Thermal Management

12.2 to 12.14
CoolBlast®: “Power up – Cool down!”

Modularity
Selection according to required volume flow. Adjustment is made specifically via fan selection in acc. with three performance classes:
- Standard Performance (axial fan)
- High Performance (axial fan with high speed)
- Ultra High Performance (diagonal fan)

Grid (optimised flow)
- With very low pressure loss so that high module cooling power is guaranteed
- The structural design contributes to considerable noise reduction

Thermostat
- Switching the unit on and off – thermostat-regulated
- Can be set to desired temperatures
The constantly increasing power losses of electronic modules make high demands on the effective cooling of electronic modules. Large airflow volumes ensure secured heat dissipation, whereby higher airflow speeds reach the components, which leads to better heat transfer.

The packing densities of electronics in racks also continue to increase. Fans with high pressure jump overcome the resulting higher increased pressure loss.

The space-saving 1 HU construction guarantees maximum installation space for our customers’ equipment.

1 The CoolBlast® fan unit from Knürr is available as a slot in unit with 3 and 6 fans for vertical ventilation of installed modules. The airflow required for cooling is primarily determined by the fan selection. Fans in three different performance classes are available (Standard, High, and Ultra High Performance). Quiet axial fans and special diagonal fans with an especially high support rate for cooling air can be selected.

2 To ensure that plenty of cooling air reaches the electronic components, CoolBlast® has an IP protective grid with high free cross-section surface. The grid form minimises the pressure loss of the streaming airflow and reduces the streaming noise.

3 The Knürr CoolBlast® adjusts its cooling airflow to the power loss to be cooled. The temperature-regulated control of the fan rotation optimises noise emission and the lifetime of the fans. The maximum reference temperature is set at the front.

A fan failure detector ensures high operational reliability. Exceeding the reference temperature is also detected in the same way. The fault signalling can be processed further with the rack monitoring system, RMS.

A simple thermostat-controlled model is also available.

4 Optimum heat dissipation of the-cooled module is attained with the high airflow volumes and pressure jumps in the CoolBlast® fan unit. Building-specific CFD simulations can optimise each customer thermal management application.

5 Air conduction components, optionally with filter, round off the product range. The filter mat protects the electronic components in use from dirt build-ups and dust, and can be changed during running operation.

In addition to the CoolBlast® fan unit, a number of other components and accessory parts are also available for thermal management in server and network rack systems.
**CoolBlast® Fan Unit**

- Fan unit for vertical cooling of modules in 19” racks
- Chassis runners are recommended for mounting. Chassis runners are required with 6-piece CoolBlast.

### Material
Sheet steel, high-grade steel grid

### Finish / Colour
Housing, zinc-plated
Front panel, powder-coated, smooth in RAL 7035 light-grey

### How supplied
Assembled, wired and tested

### Approvals
CE Label in accordance with low voltage directive 73/23/EEC, EMC directive 89/368/EEC

### Supply schedule

#### 1 CoolBlast fan unit, packed with operating instructions
- Only with DC devices: 1 connection cable, 2 m with connector plug and free ends
- Only with 230V AC devices: 1 2 m power supply lead, Euro

### Note
Please also order specific mains cable (see page 12.15)

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<thead>
<tr>
<th>Name</th>
<th>W</th>
<th>H</th>
<th>D</th>
<th>n</th>
<th>Elec. connection</th>
<th>P(W)</th>
<th>V(m³/h)</th>
<th>ΔP(Pa)</th>
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**CoolBlast® Fan Unit**

- Fan unit for vertical cooling of modules in 19” racks
- Fan function (ON/OFF) thermostat-controlled, setting from 0°C to 60°C
- Chassis runners are recommended for mounting. Chassis runners are required with 6-piece CoolBlast.

