Cooling
Intelligent climate control for your data centre
iQdata

iQdata is the brand for complete system solutions for all your data centre needs. Thanks to iQdata, SCHÄFER IT-Systems, as an experienced specialist for IT infrastructure, can now offer you the entire product spectrum for the full-scale equipment of your data centre:

- Rack
- Cooling
- Power
- Monitoring
- Security
- Service

iQdata combines the renowned SCHÄFER product quality with innovative and intelligent IT solutions to make your enterprise fit for the future. With unprecedented manufacturing depth, SCHÄFER IT-Systems develops and produces its own data centre solutions and supplies you with the complete system from a single source.

Put your trust in iQdata!

In data centres, cooling can take up more than a third of total energy consumption. Cooling solutions from SCHÄFER IT-Systems provide your data centre infrastructure with highly energy-efficient cooling, leading to a sustainable reduction in costs. Our diverse product range includes self-developed side, back or InRackcoolers, as well as enclosures for cold or warm aisles. The modular architecture of our cooling solutions enables them to be adapted individually to your specific requirements. The standardised control interface for all cooling products allows infrastructure communication via standardised protocols.

Optimised cooling –
How much would you like to save?

Performance matrix

- Basic cooling (air)
- Enclosure
- Coolant (DX)
- Cold water (CW)

Wall/Roof cooling units
- InRackcoolers
- Sidecooler CW
- Sidecooler DX

Roof fans/fan trays
- Enclosures
- Backcoolers

0 – 4 | 4 – 10 | 10 – 30 | 30 – 50

Cooling capacity in kW per rack
The system as a whole

Rack
- Network and server racks
- Colocation racks
- Cable management
- Accessories

Cooling
- Section enclosures
- Sidecooler CW and DX
- Backcooler
- InRackcoolers
- Accessories

Power
- Basic PDUs
- Smart PDUs
- Customized PDUs

Monitoring
- Rack monitoring systems
- Room monitoring systems
- DCIM

Security
- Early fire detection
- Rack extinguishing systems
- Door locking systems

Service
- Planning support
- Energy efficiency analyses
- Maintenance/replacement parts
- Commissioning/acceptance
- Assembly/installation
Section enclosures from SCHÄFER –  
Energy efficient and economical

The balance between energy efficiency and high availability

The constantly increasing demands placed on IT performance lead to an endless flow of new challenges for the operation of data centres and computer rooms. High availability IT must be both energy efficient and economical at the same time. The reduction in CO₂ values that this requires is a central topic for setting up and optimising IT rooms and data centres.

- Individual energy report determines fundamental measures like the mechanical separation of cold and warm air
- Simple solutions, such as blind panels and air-flow routing panels from SCHÄFER IT-Systems' extensive product portfolio, can often achieve initial optimisations
- The decision to choose a cold or warm aisle enclosure often depends on the prevalent room conditions rather than the energy efficiency potential
- Delivery and installation from a single source guarantee a holistic solution and ensure efficiency and operational safety targets are met

Unbeatably flexible

The enclosure components are optimised for use with SCHÄFER IT-Systems' rack portfolio. However, the open concept also enables enclosure solutions for existing infrastructures to be retrofitted at any time.

- Manufacturer-independent control concept
- Flexible enclosure solution that can be adapted to IT loads
- Extensive range of accessories (also for existing environments)
- Pressure inside the enclosure can be set to the desired level using the flow sensor

Your benefits

- High availability with optimal energy and economic efficiency
- Open system allowing retrofitting of existing infrastructure components at any time
- Modular design guarantees security of investment
- Manufacturer-independent control concept enables existing infrastructure to be used
Great variety in locking variations
Whether you prefer manual or electric sliding door, folding doors or wall elements – SCHAFER IT-Systems leaves nothing to be desired.

- Single or double wing sliding doors with mechanical and electric locks
- Double wing folding doors with mechanical lock and arrester
- Aisle closing elements (sandwich panels) can be installed on one side instead of doors
- The sliding door covers and door extensions provided as standard enable 2,000 mm and 2,200 mm cabinets as well as 100 mm and 200 mm plinths to be used
- Optional ceiling elements for the various aisle widths are all made entirely of polycarbonate (UL94 HB, halogen free)
- If required, LED elements can also be incorporated into the aisle ceiling elements
- Spray nozzles can also be installed quickly and easily in ceiling elements, installation adapters or ceiling installation bars

Adaptable and extendable - at any time
The sandwich panel used in doors, roof elevation and aisle closing elements consists of a 1 mm steel sheet exterior filled with 20 mm of Styrodur and can be worked very easily to fit requirements. On customer request, it can be adapted to special heights and widths in our own production plant.

- Individual enclosure solutions for new installations or the extension of existing data centre architecture
- Safe investment for the future: as your data centre structure grows, so does the enclosure
- Optional installation adapters for the sides and installation strips for the ceiling are also available for installing flow sensors or spray nozzles in the enclosure
- Assembly and commissioning is carried out by SCHAFER IT-Systems
Enclosures from SCHÄFER – Modular and flexible

**Range of solutions**
SCHÄFER IT-Systems has a wide-ranging product portfolio on offer. This will enable you to find the perfect enclosure solution for your individual needs and will make your data centre fit for the future.

- Enclosures in cold aisle and warm aisle versions
- Enclosures installed against walls or ceilings
- Standard components for all currently available enclosures
  - Aisle width 1,000 mm – 1,800 mm
  - Cabinet height 1,800 mm – 2,600 mm
  - Standard universal sandwich elements, e.g. for aisle closing elements, blind panels, or for adapting the different rack heights in the enclosure

**Special enclosures**
Available quickly and flexible in all possible variations
- Measurements on site
- Drawings of the enclosure solutions
- Made-to-measure manufacturing and assembly on site
- Subsequent installation and removal of IT systems possible

**Enclosure accessories**
- Individual Airtube products for air flow optimisation
- Blind panels, Swap Panel, cable entry with brush strips
- Enclosure control

**Your benefits**
- Modular design guarantees extreme flexibility for new installation or extensions
- Optimal coordination with all peripheral components to provide a perfect fit
- Short delivery times
- All SCHÄFER IT-Systems enclosure products are “Made in Germany”
Sliding door, double wing, mechanical

Double wing sliding door with mechanical closers for IQdata enclosures. Door leaves with recessed handles on both sides for easy opening and closing, as well as a large viewing window. The door leaves can be arrested in the open position if required. After manually releasing the arrest function, both leaves close automatically, fully independent of each other. SmartStop guarantees smooth closing. Suitable for all IS-1 racks from depths of 1,000 mm. Upgrading to electrical closing or synchronized mechanical closing is possible on request.

Useable dimensions (W x H): approx. aisle width minus 150 mm; height approx. 2,000 mm

Material: door leaves 1 mm steel casing, filled with 30 mm of Styrodur, 3 mm single pane safety glass viewing window, panels in sheet steel, 1.50 mm

Finish: powder coated

Colour: RAL 7035 light grey, RAL 9005 jet black

Delivery scope: 2 door leaves with tracks, 2 mechanical door closers, 2 SmartStop dampers, covers, fixing materials

<table>
<thead>
<tr>
<th>Height (mm)</th>
<th>Aisle width (mm)</th>
<th>RAL 7035</th>
<th>RAL 9005</th>
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Sliding door, double wing, electric

Double wing sliding door with electric closers for IQdata enclosures. Door leaves with recessed handles on both sides for easy opening and closing, as well as a large viewing window. Opening and closing of both door leaves is fully automatic and synchronized. Doors with “push to open” and “push-to-close” functions, as well as automatic closing after a pre-set time interval (up to 30 s). The drive can be activated externally (e.g. BMA, radio transmitter, push button, etc.). Suitable for all IS-1 racks from depths of 1,000 mm.

Useable dimensions (W x H): width approx. aisle width minus 150 mm; height approx. 2000 mm

Material: door leaves 1 mm steel casing, filled with 30 mm of Styrodur, 3 mm single pane safety glass viewing window, panels in sheet steel, 1.50 mm

Finish: powder coated

Colour: RAL 7035 light grey, RAL 9005 jet black

Technical data: connected load: 230 V, 50/60 Hz (mains protection required from customer) Opening speed approx. 0.4 m/s, closing speed approx. 0.2 m/s, hold open time approx. 2 – 30 s, traction force: 30 N

Delivery scope: 2 door leaves with tracks, 2 mechanical door closers, 2 SmartStop dampers, covers, fixing materials

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<th>RAL 9005</th>
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II. iQdata Cooling

Enclosures from SCHÄFER – System accessories

Door extension for sliding door, double wing

Door extension for height compensation when using racks with H 100 and H 200 plinths. Suitable for all double wing sliding doors.

**Material:** 1 mm steel casing, filled with 30 mm of Styrodur  
**Finish:** powder coated  
**Colour:** RAL 7035 light grey, RAL 9005 jet black  
**Delivery scope:** 2 door extensions (r + l), mounting accessories

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<th>Height (mm)</th>
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<th>RAL 9005</th>
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Sliding door top extension panel

Panel for height compensation when using a 200 mm roof elevation. Suitable for all double wing Section sliding doors.

