

CPCI System Subrack 2 U

User's Manual



Product No.:
24579-081

Rev.	Date updated	Change
R1.0	January 14, 2008	Initial Release
R1.1	April 18, 2011	Fan Tray with mini compression latch

Impressum:

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The details in this manual have been carefully compiled and checked - supported by certified Quality Management System to EN ISO 9001/2000

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1 Safety

1.1 Intended Application

The CompactPCI (CPCI) system subrack, described in this manual, is intended as a platform for a microcomputer system based on the CompactPCI Standard PICMG 2.0 Rev.3.

The CPCI system subracks are designed for protection class IP 20 and can be used only in the resp. environments.

For higher protection requirements, e.g. IP 54/55 you must install the system subrack in a protective case.

CPCI system subracks are not end-products, so there is no valid approval for this unit. In order to enable stand-alone functionality, additional elements are required. An operational system is achieved only by way of appropriate CPCI boards.

The completion and final testing of the units have been carried out, or at least supervised, by qualified technicians. These instructions are directed exclusively to these qualified technicians i.e. engineers, trained and qualified electricians etc.




Make sure that:

- the finished system complies with the safety regulations currently applicable in the country it is going to be used.
- the finished system complies with all other regulations and specifications at the place and country of use, e.g. interference limits, approval by the telecommunications authorities.


1.2 Safety Instructions

The intended audience of this User's Manual is system integrators and hardware/software engineers.

1.2.1 Safety Symbols used in this document

	<p>Hazardous voltage!</p> <p><i>This is the electrical hazard symbol. Familiarise yourself with the danger of electrical voltages and the safety precautions to avoid accidents before starting to work with parts that carry dangerous voltages.</i></p>
	<p>Caution!</p> <p><i>This is the user caution symbol. It indicates a condition where damage of the equipment or injury of the service personnel could occur. To reduce the risk of damage or injury, follow all steps or procedures as instructed.</i></p>
	<p>Danger of electrostatic discharge!</p> <p><i>Static electricity can damage sensitive components in a system. To avoid damage, wear ESD wrist straps or at regular intervals touch blank enclosure parts.</i></p>

1.3 General Safety Precautions

	<p>Warning!</p> <p><i>Voltages over 60 VDC can be present in this equipment. This equipment is intended to be accessed, to be installed and maintained by qualified and trained service personnel only.</i></p> <p><i>This equipment is designed in accordance with protection class 1! It must therefore be operated only with protective GND/earth connection!</i></p>
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- Service personnel must know the necessary electrical safety, wiring and connection practices for installing this equipment.
- Install this equipment only in compliance with local and national electrical codes.

2 Product Definition

The Schroff CPCI system subrack consists of:

- A shielded 19" subrack with front and rear card cage for 6 U boards according to CompactPCI Standard PICMG 2.0 Rev.3
- A 6 U 4 slot CPCI Backplane, system slot left (bottom)
- An ATX power supply (250 W) with wide range input
- Fans for the active cooling of the boards
- DC switch

2.1 References and Architecture Specifications

- User Manual CPCI Backplanes
Order no.: 73972-101
- Technical Data Schroff CPCI Backplanes 23006-7xx
Order no.: 73972-088
- User Guide Schroff CPCI Backplanes 23006-799
Order no.: 63972-214

Further information can also be found in the catalogue „Electronic Packaging“ and on the internet under www.schroff.biz

2.2 Subrack System Overview

Figure 1: System Overview



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- | | | | |
|---|----------------|---|------------------|
| 1 | CPCI backplane | 3 | ATX Power Supply |
| 2 | Fan Tray | 4 | DC Switch |

2.3 Subrack

The 2 U 19" subrack is based on the Schroff europacPRO system with EMC shielding. The card cage enables the horizontal assembly of 4 CPCI front boards (6 U, 4 HP, 160 mm deep) and 4 Rear I/O Boards (6 U, 4 HP, 80 mm deep).

The right guide rails of the card cage are equipped with ESD clips.

2.4 CPCI Backplane

The horizontally assembled 6 U Backplane provides:

- CompactPCI bus (PICMG2.0 R.3.0) with System Slot left (bottom)
- Connector for the Fan Tray at the left side
- Connector for the power supply at the right side

Applicable Specifications:



PICMG 2.0 R3.0 CPCI Core Specification

PICMG 2.01 R2.0 Hot Swap

PICMG 2.09 R1.0 System Management Bus

PICMG 2.10 R1.0 Keying


2.5 Power Supply

	<p>Hazardous voltage! <i>Parts of the power supply may be exposed with hazardous voltage. Always remove mains/line connector before carry out any assembly work.</i></p>
	<p>Caution! <i>Your system has not been provided with a AC power cable. Purchase a AC power cable that is approved for use in your country. The AC power cable must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cable should be greater than the ratings marked on the product.</i></p>

Power is provided through a 250 W ATX power supply with wide range input. The power supply is located to the right of the card cage behind a perforated front panel. The AC input is via an IEC 320-C14 connector at the back.