### Material
Sheet steel, high-grade steel grid

### Finish / Colour
Housing, zinc-plated
Front panel, powder-coated, smooth in RAL 7035 light-grey

### How supplied
Assembled, wired and tested

### Approvals
CE Label in accordance with low voltage directive 73/23/EEC, EMC directive 89/368/EEC

### Supply schedule

#### 1 CoolBlast fan unit, packed with operating instructions
- Only with DC devices: 1 connection cable, 2 m with connector plug and free ends
- Only with 230V AC devices: 1 2 m power supply lead, Euro

### Note
Please also order specific mains cable (see page 12.15)
CoolBlast® Fan Unit
Speed-controlled

- Fan unit for vertical cooling of modules in 19" racks
- Reference temperature can be set (20°C to 55°C)
- Speed regulation 30% to 100% of the nominal speed; with sensor break 100% speed
- Individual fan monitoring
- Digital alarm output for excess temperature alarm and fan failure
- Optical status display for O.K., excess temperature and fan failure
- Acoustic warning with push-button
- Chassis runners are recommended for mounting. Chassis runners are required with 6-piece CoolBlast.

Material
Sheet steel, high-grade steel grid

Finish / Colour
Housing, zinc-plated
Front panel, powder-coated, smooth in RAL 7035 light-grey

Approvals
CE Label in accordance with low voltage directive 73/23/EEC, EMC directive 89/366/EEC

Supply schedule
1 CoolBlast fan unit, packed with operating instructions
1 sensor cable, 2 m (plug-in)
1 signal cable, 2 m (plug-in)
Only with DC devices:
1 connection cable, 2 m with connector plug and free ends
Only with AC devices:
1 2 m power supply lead, Euro

How supplied
Assembled, wired and tested

Note
Further characteristics can be implemented project-related in line with standards.

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<th>W (mm)</th>
<th>H (mm)</th>
<th>D (mm)</th>
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Dimensions in mm:
- W = Width
- H = Height
- D = Depth
- h = Installation height
- d = Usable depth
- L = Length

Conversion: 1 mm = 0.03937 inch, 1 kg = 2.2046 pound

Note:
- SP = Standard Performance
- HP = High Performance
- UP = Ultra High Performance
- I nom = Nominal current (A)
- I max = Residual current (A)
- V = Voltage (400V = 3-phase)
- P = Power consumption (W)
- ΔP = Airflow volume (m³/h)
- ΔV = Airflow volume loss (%)
**CoolBlast® Airflow via Front Intake**

**Strong points**

- The front intake unit for the CoolBlast® is used for the targeted cooling of module chassis that are situated on top of one another (heat sources).
- The optionally available front panel can be mounted later on and is often used for optical appearance reasons.
- The filter mats protect the electronic components in use from dirt build-up and dust, and they can also be swapped out during running operation.

- The optimised airflow guides the cooled air specifically to the rear (see graphic 1). This prevents increased warming up of the vertical airflows from module chassis to module chassis (see graphic 2).

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<th>Possible configurations: Consists of</th>
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<td>50 %</td>
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**Optimum**  
**Little effect**
Air Guide for Front Intake, 1 HU
CoolBlast®
- For CoolBlast® fan unit, 3-piece and 6-piece for front intake
- Use as air guide plate
- Can be supplemented with front panel and filter mat
- **Material**
  - Sheet steel
- **Finish / Colour**
  - Powder-coated texture, RAL 7035 light-grey
- **Supply schedule**
  - 1 air guide
- **How supplied**
  - In units

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<thead>
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Front Panel for Front Intake Air Guide, 1 HU
CoolBlast®
- For use with the front intake air guide
- Can be mounted later on
- **Material**
  - Sheet steel
- **Finish / Colour**
  - Powder-coated texture, RAL 7035 light-grey, smooth
- **Supply schedule**
  - 1 front panel
- **How supplied**
  - In units

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Filter for front intake
CoolBlast®
- For use with the front intake air guide
- Can be mounted later on and filter can be swapped out during running operation
- **Filter class**
  - G2
- **Material**
  - Viledon K15/150
- **Supply schedule**
  - 1 filter
- **How supplied**
  - In units

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19” filter unit, 1 HU

- Suitable for use with the CoolBlast® fan unit
- Adjusted to the respective chassis depth

Material
Housing: sheet steel
Front panel: ABS (UL94 V-0)
Handle: extruded aluminium
Filter: Viledon P 15/150

Filter class
G2

Finish / Colour
Housing: powder-coated texture
- RAL 9011 black
Front panel: RAL 7035
- Light-grey
Handle: powder-coated texture
- RAL 5008 grey-blue