**Material:** Steel sheet, 1.5 mm  
**Colour:** powder coated  
**Farbe:** RAL 7035 light grey, RAL 9005 jet black  
**Delivery scope:** 1 sliding door cover panel

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<tr>
<th>Aisle width (mm)</th>
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Sliding door, single wing

Single-wing sliding door for one-sided enclosures against the wall. Door leaf with recessed handles on both sides for easy opening and closing, as well as a large viewing window. The door leaf can be arrested in the open position if required. Suitable for all IS-1 racks from depths of 1,000 mm.

**Useable dimensions (W x H):** width approx. aisle width minus 150 mm, height approx. 2000 mm  
**Material:** door leaf 1 mm steel casing, filled with 30 mm of Styrodur, 3 mm single pane safety glass viewing window  
**Finish:** powder coated  
**Colour:** RAL 7035 light grey, RAL 9005 jet black  
**Delivery scope:** 1 door leaf with track, 1 mechanical closer with adjustable traction force, holding function and soft-close, cover panels, mounting accessories

<table>
<thead>
<tr>
<th>Height (mm)</th>
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### Door extension for sliding door, single wing

Door extension for height compensation when using racks with H 100 and H 200 plinths.

Suitable for all single wing sliding doors.

**Material:** 1 mm steel casing, filled with 30 mm of Styrodur

**Finish:** powder coated

**Colour:** RAL 7035 light grey, RAL 9005 jet black

**Delivery scope:** 1 door extension, mounting materials

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<th>Height (mm)</th>
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### Hinged door, double wing

Double wing hinged door for enclosures with bow handles on both sides and mechanical door closers with holding function. The closer’s holding angle is factory set to 120° (adjustable).

Suitable for all IS-1 racks and compatible with most models of other manufacturers.

**Useable dimensions:** width 1,000 mm, height 2,000 mm

**Material:** extruded aluminium frame, 40 x 40 mm

**Filling material:** aluminium composite panel, 3 mm

**Covers:** Steel sheet, 2 mm

**Viewing window:** 4 mm/B1 transparent polycarbonate

**Finish:** powder coated

**Colour:** RAL 7035 light grey, RAL 9005 jet black

**Delivery scope:** 2 door elements, 2 mechanical door closers, incl. arresters, covers, mounting materials

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<th>Height (mm)</th>
<th>Aisle width (mm)</th>
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### Aisle roof

Aisle roof for covering the tops of enclosures. Transparent roof panels for optimal light permeability. Optional LED lighting also available.

**Material:** roof panel, polycarbonate 6 mm/B1, support bracket, aluminium T-profile 50 x 50 x 2 mm, anodised

**Delivery scope:**
- 1 polycarbonate panel, 6 mm/B1
- 1 aluminium T-profile, 50 x 50 x 2 mm
- 2 cam locks
- Sealing material
- Mounting materials

<table>
<thead>
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<th>Aisle width (mm)</th>
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</table>
Enclosures from SCHÄFER – System accessories

LED lighting

LED roof lighting as an additional light source in the enclosure. Better illumination of the enclosure’s interior if the light source in the room is too weak.

**Note:** replaces one 8300 roof element.

**Delivery scope:**
- 1 LED panel
- 1 LED driver
- 1 aluminium T-profile 50 x 50 x 2 mm
- 2 cam locks
- Sealing materials
- Mounting materials

**Technical data:**
- Lifetime: 40,000 h in acc. with IEC/PAS 6217
- Insulation class: II
- Protection rating: IP20
- Rated output: 50 W
- Operating voltage: 220 – 240 V, 50/60 Hz (fixed connection)
- Colour temperature: 4,000 – 4,500 K
- Colour rendering index: Ra: >80
- Light flux: 4,450 lm
- Dimensions: 1,197 x 297 x 50 mm (L x B x H)
- Material, body: Sheet steel
- Material, cover: acrylic glass

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**Aisle roof elevation panel**

Roof elevation panel for the enclosure. Serves as an elevation and support element for the aisle roof. Sandwich design makes for easy installation of accessories, such as lights or smoke alarms.

**Material:** 1mm steel casing, filled with 20 mm of Styrodur; Installation profiles: aluminium, 2 mm

**Finish:** sandwich element, powder coated, installation profiles, anodised

**Colour:** RAL 7035 light grey, RAL 9005 jet black

**Delivery scope:**
- 1 sandwich element, L 2,400 mm
- 1 aluminium F-profile, L 2,400 mm
- 1 aluminium L-profile, L 2,400 mm
- Mounting materials

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**Wall support bracket, L bracket**

Wall support bracket for installation of the aisle roof against the wall for single aisle enclosures.

**Note:** mounting materials (screws, plugs, etc.) are not included in the delivery scope.

**Material:** aluminium L-profile 50 x 50 x 2 mm

**Finish:** anodised

**Delivery scope:**
- 1 wall support bracket, L 2,400
- Sealing material
Aisle closing element

For closing one side of enclosures, e.g. in rooms not built adjoining to walls, or for covering slanted or unsightly room walls. These elements consist of three sandwich elements, which can be flexibly adapted to different aisle heights and widths. Suitable for aisle heights of up to 2,400 mm.

**Material:** 1 mm steel casing, filled with 20 mm of Styrodur, 2 mm aluminium F-profile
**Finish:** sandwich element powder coated, installation profile anodised
**Colour:** RAL 7035 light grey, RAL 9005 jet black
**Delivery scope:**
- 3 sandwich elements, H 800 mm, L 1,200/1800 mm
- 2 aluminium F-profiles L 2,400 mm
- 2 aluminium L-profiles L 2,400 mm
- Mounting materials

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<th>Aisle width (mm)</th>
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Blind panel

For closing gaps between two cabinets or as cladding panels for supporting columns in the room. The blind panels consist of two sandwich elements, which can be flexibly adapted to the different aisle heights and widths of the gaps that need closing. Suitable for aisle heights of up to 2,400 mm.

**Material:** 1 mm steel casing, filled with 20 mm of Styrodur, 2 mm aluminium F-profile
**Finish:** sandwich element powder coated, installation profile anodised
**Colour:** RAL 7035 light grey, RAL 9005 jet black
**Delivery scope:**
- 2 sandwich elements, W 800 mm, H 1,200 mm
- 2 aluminium F-profiles L 2,400 mm

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Installation adapter

Installation adapter for integration in roof elevations. Can be universally used for installation of cables, fire extinguishing spray nozzles or as surge protection for enclosures regulated with current sensors.

**Material:** sheet steel, 1 mm
**Finish:** powder coated
**Colour:** RAL 7035 light grey, RAL 9005 jet black
**Delivery scope:**
- 1 installation adapter
- 1 rubber membrane DG53 (H 200)/DG36 (H 100)
- Mounting materials

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Enclosures from SCHÄFER – System accessories

**Ceiling installation strip**

Installation strip with a width of 200 mm for integration in aisle ceilings. Can be universally used for installation of cables, fire extinguishing spray nozzles or for installing accessories (e.g. lights or smoke alarms), or as surge protection for enclosures regulated with current sensors.

**Material:** ceiling installation strip, sheet steel, 1.5 mm; support bracket, aluminium T-profile 50 x 50 x 2 mm

**Finish:** ceiling installation strip, powder coated, support bracket, anodised

**Colour:** RAL 7035 light grey, RAL 9005 jet black

**Delivery scope:**
- 1 ceiling installation strip
- 1 aluminium T-profile 50 x 50 x 2 mm
- 2 cam locks
- Sealing materials
- Mounting materials

**AREA control unit**

Compact control unit for the optimum cold air supply of up to 4 enclosures.

**Features:**
- Control of one or more enclosures possible
- Enclosure control by means of flow measurement
- Manufacturer-independent speed control of circulating air cooling devices by a 0 – 10 V output signal
- Flexibly configurable, digital and analogue inputs and outputs for integrating sensors (temperature, flow, leakage, smoke etc.) and initiating action on fault messages, alarms, speed adjustments, etc.

**Material:** sheet steel, 1.25 mm

**Finish:** powder coated

**Colour:** RAL 7035 light grey

**Delivery scope:** 1 control unit, 1 mains cable, 2 m

**Technical data:**
- 2 potential free contacts
- 4 digital outputs, 24V DC
- 4 digital inputs
- 4 analogue outputs
- 8 analogue inputs
- Dimensions in mm (W x H x D): 240 x 165 x 146
- Protocols: SNMP v2, SNMP v3, Modbus TCP, BACnet IP (optional)
- Connected load: 230 VAC, 50Hz

**Flow sensor**

Bi-directional flow sensor for controlling enclosures. Compatible with AREA control unit and iQdata Side-coolers.

**Delivery scope:** 1 flow sensor, Fixing materials

**Technical data:**
- Measuring range: -5 m/s (0 V) to +5 m/s (10 V)
- Operating voltage: 12 – 26.4 V DC
- Analogue output 0 to 10 V, short circuit projected
- Cable length: 5 m
- Rating: IP65
- Dimensions: D = 9 mm, L = 110 mm

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**Enclosure sizes**

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Temperature sensor

Sensor for monitoring temperatures, e.g. in racks or enclosures. Compatible with control unit. PT1000 standard makes the sensor manufacturer-independent.

**Delivery scope:** 1 PT1000 temperature sensor, fixing materials

**Technical data:**
- Type: PT1000
- Accuracy class type B
- Switch mode: 2-conductor
- Protective sleeve: D = 5 mm, L = 50 mm, V4A
- Rating: IP65
- Measuring range: -35 °C to +105 °C

Smoke switch

For visual smoke detection in enclosures, racks or rooms. Compatible with control unit. Manufacturer-independent.

