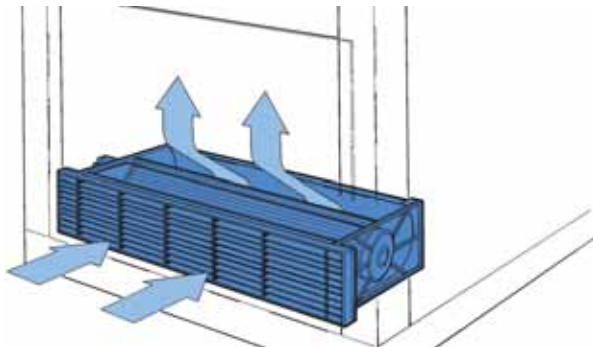
- Fan dimensioning see page 4.18

Climate control – 19" fan trays

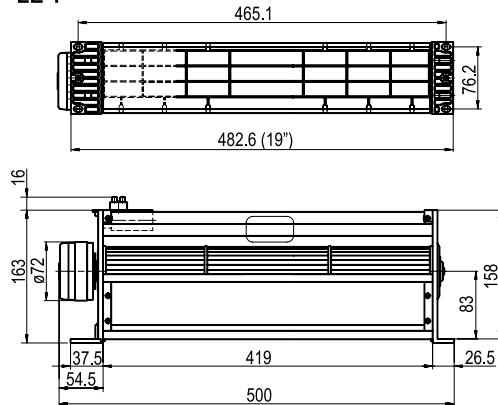
PUSHER FAN, 2 U, WITH TANGENTIAL FAN



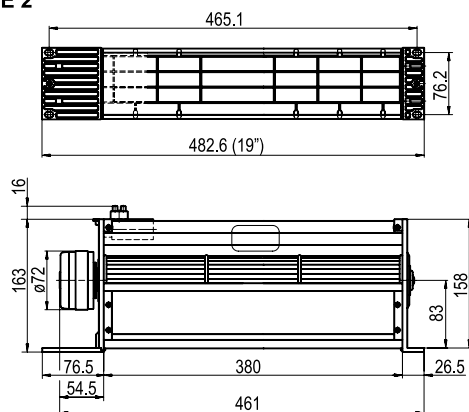
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LE 1



LE 2



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- 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 _{AC} Part no.	230 V _{AC} Part no.
LE1: Pusher fan 2 U, tangential blower	60713-003	60713-001
LE2: Pusher fan 2 U, tangential blower	60713-004	60713-002
Spare filter mat PU 10 pieces		20705-008

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DIMENSIONS

Voltage	115 V _{AC}	230 V _{AC}
Frequency in Hz	50 60	50 60
Airflow volume in m ³ /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_{DC} 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 sub racks
- Contact protection in accordance with DIN EN ISO 13857

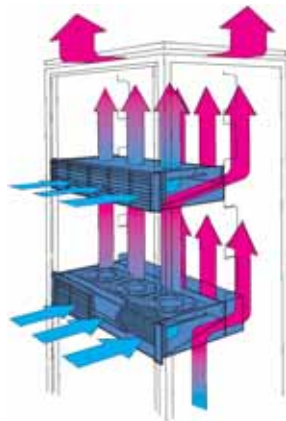
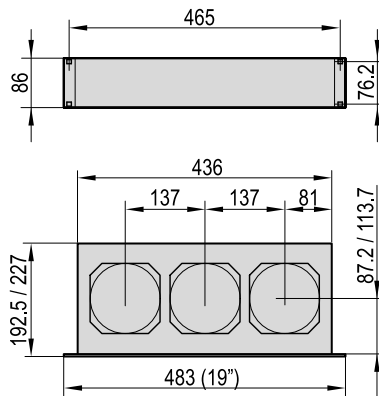


DELIVERY COMPRISES (ready to connect)

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



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ORDER INFORMATION

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

Technical data with 3 fans							
Voltage	24 V _{DC}	24 V _{DC}	115 V _{AC}		230 V _{AC}		
Frequency in MHz	–	–	50	60	50	60	50 60
Airflow volume in m ³ /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, ¹⁾ at 40 °C, ²⁾ at 55 °C	20000 ²⁾	20000 ²⁾	50000 ¹⁾		20000 ²⁾		

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)

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ORDER INFORMATION

Description	115 V _{AC} Part no.	230 V _{AC} Part no.
Supplementary fans with housing for pusher fan 2 U	10713-532	10713-530