Supply schedule
1 filter unit
1 filter

How supplied
In units

Supply schedule
Model Order no. UP

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Replacement Filter

- For 19” filter unit

Material
Filter: Viledon P 15/150

Filter class
G2

Supply schedule
1 filter

How supplied
In units

Supply schedule
Model Order no. UP

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<th>D</th>
<th>kg</th>
<th>n</th>
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<th>1 unit</th>
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<td>D</td>
<td>kg</td>
<td>n</td>
<td>03.025.249.1</td>
<td>1 unit</td>
</tr>
<tr>
<td>660</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dimensions in mm: W = Width
H = Height
D = Depth
H U = Standard height unit
1 HU = 44.45 mm
1 mm = 0.03937 inch
1 kg = 2.2046 pound

Conversion:

Pressure increase (P): Pa
Nominal current (I NM):
Residual current (I max):
Voltage (V): 400V = 3-phase
Sound pressure (p): 1 mm from the rack
Airflow volume (m³/h): 600 mm x 600 mm, raised cover
Airflow volume loss (%):
### Axial single fan technical data

<table>
<thead>
<tr>
<th>Item number</th>
<th>CoolBlast* 1</th>
<th>CoolBlast* 2</th>
<th>CoolBlast* 3</th>
<th>CoolBlast* 4</th>
<th>CoolBlast* 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dim: L x W x H</td>
<td>119 x 119 x 38</td>
<td>119 x 119 x 38</td>
<td>119 x 119 x 38</td>
<td>119 x 119 x 38</td>
<td>119 x 119 x 38</td>
</tr>
<tr>
<td>Max. volume flow, free blowing</td>
<td>275 m³/h</td>
<td>165 m³/h</td>
<td>230 m³/h</td>
<td>120 m³/h</td>
<td>120 m³/h</td>
</tr>
<tr>
<td>Voltage</td>
<td>48 VDC</td>
<td>115 VAC</td>
<td>230 VAC</td>
<td>230 VAC</td>
<td>230 VAC</td>
</tr>
<tr>
<td>Frequency</td>
<td>50 Hz</td>
<td>50 Hz</td>
<td>50 Hz</td>
<td>50 Hz</td>
<td>50 Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>19.7 W</td>
<td>14.5 W</td>
<td>15 W</td>
<td>7.5 W</td>
<td>7.5 W</td>
</tr>
<tr>
<td>Noise, free blowing</td>
<td>60 dB(A)</td>
<td>41 dB(A)</td>
<td>38 dB(A)</td>
<td>32 dB(A)</td>
<td>32 dB(A)</td>
</tr>
<tr>
<td>Bearing system</td>
<td>Ball bearing</td>
<td>Ball bearing</td>
<td>Ball bearing</td>
<td>Ball bearing</td>
<td>Ball bearing</td>
</tr>
<tr>
<td>Nominal speed</td>
<td>2900 min-1</td>
<td>2900 min-1</td>
<td>2600 min-1</td>
<td>2100 min-1</td>
<td>2100 min-1</td>
</tr>
<tr>
<td>Permitted environ. temp.</td>
<td>-20 °C to +65 °C</td>
<td>-40 °C to +60 °C</td>
<td>-40 °C to +60 °C</td>
<td>-40 °C to +70 °C</td>
<td>-40 °C to +70 °C</td>
</tr>
<tr>
<td>Lifetime, L10 at 40°C</td>
<td>70,000 h</td>
<td>43,500 h</td>
<td>43,500 h</td>
<td>43,500 h</td>
<td>43,500 h</td>
</tr>
<tr>
<td>Approvals</td>
<td>CE, VDE</td>
<td>CE, VDE</td>
<td>CE, VDE</td>
<td>CE, VDE</td>
<td>CE, VDE</td>
</tr>
</tbody>
</table>