**Delivery scope:** 1 smoke switch, 1 surface mounting base

**Technical data:**
- Revision display acc. to DIN 14677
- Measuring chamber monitoring
- Potential-free opener
- Operating voltage: 18 – 28 V DC
- Switching voltage: max. 30 V DC
- Switching current: max. 1 A
- Rating: IP42
- Housing colour: white, RAL 9010

Leakage sensor

For the detection of water seeping in or leaking out, e.g. through pipe fractures or excessive condensation in the data centre. Compatible with the control unit. Manufacturer-independent.

**Delivery scope:** 1 leakage sensor, mounting materials

**Technical data:**
- Switch mode: 2-conductor
- Switching voltage: max. 60 V
- Switching current: max. 5 A
- Switching capacity: max. 0.75 W
- Dimensions in mm (W x H x D): 64 x 15.6 x 12.7
- Cable length: 3 m

Grating panel

Grating panels for the flexible and targeted supply of cold air from the raised floor.

**Material:** steel
**Finish:** powder coated
**Colour:** RAL 7035 light grey, RAL 9005 jet black

**Delivery scope:** 1 grating panel

**Technical data:**
- Point load: 5,000 N on supports
- Breaking load: > 10,000 N
- Complies with DIN EN 12825, class 5
- Open area: 80 %
- Building material classification: DIN 4102 T1 A1
- Mesh size: 33 x 33 mm
- Dimensions in mm: 597 x 597 x 40
II. iQdata Cooling

Enclosures from SCHÄFER – System accessories

19" blind panel (plastic)

Used for covering empty spaces or for the installation of specific individual 19" components. The plastic design enables the unused spaces or slots in cabinets to be closed up cost efficiently. The Snap-In blind panels can be installed without tools.

Note: only suitable for 19" mounting angles 9.5 mm square holes.

<table>
<thead>
<tr>
<th>U</th>
<th>RAL 7035</th>
<th>RAL 9005</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7978400</td>
<td>7978450</td>
</tr>
</tbody>
</table>

Material: ABS, UL94 V-0
Delivery scope: 10 blind panels

19" Snap-in blind panel

Used for covering empty spaces or for the installation of specific individual 19" components. The high quality, robust sheet steel design significantly reduces the fire risk in the data centre compared to plastic panels. All Snap-in panels can be installed without tools. Simply applying pressure on the “push to close” fasteners is sufficient. A quarter turn then opens the fasters easily - “turn to open”. Eliminating the use of cage nuts and screws reduces installation time by up to 85 %.

Note: only suitable for 19" mounting angles 9.5 mm square holes.

<table>
<thead>
<tr>
<th>U</th>
<th>UPP</th>
<th>RAL 7035</th>
<th>RAL 9005</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>507976000</td>
<td>507976050</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>507976500</td>
<td>507976550</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>507977000</td>
<td>507977050</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>507976800</td>
<td>507976850</td>
</tr>
</tbody>
</table>

Material: blind panels, 1.25 mm steel sheet, quick fasteners, POM (polyacetal), UL94- HB
Finish: powder coated
Colour: RAL 7035 light grey, RAL 9005 jet black
Delivery scope: 1 UPP 19"-Snap-in blind panels (see table for quantity)

19" Snap-in cable guide panel with brush strip

Cable guide panels for cable routing from rear to front. The bottom half of the guide panel is open at the bottom. By installing a second panel upside down below the first panel, the cable routing space can be doubled.

Snap-in installation without tools. Simply applying pressure on the “push to close” fasteners is sufficient. A quarter turn then opens the fasters easily - “turn to open”. Eliminating the use of cage nuts and screws reduces installation time by up to 85 %.

Note: only suitable for 19" mounting angles 9.5 mm square holes.

<table>
<thead>
<tr>
<th>U</th>
<th>RAL 7035</th>
<th>RAL 9005</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>507977600</td>
<td>507977650</td>
</tr>
</tbody>
</table>

Material: steel sheet, 1.5 mm steel sheet, brush strip, TPE-V/ PP, UL94 HB, quick fasteners, POM (polyacetal), UL94- HB
Finish: powder coated
Colour: RAL 7035 light grey, RAL 9005 jet black
Delivery scope: 2 cable guide panels

AirTube

Whereas servers usually draw their cooling air in from the front, many switches do so from the sides. In energy-efficient data centres, the cold/warm air separation inside the racks gives rise to a thermal problem, because the switches draw in their cooling air from the rack’s warm area. This leads to the risk of the devices overheating, and therefore the cold air supply needs to be specifically targeted.

The AirTube enables this flexible, targeted cold air supply and the removal of exhaust air, regardless of airflow direction (from right to left, from left to right, from left and/or right to the rear).

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AirTube</td>
<td>on request</td>
</tr>
</tbody>
</table>

On request, the AirTube is available for many different switch types.

Material: steel sheet, 1.5 mm
Finish: powder coated
Colour: RAL 7021 black grey
Delivery scope: depends on the version
Active fans

Active fans for vertical cabinet ventilation. Easily mounted in the prepared top cover panel. One module contains two fans and the fan modules can be cascaded. The screw fastened housing enables individual fans to be replaced easily.

**Please note:** mains cable must be ordered separately. Not for NT Boxes.

**Material:** housing, 0.75 mm steel sheet, galvanised, protective grille, ABS

**Technical data, fan:**
- Operating voltage: 230 VAC, 50/60 Hz
- Rated output: 22/21 W
- Air flow per fan (free blowing): 162/195 m³/h
- Temperature range: -20 °C to +70 °C
- Noise emission per fan: max. 45/50 dB (A)

**Delivery comprises:** 1 fan module with two fans, fixing accessories

---

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan module with 2 fans</td>
<td>7719300</td>
</tr>
<tr>
<td>Spare fan</td>
<td>7719100</td>
</tr>
<tr>
<td>Mains cable, 2.0 m</td>
<td>6763200</td>
</tr>
</tbody>
</table>

---

Thermostat for fan control

Fully wired thermostat for temperature regulation by means of active fans in the cabinet top cover. No wiring required (Plug & Play).

**Please note:** if not already available, order mains cable separately.

**Technical data:**
- Adjustment range: 0 – 60 °C
- Max. switching capacity: 6A/230V AC
- Interference suppression class: N
- Protection rating: IP30

**Delivery comprises:** 1 thermostat, 1 connecting box, fixing accessories

---

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermostat</td>
<td>6763000</td>
</tr>
</tbody>
</table>

---

AirDuct

A targeted cold air supply can also be guaranteed for 19" devices installed in the rear 19" plane, i.e. the warm area of the rack, by depth adjustable intake ducts. As standard, the AirDuct comes in 1 U, 2 U and 3 U sizes. Other sizes are also available on request.

**Material:** sheet steel, 1.5 mm

**Finish:** powder coated

**Colour:** RAL 7021 black grey

**Delivery scope:** 1 intake duct, external part, 1 intake duct, internal part

---

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AirDuct</td>
<td>on request</td>
</tr>
</tbody>
</table>

---

The intelligent data centre
II. iQdata Cooling

Basic cooling from SCHÄFER – System accessories

1 U speed and temperature controller

Compact 1 U control unit for temperature-dependent, infinitely variable speed regulation of fan modules. Connection of fans and mains connection via rear-side IEC plug. Parameterisation is done via the front operator terminal with an LC display, which can also be used for reading the stored max. and min. temperatures. If the temperature recorded by the temperature sensor rises above the set point value, the display’s green background lighting changes to red. If the set alarm temperature is exceed, the display blinks red and the alarm contact (changeover) is activated.

Material: housing, galvanised steel sheet, front panel, steel sheet, powder-coated, RAL 9005

Dimensions:
- Installation depth: 210 mm
- Width, front panel: 482.6 mm (19”)
- Width, housing: 437 mm
- Height: 1 U

Delivery comprises: 1 speed controller, 1 mains cable, 1 temperature sensor 1.5 m

Technical data:
- Operating voltage: 110 – 240 Volt/50 + 60 Hz
- Power consumption, max.: 250 W
- Max. switching capacity: 10 A
- No load power consumption: ~ 1 W
- Alarm output: 1 changeover, 24 VUC/S A
- Fuse: M 1.6 A – 250 V (5 x 20 mm)
- Operating temperature: +5 °C to +60 °C
- Switching range: +5 °C to +50 °C
- Hysteresis: +1 °C to +5 °C
- Unit of temperature: °C/F
- Temperature sensor: PTC- sensor with plug (KTY81-2), 1.5 m
- Display/SwITCHing accuracy: ± 2 K

19” fan tray, 1 U

19” fan tray with temperature-dependent, infinitely variable speed regulation. Connection via rear-side IEC plug. Parameterisation is done via the front operator terminal with an LC display, which can also be used for reading the stored max. and min. temperatures. If the temperature recorded by the temperature sensor rises above the set point value, the display’s green background lighting changes to red. If the set alarm temperature is exceed, the display blinks red and the alarm contact (changeover) is activated.