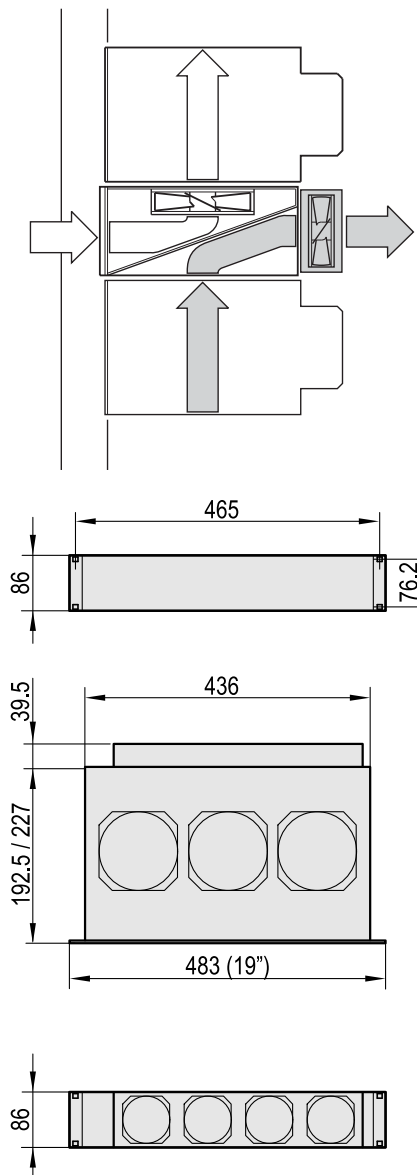
TECHNICAL DATA with 3 fans

Voltage	115 VAC		230 VAC	
Frequency in MHz	50	60	50	60
Airflow volume in m ³ /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	

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NOTE

- 24 V_{DC} version available on request
- Fan dimensioning see page 4.18



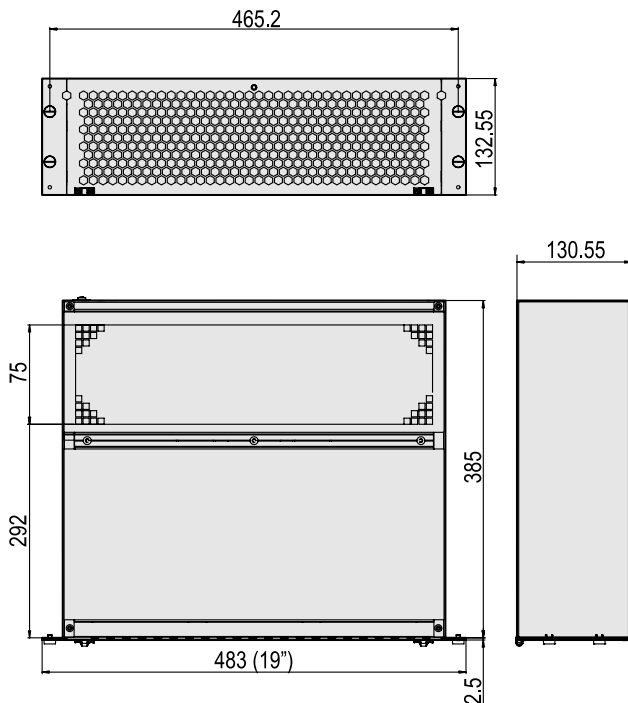
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Climate control – 19" fan trays

19" PUSHER FAN 3 U



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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 _{AC} Part no.	230 V _{AC} Part no.
19" pusher fan 3 U	10713-547	10713-546