### Use in fan unit:

<table>
<thead>
<tr>
<th>Item number</th>
<th>03.027.047.1</th>
<th>03.027.004.1</th>
<th>03.027.001.1</th>
<th>05.010.307.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use in fan unit:</td>
<td>03.027.048.1</td>
<td>03.027.005.1</td>
<td>03.027.002.1</td>
<td>05.010.306.1</td>
</tr>
<tr>
<td></td>
<td>03.027.300.1</td>
<td>03.027.301.1</td>
<td>03.027.003.1</td>
<td>01.113.430.0</td>
</tr>
<tr>
<td></td>
<td>03.027.302.1</td>
<td>03.027.303.1</td>
<td>03.027.304.1</td>
<td>01.113.431.0</td>
</tr>
<tr>
<td></td>
<td>03.027.305.1</td>
<td>03.027.306.1</td>
<td>03.027.307.1</td>
<td>01.243.428.1</td>
</tr>
<tr>
<td></td>
<td>03.028.110.8</td>
<td>03.028.111.8</td>
<td>03.028.112.8</td>
<td>03.028.113.8</td>
</tr>
</tbody>
</table>
Euro Mains Cable
For DIN 49 440 and French/Belgian standard
- Mains plug CEE/VII
- Euro socket IEC 320
- Cable: H05VV-F 3G 1 mm²
  - Mains voltage: 250 VAC
  - Nominal current: 10 A

<table>
<thead>
<tr>
<th>L</th>
<th>S</th>
<th>F1</th>
<th>F2</th>
<th>19&quot;</th>
<th>Safe</th>
<th>Model</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>440</td>
<td>04.000.054.9</td>
<td>1 unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5000</td>
<td>440</td>
<td>04.000.050.9</td>
<td>1 unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Euro Mains Cable
For Swiss standard
- Mains plug: Type 12
- Euro socket IEC 320
- Cable: H05VV-F 3G 1 mm²
  - Mains voltage: 250 VAC
  - Nominal current: 10 A

<table>
<thead>
<tr>
<th>L</th>
<th>S</th>
<th>F1</th>
<th>F2</th>
<th>19&quot;</th>
<th>Safe</th>
<th>Model</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>04.000.055.9</td>
<td>1 unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Euro Mains Cable
For British standard
- Mains plug: Type BS 1363
- Euro socket IEC 320
- Cable: H05VV-F 3G 1 mm²
  - Mains voltage: 250 VAC
  - Nominal current: 10 A

<table>
<thead>
<tr>
<th>L</th>
<th>S</th>
<th>F1</th>
<th>F2</th>
<th>19&quot;</th>
<th>Safe</th>
<th>Model</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>04.000.056.9</td>
<td>1 unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Euro Connection Cable
- Mains plug: IEC 320
- Euro socket IEC 320
- Cable: H05VV-F 3G 1 mm²
  - Mains voltage: 250 VAC
  - Nominal current: 10 A

<table>
<thead>
<tr>
<th>L</th>
<th>S</th>
<th>F1</th>
<th>F2</th>
<th>19&quot;</th>
<th>Safe</th>
<th>Model</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>900</td>
<td>04.000.051.9</td>
<td>1 unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Door Contact Switch
- On/off switch, 4 A, 230 V
- Activation with opening and closing of the door
  - Supply schedule
    1 door contact switch (not wired)
    1 mounting brackets
    Mounting material

<table>
<thead>
<tr>
<th>W</th>
<th>H</th>
<th>S</th>
<th>HU</th>
<th>h</th>
<th>d</th>
<th>w</th>
<th>Model</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.110.722.9</td>
<td>1 unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Filter Fan**

- For specific use with hot spots
- Also suitable for later mounting, quick and easy
- The filter mats provide high filtering-out properties, are easily exchanged and can be cleaned
- The fans do not require maintenance and their value is especially emphasized by their long lifespan and low noise factor
- Airflow: blowing in the rack (pre-setting)
- Can be used as blowing-out or taking-in