Material: housing, galvanised steel sheet, front panel, steel sheet, powder-coated, RAL 9005

Dimensions:
- Installation depth: 375 mm
- Width, front panel: 482.6 mm (19”)
- Width, housing: 437 mm
- Height: 1 U

Delivery comprises: 1 speed controller, 1 mains cable, 1 temperature sensor 1.5 m

Technical data:
- Operating voltage: 110 – 240 Volt/50 + 60 Hz
- Axial fan, ball-bearing, lifetime: 50,000 h at 25 °C
- Max. air capacity: 900 m³/h
- Max. power consumption: 124 W
- Alarm output: 1 changeover, 24 VUC/S A
- Fuse: M 1.6 A – 250 V (5 x 20 mm)
- Operating temperature: +5 °C to +60 °C
- Hysteresis: +1 °C to +5 °C
- Unit of temperature: °C/F
- Temperature sensor: PTC- sensor with plug (KTY81-2), 1.5 m
- Display/SwITCHing accuracy: ± 2 K
The climate control solutions developed by SCHÄFER IT-Systems offer a great selection of high-availability, energy-efficient cooling possibilities for IT components. This can range from solutions for individual racks to cooling concepts for the server rooms of entire data centres.

### Wall-mounted cooling

- **Wall-mounted cooling unit up to 2.5 kW**
  - Water and coolant-based cooling solution
  - Suitable for smaller IT rooms and industrial cabinet systems
  - Cooling device mounted onto IT rack side panel

### Roof-mounted cooling

- **Roof-mounted cooling unit up to 5.2 kW**
  - Coolant-based cooling solution
  - Suitable for smaller IT rooms and industrial cabinet systems

### Backcooler

- **Backcooler up to 30 kW**
  - Especially energy-efficient
  - Heat dissipation into the room is reduced to a minimum
  - Additional filtration of room air
  - Intelligent cooling valve regulates cooling capacity
  - Heavy duty racks can be cooled separately

### InRackcooler

- **InRackcooler up to 27 kW**
  - Direct cooling at server level without additional cooling air
  - Separation of building or enclosure cooling and rack cooling network
  - High water temperature possible
  - Year-round free cooling without chilled water unit
  - Increased energy efficiency possible due to use of heat pumps

### Heat exchanger

- **Heat exchanger up to 300 kW**
  - Separation of coldwater networks for building or enclosure and IT
  - Leak monitoring
  - Automatic flow temperature control to prevent condensation
  - Activation of additional redundant cooling sources
  - Extraction of thermal energy for recovery of energy

From individual racks to complete data centres

II. iQdata Cooling

Climate control units from SCHÄFER –
Sidecooling redefined
Today, reducing operating costs while optimising reliability plays a more important role than ever before. A major focus here lies in reducing the energy consumption of data centres. With its future-oriented side cooling concept (Sidecooler) SCHÄFER IT-Systems has succeeded in combining significantly higher efficiency with considerably lower energy costs.

- With its closed and hybrid cooling architecture, the Sidecooler can be operated with no ventilators for cooling capacities of up to 28 kW, depending on the IT components installed
- Drastic reduction of the energy requirement for cooling
- Modular design enables energy-optimised EC ventilators to be retrofitted at any time without downtimes
- Water and electrical connections can be installed either at the top or bottom
- Maximal cooling capacity can be adapted on request – future-proof
- An intelligent control system recognises current utilization and increases the chilled water flow temperature on the cooling generator (setpoint adjustment) via a 0 – 10 V signal, which extends the free cooling mode

SCHÄFER Logic Interface
The SCHÄFER Logic Interface is the central operating panel for the data centre administrator. All relevant parameters can be read or adjusted on the touch panel.

- The status overview provides information on exhaust air, supply air, flow and return flow temperatures, fan speed in % and valve opening in %
- Password protected entry of parameter changes
- Fast, easy and intuitive thanks to the optimised operator logic
- Continuous monitoring by 13 sensors
- Integrated web server (Ethernet, TCP/IP, FTP, UDP, Modbus RTU or Modbus TCP Master/Slave)

Data security
- The control system is accessed via HTTP(S) and SNMP v2c and v3

Modular ventilator units
- Pre-wired for full installation in entire cabinet
- Ventilators can be retrofitted later if required, without switching off the device
- Constant monitoring and comparison of ventilator fan speeds by intelligent controller
- Master-Slave in combination with an enclosure

Your benefits
- Retrofitting fans possible on request at any time (even during normal operation)
- Easy-to-access, maintenance friendly control box (removable)
- Master display with intuitive operator guidance and full status monitoring
- Load-dependent adaptation of chilled water flow temperature and thermal load by the control system
II. iQdata Cooling

Sidecooler CW from SCHÄFER – Economical and eco-friendly

Closed ventilation architecture
As the ventilation architecture is closed, ventilation between Sidecooler and rack is completely independent of room temperatures and noise emissions can be reduced to a minimum. An optional high efficiency heat exchanger with an extended heat exchanging surface enables chilled water flow temperatures of up to 30 °C at a server supply air temperature of 35 °C to be achieved (deltaT chilled water flow/server supply air K5).

Open ventilation architecture
The open ventilation architecture involves ventilators in the Sidecooler setting the exact volume of air in motion that is required for actually forcing the warm air away from the servers. This prevents high volumes of air leakage and so results in energy savings. Sidecoolers from SCHÄFER IT-Systems can also be used in Master-Slave mode, meaning that all the fans in an enclosure operate at the same fan speed. Altogether, a total of 64 Sidecoolers can work in one Master-Slave group.

Hybrid ventilation architecture/rear side closed
In the hybrid ventilation architecture, the rear side of the rack row forms a warm aisle. This variant can completely replace an entire warm aisle enclosure. The open architecture at the front of the rack row enables redundant cooling to be used and also means that existing fire extinguishers in the room will also be effective for the rack row, thus eliminating any additional installation work.

Hybrid ventilation architecture / front side closed
In hybrid ventilation architecture with a closed front side, an entire cold aisle enclosure is replaced. In combination with a warm aisle enclosure, this enables the influence of cables on the flow of cool air to be significantly reduced. This variant is particularly suitable for racks with widths of 600 mm.

Your benefits
- In closed and hybrid versions up to 28 kW cooling capacity without ventilator fans
- New energy-efficient, space saving pipe-in-pipe concept
- Can be used in various ventilation architectures
- Equipped with the SCHÄFER Logic Interface for integration in all monitoring systems
- Rotation concept provides needs-based climate control
Sidecooler CW from SCHÄFER – Combining a broad spectrum with high efficiency

Technical data

<table>
<thead>
<tr>
<th>Description</th>
<th>Sidecooler (height 2,000 mm)</th>
<th>Sidecooler (height 2,200 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidecooler, closed version</td>
<td>CW- N</td>
<td>CW- H</td>
</tr>
<tr>
<td>Sidecooler hybrid version</td>
<td>HW- N</td>
<td>HW- H</td>
</tr>
<tr>
<td>Sidecooler open version</td>
<td>OW- N</td>
<td>OW- H</td>
</tr>
<tr>
<td>Height (mm)</td>
<td>2,000</td>
<td>2,200</td>
</tr>
<tr>
<td>Depth (mm)</td>
<td>1,000, 1,200 (other depths on request)</td>
<td>1,000, 1,200 (other depths on request)</td>
</tr>
<tr>
<td>Width (mm)</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Rated cooling capacity without fans</td>
<td>20 kW</td>
<td>25 kW</td>
</tr>
<tr>
<td>Rated cooling capacity with fans</td>
<td>32 kW (with 5 fans)</td>
<td>38 kW (with 6 fans)</td>
</tr>
<tr>
<td>Volume flow rate with fans</td>
<td>6,300 m³/h (with 5 fans)</td>
<td>7,100 m³/h (with 6 fans)</td>
</tr>
<tr>
<td>Airside differential pressure</td>
<td>10 Pa (without fans)</td>
<td>17 Pa (without fans)</td>
</tr>
<tr>
<td>Max. power consumption of fans</td>
<td>5 x 170 W</td>
<td>6 x 170 W</td>
</tr>
<tr>
<td>Supply air temperature, server</td>
<td>18 °C to 35 °C</td>
<td>18 °C to 35 °C</td>
</tr>
<tr>
<td>Volume flow rate, water</td>
<td>up to 4.8 m³/h, depending on cooling capacity</td>
<td>up to 4.8 m³/h, depending on cooling capacity</td>
</tr>
<tr>
<td>Difference in water pressure</td>
<td>80 KPa</td>
<td>80 KPa</td>
</tr>
<tr>
<td>Max. operating pressure</td>
<td>10 bar</td>
<td>10 bar</td>
</tr>
<tr>
<td>Cold water inflow temperature</td>
<td>12 °C to 30 °C</td>
<td>12 °C to 30 °C</td>
</tr>
<tr>
<td>Cold water outflow temperature</td>
<td>18 °C to 35 °C</td>
<td>18 °C to 35 °C</td>
</tr>
<tr>
<td>Variable cold water temperatures</td>
<td>In free cooling mode possible depending on cooling requirement</td>
<td>In free cooling mode possible depending on cooling requirement</td>
</tr>
<tr>
<td>Cold water connection</td>
<td>1 ¼” AG</td>
<td>1 ¼” AG</td>
</tr>
</tbody>
</table>