Accessories

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

TECHNICAL DATA

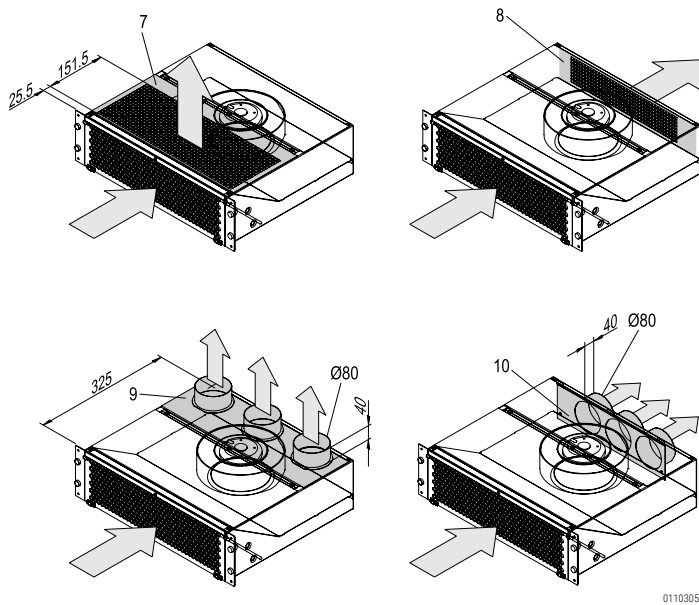
Voltage	115 VAC	230 VAC
Frequency in MHz	50 60	50 60
Airflow volume in m ³ /h	510 570	510 570
Noise level per fan in dB(A)	62 64	62 64
Max. stat. pressure in Pa	320 410	320 410
Power consumption in W	55 65	58 75
Max. ambient temperatures in °C	-20 ... +50	-20 ... +50
Life in h at 55 °C	20000	20000

NOTE

- Wide input voltage range 90 V ... 260 V_{AC} 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

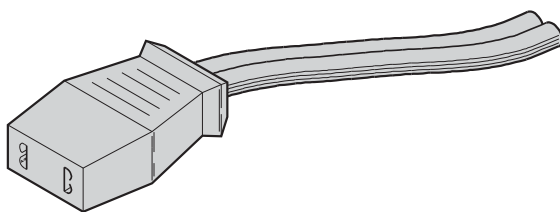


- For 19" pusher fan 3 U

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, without perforation, 1 mm, finish AlZn	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, external diameter 80 mm, St, 1 mm, finish AlZn	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 ²), 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	21101-246

Climate control – 19" fan trays

SERVICEPLUS: CONFIGURATION WITH ASSEMBLY



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- 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)	Front panel without switch AC (230 V)	DC	Front panel with switch AC (230 V)	DC	Filter mat G 2	Fans

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

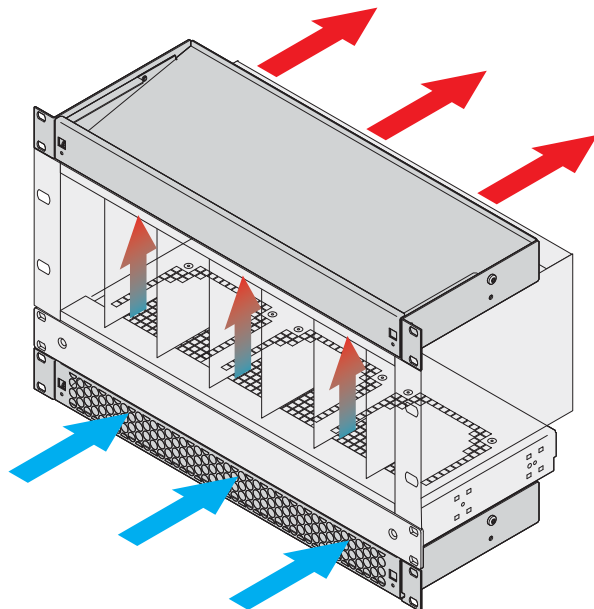


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1 U air deflector chassis (bottom) with 1 U fan tray (top)



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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	60713-169
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 m ³ /h	115 V _{AC} Part no.	230 V _{AC} Part no.
Type A	25	84	20713-146	20713-142
Type B	25	108	20713-147	20700-001
Type C	38	162	20713-244	20713-243
Assembly kit for fan PU 1 kit				21102-013

DIMENSIONS AC fans

Type	Type A		Type B		Type C	
Frequency in Hz	50	60	50	60	50	60
Airflow volume in m ³ /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



01108005

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 m ³ /h	Power consumption W	Input voltage V	Part no.
25.5	171	5.3	24	20713-172
38	184	8	12	20713-241
38	184	8	24	20713-240
38	184	8	48	20713-242
Assembly kit for fan PU 1 kit				21102-013