<table>
<thead>
<tr>
<th>LxW</th>
<th>D/z</th>
<th>y/z</th>
<th>kg</th>
<th>Max. AF</th>
<th>EL conn.</th>
<th>L</th>
<th>Noise</th>
<th>N</th>
<th>Life/60º</th>
<th>Model</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>150x150</td>
<td>71/20/5</td>
<td>125/131</td>
<td>0.812</td>
<td>57 m³/h</td>
<td>230 V / 50/60Hz 20 W</td>
<td>43 dBA</td>
<td>2650/min</td>
<td>40,000 h</td>
<td>Filter fan</td>
<td>03.026.501.1</td>
<td>1 unit</td>
<td></td>
</tr>
<tr>
<td>204x204</td>
<td>90/120/5,7</td>
<td>177/185</td>
<td>1</td>
<td>90 m³/h</td>
<td>230 V / 50/60Hz 20 W</td>
<td>43 dBA</td>
<td>2650/min</td>
<td>40,000 h</td>
<td>Filter fan</td>
<td>03.026.502.1</td>
<td>1 unit</td>
<td></td>
</tr>
<tr>
<td>250x250</td>
<td>113/172/6</td>
<td>223/230</td>
<td>1.690</td>
<td>240m³/h</td>
<td>230 V / 50/60Hz 29 W</td>
<td>50 dBA</td>
<td>2800/min</td>
<td>40,000 h</td>
<td>Filter fan</td>
<td>03.026.503.1</td>
<td>1 unit</td>
<td></td>
</tr>
<tr>
<td>325x325</td>
<td>125/208/7</td>
<td>291/302</td>
<td>3.620</td>
<td>520m³/h</td>
<td>230 V / 50/60Hz 67 W</td>
<td>63 dBA</td>
<td>2770/min</td>
<td>50,000 h</td>
<td>Filter fan</td>
<td>03.026.504.1</td>
<td>1 unit</td>
<td></td>
</tr>
</tbody>
</table>

**Exit filter**

<table>
<thead>
<tr>
<th>LxW</th>
<th>D/z</th>
<th>y/z</th>
<th>kg</th>
<th>Max. AF</th>
<th>EL conn.</th>
<th>L</th>
<th>Noise</th>
<th>N</th>
<th>Life/60º</th>
<th>Model</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>150x150</td>
<td>24/5</td>
<td>125/131</td>
<td>0.140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Exit filter</td>
<td>03.026.511.1</td>
<td>1 unit</td>
</tr>
<tr>
<td>204x204</td>
<td>20.5/5.7</td>
<td>177/185</td>
<td>0.275</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Exit filter</td>
<td>03.026.512.1</td>
<td>1 unit</td>
</tr>
<tr>
<td>250x250</td>
<td>25/6</td>
<td>233/230</td>
<td>0.440</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Exit filter</td>
<td>03.026.513.1</td>
<td>1 unit</td>
</tr>
<tr>
<td>325x325</td>
<td>26/7</td>
<td>291/302</td>
<td>0.780</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Exit filter</td>
<td>03.026.514.1</td>
<td>1 unit</td>
</tr>
</tbody>
</table>

**Replacement filter mat**

<table>
<thead>
<tr>
<th>LxW</th>
<th>D/z</th>
<th>y/z</th>
<th>kg</th>
<th>Max. AF</th>
<th>EL conn.</th>
<th>L</th>
<th>Noise</th>
<th>N</th>
<th>Life/60º</th>
<th>Model</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>150x150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Replacement filter mat</td>
<td>03.026.521.9</td>
<td>6 units</td>
</tr>
<tr>
<td>204x204</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Replacement filter mat</td>
<td>03.026.522.9</td>
<td>6 units</td>
</tr>
<tr>
<td>250x250</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Replacement filter mat</td>
<td>03.026.523.9</td>
<td>6 units</td>
</tr>
<tr>
<td>325x325</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Replacement filter mat</td>
<td>03.026.524.9</td>
<td>6 units</td>
</tr>
</tbody>
</table>

**Material**
- Heat-resistant ABS plastic, UL 94 V-0

**Colour**
- RAL 7035 light-grey

**Approvals**
- CE Symbol

**Protection rating**
- IP 54

---

**Dimensions in mm:**
- W = Width
- H = Height
- D = Depth
- h = Installation height
- d = Useable depth
- L = Length

**Conversion:**
- 1 mm = 0.03937 inch
- 1 kg = 2.2046 pound
# THERMAL MANAGEMENT

## Thermostat

- For controlling the inside temperature of the rack
- Temperature display: +10°C...+70°C
- Setting the alarm temperature via front panel potentiometer
- Optical alarm display (LED red)
- Alarm signalling via floating switching contact (1 changeover contact 250 VAC / 8 A)
- Power supply: 230 V / 50Hz

<table>
<thead>
<tr>
<th>Material</th>
<th>Plastic</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>W</th>
<th>H</th>
<th>D</th>
<th>L</th>
<th>W</th>
<th>n</th>
<th>Model</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>01.113.384.3</td>
<td>1 unit</td>
<td></td>
</tr>
</tbody>
</table>