* Depending on the IT components, cold water temperatures and frame sizes

Your benefits

- Setpoint adjustment of chilled water temperature extends free cooling mode
- Extremely large heat exchanging surface for cooling
- Low noise emissions
- Very high chilled water temperature of up to 30 °C possible
### Configure your Sidecooler now

<table>
<thead>
<tr>
<th>Cabinet type</th>
<th>Coolant connection</th>
<th>Control/Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC</td>
<td></td>
<td></td>
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<tr>
<td>SC</td>
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<td>SC</td>
<td></td>
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<tr>
<td>SC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. Bauform</th>
<th>2. Cooling medium</th>
<th>3. Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>O Open Loop</td>
<td>W water</td>
<td>N 2,000 mm</td>
</tr>
<tr>
<td>C Closed Loop</td>
<td>D coolant</td>
<td>H 2,200 mm</td>
</tr>
<tr>
<td>H Hybrid Loop, closed at rear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y Hybrid Loop, closed at front</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1,000 mm</td>
<td>1 RAL 7035 light grey</td>
<td>0 no plinth</td>
</tr>
<tr>
<td>2 1,200 mm</td>
<td>2 RAL 9005 jet black</td>
<td>1 with 100 mm plinth</td>
</tr>
<tr>
<td>3 Special depth</td>
<td></td>
<td>2 with 200 mm plinth (on request)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. Splash guard with filter class¹</th>
<th>8. Number of ventilator modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 no splash guard</td>
<td>0 none</td>
</tr>
<tr>
<td>1 G 3 (only on SC-C and SC-H) on one side</td>
<td>1 1 module</td>
</tr>
<tr>
<td>2 G 4 (only on SC-C and SC-H) on one side</td>
<td>2 2 module</td>
</tr>
<tr>
<td>3 G 3 (only on SC-C and SC-H) on both sides</td>
<td>3 3 module</td>
</tr>
<tr>
<td>4 G 4 (only on SC-C and SC-H) on both sides</td>
<td>4 4 module</td>
</tr>
<tr>
<td></td>
<td>5 5 module</td>
</tr>
<tr>
<td></td>
<td>6 6 module (only in height 2,200 mm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>U from below</td>
<td>S standard</td>
<td>0 no condensation pump</td>
</tr>
<tr>
<td>O from above</td>
<td>V for high cold water temperature and cooling capacity</td>
<td>1 with condensation pump</td>
</tr>
<tr>
<td>S from below in the plinth</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 without meter</td>
<td>0 without door opening</td>
<td>0 without smoke detection</td>
</tr>
<tr>
<td>1 with meter</td>
<td>1 with up to 1 server cabinet (on request)</td>
<td>1 with smoke detection</td>
</tr>
<tr>
<td></td>
<td>1 with up to 2 server cabinets (on request)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 with up to 3 server cabinets (on request)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 with up to 4 server cabinets (on request)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B standard (HTTP, Modbus TCP, TRU, SNMP V2 und V3), FTP</td>
<td>0 without temperature sensors</td>
<td>0 without door monitoring</td>
</tr>
<tr>
<td>B BACnet</td>
<td>1 temperature sensor for 1 cabinet</td>
<td>1 door monitor for 1 cabinet</td>
</tr>
<tr>
<td></td>
<td>2 temperature sensors for 2 cabinets</td>
<td>2 door monitors for 2 cabinets</td>
</tr>
<tr>
<td></td>
<td>3 temperature sensors for 3 cabinets</td>
<td>3 door monitors for 3 cabinets</td>
</tr>
<tr>
<td></td>
<td>4 temperature sensors for 4 cabinets</td>
<td>4 door monitors for 4 cabinets</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>18. Configurable inputs and outputs</th>
<th>19. Mains power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 none</td>
<td>0 simple supply</td>
</tr>
<tr>
<td>1 2 x potential free contacts and 2 x digital inputs</td>
<td>1 A/B supply</td>
</tr>
</tbody>
</table>

¹ not available for all types
II. iQdata Cooling

Sidecooler DX from SCHÄFER – The energy efficient cooling solution with coolants

The energy saver up to grade A+++

The Power Inverter external cooler is especially economical, thanks to a special Power Receiver for super cooling the coolant and two individually controlled expansion valves. In combination with the Sidecooler, an energy efficiency label up to grade A++ can be achieved. Housing and frame are made of strong galvanised steel sheet with an additional weather-resistant polyester stove enamel finish and sound insulation on the inside. Inside the device, there is a high efficiency heat exchanger as a vaporiser made of copper piping with pressed L-shaped aluminium fins, with a sub-cooler for increased performance.

- Directly driven, EC centrifugal fans in plastic, speed-controlled
- Weather proof drive motor, maintenance-free with thermal overload protection
- Speed-controlled DC inverter compressor
- Mounted on vibration damper for low vibration and extremely low noise operation, high efficiency; motor protected against thermal overload and over current
- Crankcase heater for a smooth start and for preventing liquid coolant collecting in the refrigeration oil
- Cooling circuit with filter, oil separator, reservoir and service/filling connections
- The cooling circuit is pressure and leak tested, dried, evacuated and provided with a charge of refrigeration oil
- Pre-filled with R410A coolant
- Rotation of cooling devices when the Sidecoolers which are not required are in standby mode
- In standby mode, the Sidecoolers actually required for cooling run at optimum power level

ATTENTION: SIDECOOLER DX MAY ONLY BE OPERATED WITH EXTERNAL COOLERS FROM THE FOLLOWING LIST!

Make: Mitsubishi Electric, R410A external cooler
4.5 kW > PUHZ-ZRP35VKA
8 kW > PUHZ-ZRP71VHA
10 kW > PUHZ-ZRP100YKA
15 kW > PUHZ-ZRP140YKA
20 kW > PUHZ-ZRP200YKA2
25 kW > PUHZ-ZRP250YKA2

Your benefits
- High energy efficiency
- Intuitive control and monitoring
- Extremely easy maintenance
- Can be retrofitted to existing infrastructures
## Technical data

<table>
<thead>
<tr>
<th>General data</th>
<th>DX 4.5 kW</th>
<th>DX 8 kW</th>
<th>DX 10 kW</th>
<th>DX 15 kW</th>
<th>DX 20 kW</th>
<th>DX 25 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidecooler rated cooling capacity, dry, without latent heat</td>
<td>4.5 kW</td>
<td>8 kW</td>
<td>10 kW</td>
<td>15 kW</td>
<td>20 kW</td>
<td>28 kW</td>
</tr>
<tr>
<td>Cooling capacity regulation</td>
<td>infinite from 30 % to 100 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coolant type</td>
<td>R410A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Sidecooler technical data

<table>
<thead>
<tr>
<th>No. of ventilators for rated cooling capacity</th>
<th>2</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>5/6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. no. of ventilators possible*</td>
<td>5/6</td>
<td>5/6</td>
<td>5/6</td>
<td>5/6</td>
<td>5/6</td>
<td>5/6</td>
</tr>
<tr>
<td>Air flow for rated cooling capacity</td>
<td>1,400 m³/H</td>
<td>2,500 m³/H</td>
<td>3,500 m³/H</td>
<td>4,600 m³/H</td>
<td>6,200 m³/H</td>
<td>7,200 m³/H</td>
</tr>
<tr>
<td>Air flow for max. no. of installed fans*</td>
<td>6,300/7,000 m³/H</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. current per EC ventilator fan</td>
<td>1.4 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. current for max. no. of installed fans</td>
<td>1,050 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply for electric interior device</td>
<td>230 V/1 ph/50 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption for rated cooling capacity</td>
<td>300 W</td>
<td>300 W</td>
<td>470 W</td>
<td>650 W</td>
<td>820 W</td>
<td>1,050 W</td>
</tr>
<tr>
<td>Filter class (optional)</td>
<td>EU 3 oder EU 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heat exchanger surface</td>
<td>8.4 m²</td>
<td>18.4 m²</td>
<td>18.4 m²</td>
<td>37.2 m²</td>
<td>37.2 m²</td>
<td>59.4 m²</td>
</tr>
<tr>
<td>Pipe contents</td>
<td>0.8 dm³</td>
<td>1.6 dm³</td>
<td>1.6 dm³</td>
<td>3.6 dm³</td>
<td>3.6 dm³</td>
<td>5.4 dm³</td>
</tr>
<tr>
<td>Material</td>
<td>Tubing Copper/Lamellae Aluminium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Dimensions, internal device

| Width | 300 mm | 300 mm | 300 mm | 300 mm | 300 mm | 300 mm |
| Height | 2,000/2,200 mm | 2,000/2,200 mm | 2,000/2,200 mm | 2,000/2,200 mm | 2,000/2,200 mm | 2,000/2,200 mm |
| Depth | 1,000/1,200 mm | 1,000/1,200 mm | 1,000/1,200 mm | 1,000/1,200 mm | 1,000/1,200 mm | 1,000/1,200 mm |
| Weight with ventilator fans* | 150/160 kg | 150/160 kg | 154/168 kg | 160/170 kg | 160/170 kg | 165/175 kg |
| Noise level at rated cooling capacity, open version | 79 dB(A) | 79 dB(A) | 85 dB(A) | 85 dB(A) | 87 dB(A) | 90 dB(A) |