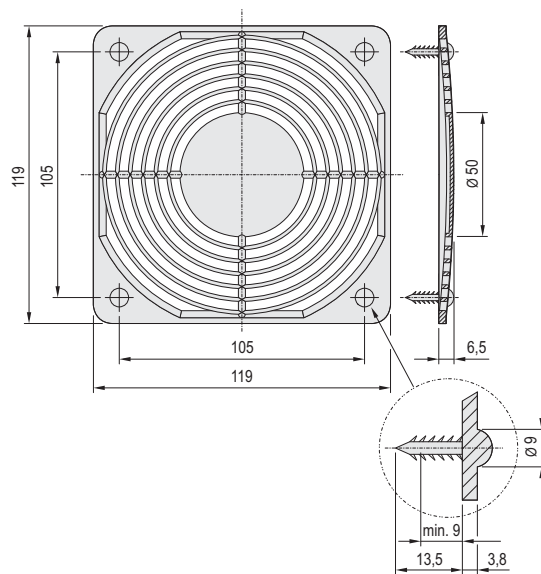
TECHNICAL DATA DC fans

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 m ³ /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

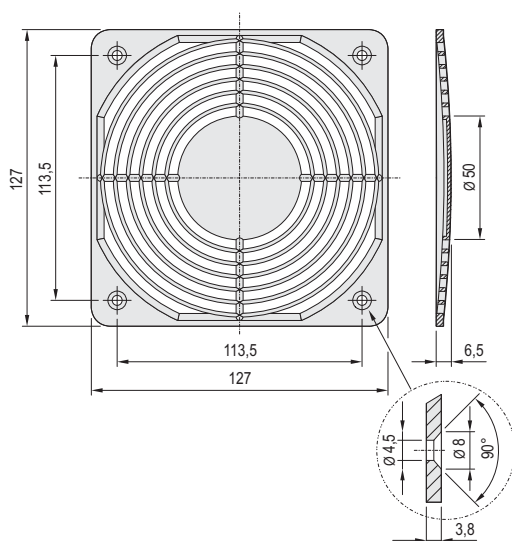
DELIVERY COMPRISES

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	60225-052

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

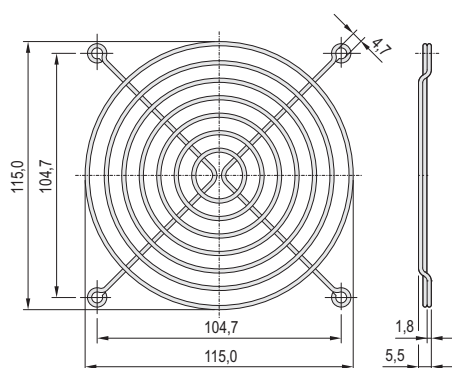
DELIVERY COMPRISES

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	60225-053
Assembly kit for plastic grille (4 screws, 4 washers, 4 nuts M4), PU 1 set	21102-014

PROTECTIVE GRILLE, METAL, TO SCREW-ON



01109050

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

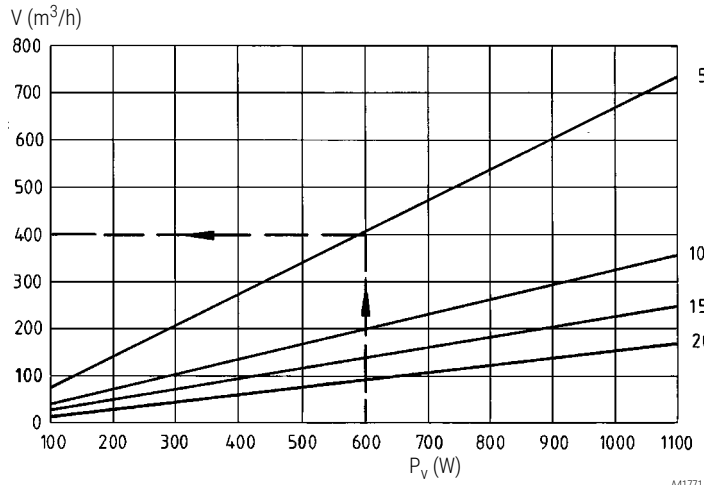
DELIVERY COMPRISES

Item	Qty	Description
1	1	St, 1 mm

ORDER INFORMATION

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

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

ΔT is the temperature difference between the ambient temperature of the sub-assembly and that of the air drawn in.