## Temperature Module

- For monitoring the inside temperature of the rack
- Temperature display: +10°C...+70°C
- Setting the alarm temperature via frontal potentiometer
- Optical alarm display (LED red)
- Alarm signalling via floating switching contact (1 changeover contact 250 VAC / 8 A)
- Power supply: 230 V / 50Hz

<table>
<thead>
<tr>
<th>Material</th>
<th>Plastic</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>W</th>
<th>H</th>
<th>D</th>
<th>L</th>
<th>W</th>
<th>n</th>
<th>Model</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>01.117.525.1</td>
<td>1 unit</td>
<td></td>
</tr>
</tbody>
</table>

## 19" Front Panel, 1 HU for Temperature Module

- For installing the temperature module

<table>
<thead>
<tr>
<th>Colour</th>
<th>RAL 7035 light-grey</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>W</th>
<th>H</th>
<th>D</th>
<th>L</th>
<th>W</th>
<th>n</th>
<th>Model</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>01.117.526.1</td>
<td>1 unit</td>
<td></td>
</tr>
</tbody>
</table>

## Bracket for Temperature Module

- For non-standard installation of temperature module, e.g. laterally on the 19" extrusion

<table>
<thead>
<tr>
<th>Material / Finish</th>
<th>Aluminium, 2 mm, sheer</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>W</th>
<th>H</th>
<th>D</th>
<th>L</th>
<th>W</th>
<th>n</th>
<th>Model</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>01.117.527.0</td>
<td>1 unit</td>
<td></td>
</tr>
</tbody>
</table>

## Protection rating

- IP 30

## Approvals

- CE Label in acc. with low voltage directive 73/23/EEC, EMC directive 89/336/EEC

## Supply schedule

- 1 bracket
- Mounting material

<table>
<thead>
<tr>
<th>How supplied</th>
<th>Flat-packed kit</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>W</th>
<th>H</th>
<th>D</th>
<th>L</th>
<th>W</th>
<th>n</th>
<th>Model</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>01.117.527.0</td>
<td>1 unit</td>
<td></td>
</tr>
</tbody>
</table>

## Thermostat

- For controlling the inside temperature of the rack in conjunction with fan units and heating fans
- Setting range: +10°C...+60°C
- Switching temperature difference (hysteresis) 2K
- Contact type: 1 changeover contact
- Sensor: thermostatic bimetal
- Contact rating: 230 VAC/10 A (heating), 5 A (cooling)
- Interference suppression: in acc. with DIN 55014

<table>
<thead>
<tr>
<th>Material</th>
<th>Plastic</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>W</th>
<th>H</th>
<th>D</th>
<th>L</th>
<th>W</th>
<th>n</th>
<th>Model</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>01.113.384.3</td>
<td>1 unit</td>
<td></td>
</tr>
</tbody>
</table>
## Installation Set for 19” Cooling Unit

- With PG screw fittings for cable routing
- **Finish**
  - Powder-coated texture, RAL 7035 light-grey
- **Supply schedule**
  - 1 bottom cover
  - 1 connection panel, 9 HU
  - 2 chassis runners
  - Mounting material

<table>
<thead>
<tr>
<th>W</th>
<th>H</th>
<th>D</th>
<th>kg</th>
<th>W</th>
<th>For rack type</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>800</td>
<td></td>
<td></td>
<td>Miracel</td>
<td>01.131.610.1</td>
<td>1 set</td>
<td></td>
</tr>
<tr>
<td>800</td>
<td>800</td>
<td></td>
<td></td>
<td>Miracel</td>
<td>01.131.612.1</td>
<td>1 set</td>
<td></td>
</tr>
</tbody>
</table>

- **How supplied**
  - Flat-packed kit
- **Note**
  - Please order a rear door shortened by 9 HU. Installation of this set is not possible in a rack with plinth!
Cooling Unit
Wall installation

- Maintenance-free operation with biggest possible lamella spacing and filter-less operation
- Condensation vaporization or condensation run-off
- For mounting on rear panel, rear door or side panel of a rack
- Temperature regulation via electronic board
- CFC-free cooling agent, R 134a
- No danger to your electronic components from dust build-up and spray water: IP 54 on the rack side
- Even temperature distribution in the rack