### Connections, internal device

| Liquid line Ø | 10 mm | 10 mm | 10 mm | 10 mm | 10 mm | 12 mm |
| Gas pipe Ø | 16 mm | 16 mm | 16 mm | 16 mm | 22 mm | 28 mm |
| Condensation line Ø | ½” | ½” | ½” | ½” | ½” | ½” |

### Technical data, external device

| Width | 809 mm | 950 mm | 1,050 mm | 1,050 mm | 1,050 mm | 1,050 mm |
| Height | 630 mm | 943 mm | 1,338 mm | 1,338 mm | 1,338 mm | 1,338 mm |
| Depth | 300 mm | 330 mm | 370 mm | 370 mm | 370 mm | 370 mm |
| Weight (net) | 43 kg | 71 kg | 121 kg | 129 kg | 129 kg | 135 kg |
| Coolant contents | 2.5 kg | 3.5 kg | 5.0 kg | 5.0 kg | 7.7 kg | 7.7 kg |
| Max. capacity (distance/height difference) | 50/30 m |

### Pipe/Line connections

| Liquid line Ø | 10 mm | 10 mm | 10 mm | 10 mm | 10 mm | 12 mm |
| Gas pipe Ø | 16 mm | 16 mm | 16 mm | 16 mm | 22 mm | 28 mm |

* Construction height 2,000/2,200 mm
## Sidecooler DX from SCHÄFER – Customized configuration made easy

Configure your Sidecooler now

<table>
<thead>
<tr>
<th>Cabinet type</th>
<th>Coolant connection</th>
<th>Control/Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC O 1 H 2 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC C 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC H 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC Y 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC C 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC H 6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. **Type**
   - O: Open Loop
   - C: Closed Loop
   - H: Hybrid Loop, closed at rear
   - Y: Hybrid Loop, closed at front

2. **Cooling capacity**
   - 1: 4.5 kW
   - 2: 8.0 kW
   - 3: 10 kW
   - 4: 15 kW
   - 5: 20 kW
   - 6: 28 kW

3. **Height**
   - N: 2,000 mm
   - H: 2,200 mm

4. **Depth**
   - 1: 1,000 mm
   - 2: 1,200 mm
   - 3: special depth

5. **Colour**
   - 1: RAL 7035 light grey
   - 2: RAL 9005 jet black

6. **Frame**
   - 0: no plinth
   - 2: with 100 mm plinth

7. **Filter**
   - 0: no filter
   - 1: G 3 on one side
   - 3: G 3 on both sides

8. **Number of ventilator modules**
   - 0: none
   - 1: 1 module
   - 2: 1 module
   - 3: 1 module
   - 4: 1 module
   - 5: 1 module
   - 6: 1 module (only in height 2,200 mm)

9. **Condensation pump**
   - 0: no condensation pump
   - 1: with condensation pump

10. **Master-Slave connection**
    - 0: without
    - 1: with

12. **Automatic emergency door opening**
    - 0: without door opening
    - 1: with up to 1 server cabinet (on request)
    - 2: with up to 2 server cabinets (on request)
    - 3: with up to 3 server cabinets (on request)
    - 4: with up to 4 server cabinets (on request)

13. **Smoke detection**
    - 0: without smoke detection
    - 1: with smoke detection

14. **Communications interface**
    - S: standard (HTTP, Modbus TCP, TRU, SNMP V2 und V3, FTP)
    - B: BACnet

15. **Server cabinet monitoring**
    - 0: without temperature sensors
    - 1: temperature sensor for 1 cabinet
    - 2: temperature sensors for 2 cabinets
    - 3: temperature sensors for 3 cabinets
    - 4: temperature sensors for 4 cabinets

17. **Door monitoring for server cabinets**
    - 0: without door monitoring
    - 1: door monitor for 1 cabinet
    - 2: door monitors for 2 cabinets
    - 3: door monitors for 3 cabinets
    - 4: door monitors for 4 cabinets

18. **Configurable inputs and outputs**
    - 0: none
    - 1: 2 x potential free contacts and 2 x digital inputs

19. **Mains power supply**
    - 0: simple supply
    - 1: A/B supply
Sidecooler from SCHÄFER – Intelligent control saves energy

Sidecooler control system
All Sidecoolers are linked together and communicate with each other. The intelligent control monitors the entire system, detects malfunctions and the available cooling capacity of the Sidecoolers. In the event of any malfunctions, faults are passed on to the central monitoring network. The relevant fail-safe functions are then automatically activated by the Sidecooler control.

- Connect all Sidecoolers with network cables
- Determine the master
- Assign IP address

Benefits
- All the active Sidecooler fans operate at the same speed
- The controlled variable is the flow velocity, measured through a cut-out in the enclosure
- Only those SC-DX are in operation which are actually needed for dissipating the thermal energy. All other SC-DX not needed for cooling are in stand-by mode
- Rotation of the SC-DX in standby mode
- In standby mode, the fans are switched off
- Combination of coldwater or coolant based Sidecoolers is possible
- Optimal balance between operational safety and energy efficiency

The Sidecoolers in the same enclosure work with 2 control loops.

Control loop 1
- Controls ventilator fan speed depending as a function of the freely adjustable flow velocity in the bypass
- A balanced pressure ratio is achieved in the enclosure, i.e., only as much air volume flow is generated as is actually required for cooling. Leaks through openings in the raised floor or routing apertures in the racks are reduced to a minimum
- For measuring flow velocity, one or more flow sensors are required

Control loop 2
- Controls the inverter compressors, depending on the thermal load (9 power levels)
- Required cooling capacity and generated cooling capacity in the entire enclosure are constantly calculated and compared. DX Sidecooler which are not required are switched to standby mode
- When greater cooling capacity is needed, individual Sidecooler are activated, depending on the required cooling capacity
- The upper limits for switching Sidecooler DX to standby mode can be set on the master display
- The lower limits for re-activating individual Sidecooler DX can be selected and set freely on the master display
- There is constant rotation of Sidecooler DX, i.e., those in standby mode are re-activated and those operating the cooling function are switched off. Sidecooler with external units have operating times of the same duration

Variation 1: Sidecooler DX in one enclosure
Using the Sidecooler DX in a Master-Slave combination enables operation to be especially energy-efficient. If there is more than one Sidecooler in an enclosure, any Sidecooler not needed for cooling are automatically switched to standby mode.

Variation 2: DX and Sidecooler CW in one enclosure
Installing CW and Sidecooler DX in one enclosure has the following benefits:
- Sidecooler CW can be connected to a free cooler. If the external temperature rises, the Sidecooler CW automatically switches off and the Sidecooler DX switches on
- Redundancy, meaning if the coldwater supply for the Sidecooler CW fails, the Sidecooler DX is automatically activated
- If the Sidecooler CW switch off, the control valve on the water-side closes automatically, enabling a considerable energy saving
Backcooler from SCHÄFER – The space-saving climate control system

Backcooler

The Backcooler is mounted directly on the rear wall panel of the IS-1 cabinet, preventing warm server exhaust air from entering the installation room. The thermal energy from the IT components is taken up by the Backcooler without any additional fans and can be conveyed to the re-cooling system by means of the cold water contained in it. The elimination of the fans and the especially low hydraulic pressure loss on the air side makes the Backcooler especially energy efficient.

The Backcooler replaces the server cabinet rear door and can be opened to 180 °. Special water-carrying hinges prevent the connecting supply lines from becoming twisted. The cold water flow resistance on the water side is extremely low.

A rectifier guarantees that air flow through the heat exchanger is even. The rectifier is equipped with a filter class G3 air filtering function in acc. with DIN EN 779.

Separation of the warm and cold sections of IS-1 cabinets takes place in the rear section containing the IT components. Thus, the IT components are located in the cold section of the rack and no thermal energy can be transmitted back to the server or blades. Switches can be installed in the cabinets without any additional effort (AirTube). Due to the very small area containing warm air, thermal energy radiating out into the installation room is prevented.

In the Backcooler, the separator panel between warm and cold air is located in the rear section of the cabinet rear. The advantage of this is that most of the IT components (e.g. the server) are located in the cold section of the cabinet. The air separator is adjustable and is always adapted to the shortest server.

The cold water connection is made via a special pipe assembly, in which special water-carrying swivel joints are integrated.

- No cross-over of cold water flow and cold water return
- Very low installation depth (90 mm)
- The adjustable air separation panels can be adapted to the respective IT components
- Special brush strips provide the sealing

Your benefits

- No additional thermal load in the room
- Cold room concept, i.e., the room temperature remains cool
- Hot Spots in individual cabinets can be targeted and cooled specifically
- No warm areas in the server room
- Low space requirement
Backcooler

### Technical data

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>Steel sheet, coated</td>
</tr>
<tr>
<td>Dimensions, H x W x D (mm)</td>
<td>2,000 (2,200) x 800 x 90 (hinge section 120 mm)</td>
</tr>
<tr>
<td>Temperature range, air side</td>
<td>12 °C to 30 °C</td>
</tr>
<tr>
<td>Max. room air humidity</td>
<td>8 g/kg tr. air (operation above dew point necessary)</td>
</tr>
<tr>
<td>Outflow temperature from heat exch.</td>
<td>18 °C to 25 °C</td>
</tr>
<tr>
<td>Air temperature difference</td>
<td>5 K to 20 K</td>
</tr>
<tr>
<td>Cooling capacity</td>
<td>30 kW (depending on air side temperature difference)</td>
</tr>
</tbody>
</table>

### Cooling water

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling water flow</td>
<td>15 °C to 25 °C</td>
</tr>
<tr>
<td>Cooling water outlet</td>
<td>21 °C to 31 °C</td>
</tr>
<tr>
<td>Maximum operating pressure</td>
<td>10 bar</td>
</tr>
<tr>
<td>Connection to building network</td>
<td>1” flat sealing external thread</td>
</tr>
</tbody>
</table>

**Backcooler partition panel**

The panels are mounted on the adjustable air separator, between the war and cold server sections. The air separator is located in the rear of the server section, so that most of the server is in the cold section.