Example of readings

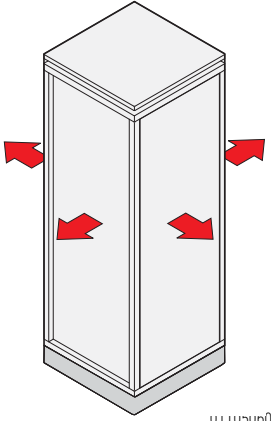
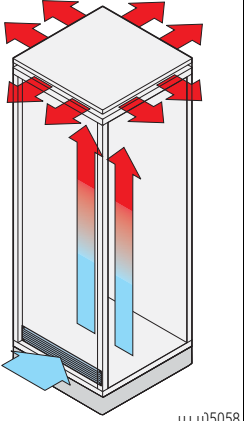
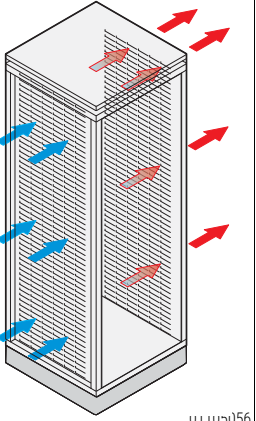
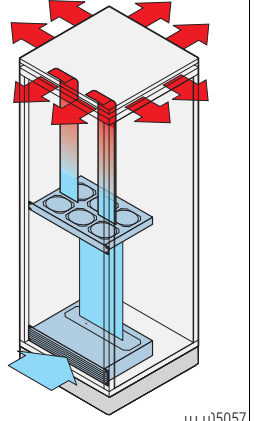
- $P_v = 600 \text{ W}$
- air sucked in: 25°C
- permissible ambient temperature of the sub-assembly = 30°C

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

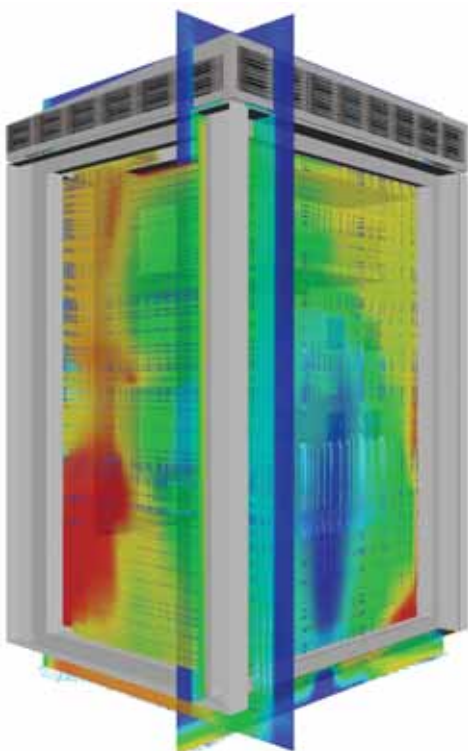
Climate control – Service

PRODUCTS / COOLING CONCEPTS

Product	Closed cabinet	Raised cover, ventilation slots	Perforated doors	19" circulation fan, top cover fan
Description	 <p>Natural convection through thermal radiation</p>	 <p>Free convection through top opening</p>	 <p>Free convection through openings in doors/rear panels</p>	 <p>Cooling with air</p>
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



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

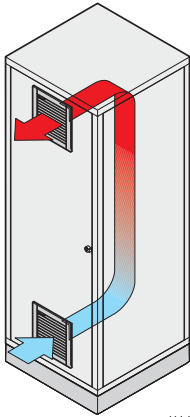
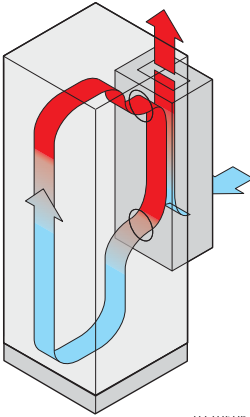
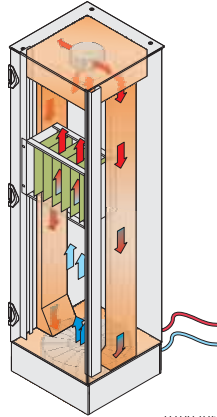
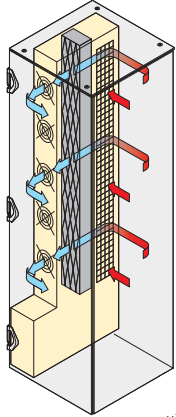
Your advantage:

- 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

01103050

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	 Cooling with air 01102050	 Cooling with coolant 01103001	 Cooling with water 01100055	 Cooling with water 01005081
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. 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



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!

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