Material
Sheet steel housing

Finish / Colour
Housing, powder-coated texture, RAL 7035 light-grey

Approvals
CE

Supply schedule
1 cooling unit
Mounting material
Operating instructions

Technical data (general)
- Mains voltage: 230V ~1
- Mains frequency: 50Hz/60Hz
- Temperature range: 20°C to 55°C
- Cooling agent: R134a (CFC-free)
- Protection rating: IP54

Electronic board functions
- Reference temperature (internal rack temperature) can be set between 25°C and 45°C
- LED display of the actual temperature and operating state; compressor “On”, “Off”
- High and low temperature alarm display; test alarm
- Floating break contact for error messages
- Connection option for optional door contact switch

<table>
<thead>
<tr>
<th>Qn LUS</th>
<th>W</th>
<th>H</th>
<th>D</th>
<th>Wt</th>
<th>V (on side)</th>
<th>I nom</th>
<th>I max</th>
<th>Sound press. (1m)</th>
<th>Order no.</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>900</td>
<td>322</td>
<td>784</td>
<td>221</td>
<td>29</td>
<td>330</td>
<td>3</td>
<td>14.5</td>
<td>65</td>
<td>03.032.330.1</td>
<td>1 unit</td>
</tr>
<tr>
<td>1400</td>
<td>406</td>
<td>934</td>
<td>244</td>
<td>42</td>
<td>575</td>
<td>5</td>
<td>17</td>
<td>65</td>
<td>03.032.331.1</td>
<td>1 unit</td>
</tr>
<tr>
<td>2000</td>
<td>406</td>
<td>934</td>
<td>244</td>
<td>44</td>
<td>860</td>
<td>5</td>
<td>20</td>
<td>65</td>
<td>03.032.332.1</td>
<td>1 unit</td>
</tr>
<tr>
<td>2700</td>
<td>508</td>
<td>1234</td>
<td>375</td>
<td>86</td>
<td>860</td>
<td>9</td>
<td>38</td>
<td>70</td>
<td>03.032.333.1</td>
<td>1 unit</td>
</tr>
</tbody>
</table>

Dimensions in mm: W = Width, H = Height, D = Depth, Wt = Weight

Insertion height: HA = 44.45 mm

UP = Unit of packaging

Sound pressure level: 1 m at 1 m.

Conversion: 1 mm = 0.03937 inch, 1 kg = 2.2046 pound
### THERMAL MANAGEMENT

#### Cooling Unit

**Top-mounting**

- Maintenance-free operation with biggest possible lamella spacing and filter-less operation
- Condensation vaporization or condensation run-off
- Easy set-up on the top of the rack
- Temperature regulation via electronic board
- CFC-free cooling agent, R 134a
- No danger to your electronic components from dust build-up and spray water: IP 54 on the rack side
- Even temperature distribution in the rack

**Material**

Sheet steel housing

**Finish / Colour**

Housing, powder-coated texture, RAL 7035 light-grey

**Approvals**

CE

#### Supply schedule

1 cooling unit

Mounting material

Operating instructions

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- High and low temperature alarm display; test alarm
- Floating break contact for error messages
- Connection option for optional door contact switch

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### LUF20210

**Qn** | **W** | **H** | **D** | **Wt** | **V rack side** | **I nom** | **I max** | **Sound press. in 1m (dB(A))** | **Order no.** | **UP**
---|---|---|---|---|---|---|---|---|---|---
900 | 800 | 330 | 320 | 345 | 2.7 | 15 | 65 | Type 5 | 03.032.340.1 | 1 unit
1400 | 604 | 350 | 448 | 45 | 375 | 4.3 | 17 | 65 | Type 6 | 03.032.341.1 | 1 unit
2000 | 604 | 350 | 448 | 44 | 486 | 5 | 22 | 65 | Type 7 | 03.032.342.1 | 1 unit
2700 | 808 | 447 | 480 | 81 | 860 | 8 | 38 | 67 | Type 8 | 03.032.343.1 | 1 unit

**Dimensions in mm:**

- **W** = Width
- **H** = Height
- **D** = Depth
- **Wt** = Weight
- **V** = Volume flow (m³/h)
- **P** = Pressure increase
- **Qn** = Nominal cooling power (W)

**Conversion:**

1 mm = 0.03937 inch
1 kg = 2.2046 pound

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**Type 5**

**Type 6**

**Type 7**

**Type 8**