<table>
<thead>
<tr>
<th>Dimensions H x W x D (mm)</th>
<th>Pipe connection</th>
<th>Colour RAL</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,000 x 800 x 90</td>
<td>top left</td>
<td>7035</td>
<td>506789500</td>
</tr>
<tr>
<td>2,000 x 800 x 90</td>
<td>bottom left</td>
<td>7035</td>
<td>506789300</td>
</tr>
<tr>
<td>2,000 x 800 x 90</td>
<td>top right</td>
<td>7035</td>
<td>506789400</td>
</tr>
<tr>
<td>2,000 x 800 x 90</td>
<td>top left</td>
<td>9005</td>
<td>506789550</td>
</tr>
<tr>
<td>2,000 x 800 x 90</td>
<td>bottom left</td>
<td>9005</td>
<td>506789350</td>
</tr>
<tr>
<td>2,000 x 800 x 90</td>
<td>top right</td>
<td>9005</td>
<td>506789450</td>
</tr>
<tr>
<td>2,200 x 800 x 90</td>
<td>top left</td>
<td>7035</td>
<td>506789900</td>
</tr>
<tr>
<td>2,200 x 800 x 90</td>
<td>bottom left</td>
<td>7035</td>
<td>506789700</td>
</tr>
<tr>
<td>2,200 x 800 x 90</td>
<td>top right</td>
<td>7035</td>
<td>506789800</td>
</tr>
<tr>
<td>2,200 x 800 x 90</td>
<td>top left</td>
<td>9005</td>
<td>506789950</td>
</tr>
<tr>
<td>2,200 x 800 x 90</td>
<td>bottom left</td>
<td>9005</td>
<td>506789750</td>
</tr>
<tr>
<td>2,200 x 800 x 90</td>
<td>top right</td>
<td>9005</td>
<td>506789850</td>
</tr>
<tr>
<td>2,200 x 800 x 90</td>
<td>bottom right</td>
<td>9005</td>
<td>506789650</td>
</tr>
</tbody>
</table>

**Dimensions (mm) | Colour RAL | Order no.**

<table>
<thead>
<tr>
<th>Dimensions (mm)</th>
<th>Colour RAL</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7035</td>
<td>506783950</td>
</tr>
<tr>
<td>1</td>
<td>9005</td>
<td>506783960</td>
</tr>
</tbody>
</table>
II. iQdata Cooling

Backcooler from SCHÄFER – The automatically controlled cooling system

Cooling capacity control
A 2-way control valve is responsible for controlling the cooling capacity, depending on the thermal load. The valve is installed in the coldwater supply pipes provided by the customer.

Benefits
- Automatic control of cooling capacity by means of a control valve with 230 V power supply and sensors
- Savings of electrical energy of between 30 % and 80 % possible, as the pumps only have to provide cold water which is actually needed
- The freely selectable setting for temperature difference on the water side enables the very stable operation of the chillers (no cycles) and increases operating time
- The cold water return temperature can be set very high, increasing the proportion of free cooling

Control valve

<table>
<thead>
<tr>
<th>Type</th>
<th>Delivery scope</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature difference controller</td>
<td>1 electrical actuator with safety function 1 straight way valve, 1&quot; , Kvs 7.2</td>
<td>506789100</td>
</tr>
<tr>
<td></td>
<td>2 contact sensors</td>
<td></td>
</tr>
<tr>
<td>Temperature difference controller with connecting hose</td>
<td>1 electrical actuator with safety function 1 straight way valve, 1&quot; , Kvs 7.2</td>
<td>506789110</td>
</tr>
<tr>
<td></td>
<td>2 contact sensors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 diffused oxygen-tight flexible tubes, 1&quot;</td>
<td></td>
</tr>
<tr>
<td>Temperature difference controller with connecting hose and balancing valve</td>
<td>1 electrical actuator with safety function 1 straight way valve, 1&quot; , Kvs 7.2</td>
<td>506789120</td>
</tr>
<tr>
<td></td>
<td>2 contact sensors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 diffused oxygen-tight flexible tubes, 1&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 balancing valve</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 ball valve, 1&quot;</td>
<td></td>
</tr>
<tr>
<td>Temperature difference controller + room temperature controller</td>
<td>1 electrical actuator with safety function 1 straight way valve, 1&quot; , Kvs 7.2</td>
<td>506789130</td>
</tr>
<tr>
<td></td>
<td>2 contact sensors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 room temperature sensor</td>
<td></td>
</tr>
<tr>
<td>Temperature difference controller + room temperature controller with connecting hose</td>
<td>1 electrical actuator with safety function 1 straight way valve, 1&quot; , Kvs 7.2</td>
<td>506789140</td>
</tr>
<tr>
<td></td>
<td>2 contact sensors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 diffused oxygen-tight flexible tubes, 1&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 room temperature sensor</td>
<td></td>
</tr>
<tr>
<td>Temperature difference controller + room temperature controller with connecting hose and balancing valve</td>
<td>1 electrical actuator with safety function 1 straight way valve, 1&quot; , Kvs 7.2</td>
<td>506789150</td>
</tr>
<tr>
<td></td>
<td>2 contact sensors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 diffused oxygen-tight flexible tubes, 1&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 balancing valve</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 ball valve, 1&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 room temperature sensor</td>
<td></td>
</tr>
</tbody>
</table>
The intelligent data centre
**II. iQdata Cooling**

**InRackcooler from SCHÄFER – The space-saving, compact cooling solution**

**Energy-saving direct cooling for IT components**

The heat exchanger station, installed at the bottom of the rack in its space-saving, compact design, is used to separate the IT cooling system from the building’s chilled water network. The ready-to-connect station, equipped with a high-efficiency double pump and a safety device assembly, is fitted into a condensate drip tray, making it easily extendable. A 2-way valve installed in the primary chilled water network is responsible for temperature regulation in the secondary cooling water circuit. By means of an integrated dew-point sensor and the intelligent control, the dew point temperature is constantly monitored and the chilled water temperature raised as much as is required to prevent condensation forming in the secondary chilled water network.

**Technical data**

<table>
<thead>
<tr>
<th>InRackcooler</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cooling capacity</strong></td>
<td>27 kW</td>
</tr>
<tr>
<td><strong>Height</strong></td>
<td>4 U (single pump) / 6 U (double pump)</td>
</tr>
<tr>
<td><strong>Width</strong></td>
<td>19”</td>
</tr>
<tr>
<td><strong>Depth (mm)</strong></td>
<td>1,000 / 1,200</td>
</tr>
<tr>
<td><strong>Mains connection</strong></td>
<td>1-ph-230V/50 Hz</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>0.3 kW</td>
</tr>
<tr>
<td><strong>Interfaces</strong></td>
<td>1 x Ethernet TCP/IP</td>
</tr>
<tr>
<td></td>
<td>1 x RS 485</td>
</tr>
<tr>
<td></td>
<td>4 x potential free, free configurable outputs</td>
</tr>
<tr>
<td><strong>Protocols</strong></td>
<td>TCP/IP; HTTP(s); Modbus RTU; Modbus TCP; SNMP Trap; SNMP GET v2c, v3; BACnet IP (optional); FTP</td>
</tr>
</tbody>
</table>

**Your benefits**

- Direct, energy-saving cooling for your IT components
- Space-saving, compact design
- Monitoring via integrated dew point sensor and intelligent control
- No condensation in the secondary chilled water network
- Adapted to the respective server manufacturer
Wall-mounted cooling unit from SCHÄFER – Compact units for high performance

Up to now, server rack components have been designed for a mean operating temperature of 50 °C. As the temperature increases, the lifetime decreases or the IT components become more susceptible to faults. The ideal temperature for achieving a balance between component lifetime and the costs for switching cabinet climate control conditioning is set at 35 °C in the cabinet interior.

Wall-mounted cooling units with water as the coolant
These wall-mounted cooling units are designed for mounting on the server rack sides and consist of a high-performance air/water heat exchanger. By means of the water, the thermal energy can be conducted out of the cabinet without it being dissipated into the installation room. An easily replaceable fan conducts the flow of cooling air directly to the servers via an optional air baffle. The required air flow temperature can be set using a control valve.

Benefits
- Exhaust heat from the servers does not get into the server installation room
- Condensate discharge connection
- Also suitable for water containing antifreeze
- Contaminated room air does not get into the heat exchanger

Information
- The cooling units are designed for indoor installation
- The thermal energy must be released into the installation rooms. Dissipation is the responsibility of the customer

Wall-mounted cooling units with coolant R 134a
These cooling units have two completely separate air cycles. In the internal cycle (cabinet side) the cooling units have an IP54 rating. A compression cooling device provides the cooling inside the server cabinet. The coolant used is the safety refrigerant R134a. An optional air baffle conveys the cooled air directly to the front of the server.

Benefits
- Safety refrigerant R134a
- Cooling capacity between 750 W and 2,500 W
- Condensate evaporation from a cooling capacity of 600 W
- Compact design

Information
- The cooling units are designed for indoor installation
- The thermal energy must be released into the installation rooms. Dissipation is the responsibility of the customer

<table>
<thead>
<tr>
<th>Cooling capacity L 35L35 (W)</th>
<th>Voltage (V)</th>
<th>Power consumption (W)</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>230</td>
<td>780</td>
<td>7710040</td>
</tr>
<tr>
<td>1,000</td>
<td>400</td>
<td>700</td>
<td>7710030</td>
</tr>
<tr>
<td>1,500</td>
<td>400</td>
<td>880</td>
<td>7710010</td>
</tr>
<tr>
<td>2,000</td>
<td>230</td>
<td>1,260</td>
<td>7710020</td>
</tr>
<tr>
<td>2,500</td>
<td>400</td>
<td>990</td>
<td>7710050</td>
</tr>
</tbody>
</table>

Other versions available on request.
The intelligent data centre
Roof-mounted cooling unit

The unit has two completely separate air cycles. In the internal cycle (cabinet side), the cooling unit has an IP54 rating. A compression cooling device provides the cooling inside the server cabinet (coolant R410).

From size 6310110, the cooling unit contains a condensation evaporator. This is a small heating cartridge over which the condensate is conducted to make it evaporate.

From this unit size, no additional condensation line (drainage) is necessary.

Benefits

- Self-cleaning condenser
- Hydrophilic coated evaporator
- 8 unit sizes
- Cooling capacity between 330 W and 2,000 W
- Condensate evaporation from a cooling capacity of 1400 W
- Digital thermostat (except unit with order no. 6310033)
- Quick connector (except unit with order no. 6310033)

Information

- The cooling unit is designed for indoor installation
- The thermal energy must be released into the installation rooms. Dissipation is the responsibility of the customer

<table>
<thead>
<tr>
<th>Cooling capacity L 35L35 (W)</th>
<th>Voltage (V)</th>
<th>Power consumption (W)</th>
<th>Dimensions H x W x D (mm)</th>
<th>Weight (kg)</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>330</td>
<td>230</td>
<td>240</td>
<td>180 x 476 x 324</td>
<td>17</td>
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</tr>
<tr>
<td>600</td>
<td>230</td>
<td>411</td>
<td>335 x 600 x 325</td>
<td>29.5</td>
<td>6310060</td>
</tr>
<tr>
<td>900</td>
<td>230</td>
<td>630</td>
<td>335 x 600 x 325</td>
<td>31.5</td>
<td>6310100</td>
</tr>
<tr>
<td>1,400</td>
<td>230</td>
<td>950</td>
<td>400 x 600 x 400</td>
<td>48</td>
<td>6310110</td>
</tr>
<tr>
<td>2,000</td>
<td>230</td>
<td>1,200</td>
<td>450 x 600 x 400</td>
<td>51.5</td>
<td>6310120</td>
</tr>
<tr>
<td>2,700</td>
<td>400</td>
<td>1,580</td>
<td>480 x 800 x 450</td>
<td>74.5</td>
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</tr>
<tr>
<td>3,800</td>
<td>400</td>
<td>1,450</td>
<td>480 x 800 x 450</td>
<td>79.5</td>
<td>6310140</td>
</tr>
<tr>
<td>5,200</td>
<td>400</td>
<td>2,540</td>
<td>550 x 800 x 600</td>
<td>94</td>
<td>6310150</td>
</tr>
</tbody>
</table>

Other versions available on request.
Energy-saving cooling in your data centre
Saving electrical energy is becoming increasingly important. To achieve this, it is necessary for long periods of the year to operate the cooling device in the free cooling mode, i.e., without chillers. This is possible with high cold water temperatures and the inclusion of an external cooling source which is only used in the event of very high external temperatures. The heat exchanger integrates additional cooling sources into the chilled water network of the IT cooling system.

- The primary and secondary chilled water circuits remain separate
- Leakage monitoring in the secondary network
- Dew-point controlled regulation renders insulation of the secondary chilled water line unnecessary
- Energy-saving system due to capacity-dependent, speed-controlled redundant pumps
- Reliable inclusion of an external energy source possible

Direct cooling
A direct connection between the free cooler and the latent storage unit makes it possible to utilize free cooling for a high proportion of the overall operating time. During the midday hours in summer, cooling is effected from the latent storage unit, which is re-charged through the night. During the rest of the year, cooling is taken over completely by the free cooler. The refrigeration unit, which can be designed for a low cooling capacity, only operates for a few hours in the year.

Your benefits
- Direct cooling due to integrated heat exchanger
- Simple incorporation of reservoirs or chilled water units temperature peaks
- Integrated latent storage unit
- Dew point control
Heat exchanger from SCHÄFER – Energy-saving and reliable

**Direct cooling with an integrated heat exchanger**
For cooling IT components free cooling can be used for most of the year. During temperature peaks in summer a reservoir or a chilled water unit can be operated while ensuring the various chilled water systems remain separated. It is also possible to connect a heat pump.

**Direct cooling with two integrated heat exchangers**
By means of the two heat exchanger the data centre can be cooled by free cooling. In addition thermal energy can be disengaged for a heat pump and a chilled water unit can be connected to the second heat exchanger. Connecting a reservoir is also possible. The two heat exchangers ensure the individual cooling media remain separated.

**Technical data**

<table>
<thead>
<tr>
<th>Heat Exchanger direct cooler with external cooling device</th>
<th>Heat Exchanger direct cooler with external cooling device</th>
</tr>
</thead>
<tbody>
<tr>
<td>without additional adiabatic cooling</td>
<td>with additional adiabatic cooling</td>
</tr>
<tr>
<td>4 kW</td>
<td>4 kW</td>
</tr>
<tr>
<td>10 kW</td>
<td>10 kW</td>
</tr>
<tr>
<td>20 kW</td>
<td>20 kW</td>
</tr>
<tr>
<td>30 kW</td>
<td>30 kW</td>
</tr>
</tbody>
</table>

**Heat Exchanger**

<table>
<thead>
<tr>
<th>with 1 heat exchanger</th>
<th>with 2 heat exchangers</th>
</tr>
</thead>
<tbody>
<tr>
<td>water/water</td>
<td></td>
</tr>
<tr>
<td>50 kW</td>
<td>50 kW</td>
</tr>
<tr>
<td>75 kW</td>
<td>75 kW</td>
</tr>
<tr>
<td>100 kW</td>
<td>100 kW</td>
</tr>
<tr>
<td>200 kW</td>
<td>200 kW</td>
</tr>
<tr>
<td>300 kW</td>
<td></td>
</tr>
</tbody>
</table>

**Additional adiabatic cooling**

**Cooling cycle (diagram)**
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IV. The SCHÄFER WERKE Group of Companies

- EMW Steel Service Centre
- SCHÄFER Perforated Metal
- SCHÄFER Container Systems
- SCHÄFER Container Systems
- SCHÄFER IT-Systems
- SCHÄFER Industrial Solutions
Within the SCHÄFER Group, SCHÄFER WERKE are the specialists for the development, manufacture and sale of thin steel sheet and stainless steel products. Constant growth and the uncompromising extension of the product range underline the company’s successful strategy. The outstanding success of the five individual business areas lies above all in the ability to put customer wishes into practice quickly, while keeping the products themselves highly individual.

The extraordinary speed at which new sheet steel products can be realised stems from the close co-operation of all business areas with our own EMW Steel Service Centre, which, with a storage capacity of 100,000 t of thin steel sheet, can provide the coils, slit strips, cut-to-size sheets and formats required for further processing in very high quality and at very short notice. SCHÄFER Perforated Metal supply a broad and rapidly available range of high-quality perforated plates and sheets for all sectors and application fields. SCHÄFER Container Systems is one of the world’s leading suppliers of reusable stainless steel beverage containers for beer, wine and soft drinks, as well as for IBCs and special containers for solid and liquid substances and granulates.

SCHÄFER IT-Systems supplies both standardised and made-to-measure network and server cabinets, as well as data centre and water-cooled server cabinet solutions, which are planned, adapted to the specific projects and manufactured in our own company, on the basis of our extensive, future-oriented know-how and expertise. SCHÄFER Industrial Solutions develops, designs and manufactures customised punched and bent parts, machine cladding, special and standard housing solutions in metal.

Our great manufacturing expertise, our extensive range of production equipment and our employees’ outstanding level of qualification make SCHÄFER the ideal partner for contract manufacturing. By working with SCHÄFER, our customers can profit from measurable time and cost-saving benefits.
SCHÄFER IT-Systems, an innovative manufacturer of made-to-measure network and server cabinet and data centre solutions for both conventional and complex applications, is part of the internationally successful company SCHÄFER WERKE. This owner-led group of companies has its headquarters in Neunkirchen in Germany’s Siegerland region. The work of all the SCHÄFER WERKE divisions – SCHÄFER IT-Systems, SCHÄFER Industrial Solutions, SCHÄFER Container Systems, SCHÄFER Perforated Metal and the EMW Steel Service Centre – is based on high-quality thin steel sheet. The processing of this material is one of the core competencies of this enterprise.