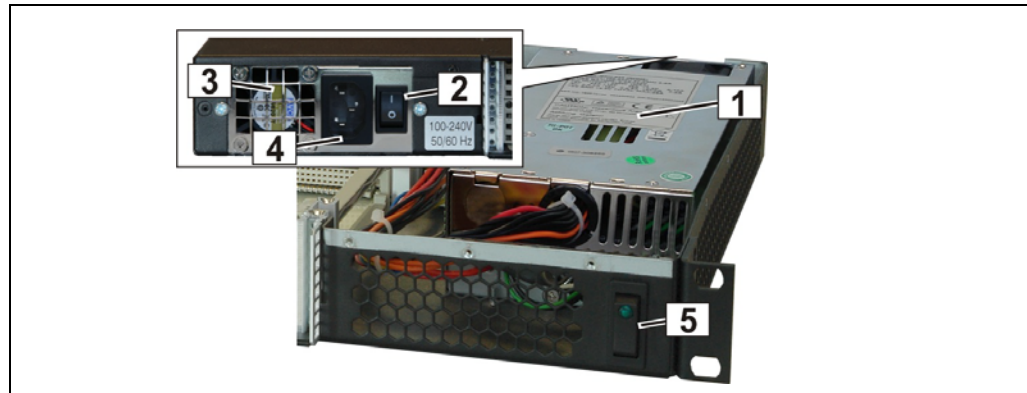
The mains on/off switch is located at the back close to the AC input connector. With a DC switch at the front you can switch-off the DC outputs of the power supply.

2.5.1 Grounding/Earthing

	<p>Caution! <i>The unit is designed in accordance with protection class 1! It must therefore be operated with protective earth/GND connection. Use only a three conductor AC power cable with a protective earth conductor that meets the IEC safety standards!</i></p>
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2.5.2 ATX Power Supply

Figure 2: ATX Power Supply



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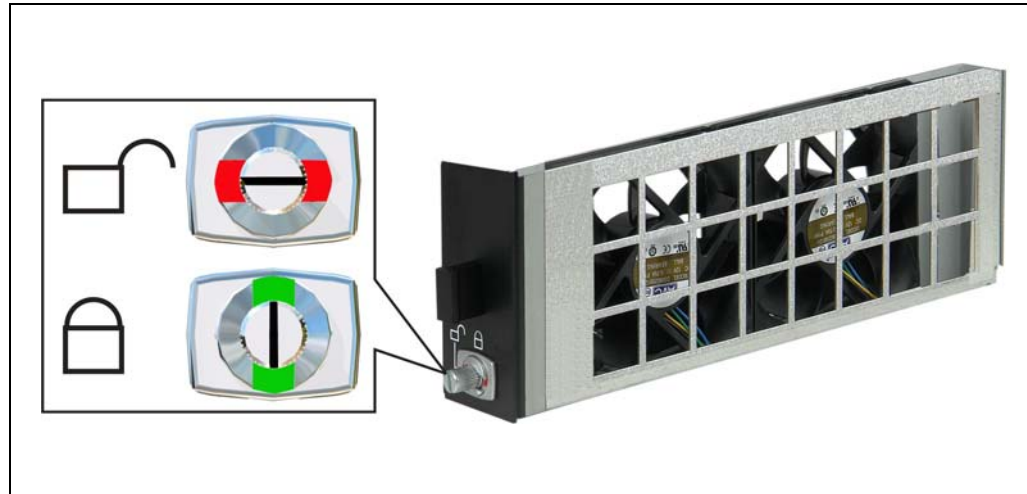
- | | | | |
|---|------------------|---|---------------------------|
| 1 | ATX Power Supply | 4 | AC Connector (IEC320-C14) |
| 2 | AC Switch | 5 | DC Switch |
| 3 | Fan | | |

Table 1: Techn. Data ATX Power Supply

Input voltage	90...264 VAC, 120...380 VDC / active PFC
Input frequency	47...63 Hz
Input current	4 A (115 V) / 2 A (230 V)
Output (max)	5 V / 23 A; 3,3 V / 14 A, 12 V / 16 A, -12 V / 0,5 A)
Output (min)	5 V / 3 A; 3,3 V / 1 A, 12 V / 2 A, -12 V / 0,1 A)
Inrush Current	65/130 A (115/230 VAC)
Efficiency	>70%, (115 VAC full oad)
Overload protection	110...160%, shut down
Short circuit protection	+3,3 V, +5 V, +12 V, shut down / -5 V, -12 V, +5 VSB, auto recovery
Over voltage protection	+3,3 V (+3,6...+4,2 V), +5 V (+5,6...+6,6 V), +12 V (13,2...14,6 V)
Ripple	+3,3 V 60 mV / +5 V 50 mV / +12 V 120 mV / -12 V 120 mV
Load regulation	+3,3 V ±5% / +5 V ±5% / +12 V ±5% / -12 V ±10%
Hold up time	>16 msec.
Power Good Signal	switch-on delay 100...500 msec. Switch-off delay 1msec.
Isolation voltage	Input / Chassis 3000 VAC for 60 sec. Input / Output 1800 VAC for 60 sec.
Leakage current	<3,5 mA, 115 VAC / 230 VAC
Operating temperature	0...+50°C
Derating	Power on: +3,3 V: +30°C/14 A, +40°C/12 A, +50°C/10 A
Storage temperature	-20...+80°C
Humidity	20...80% RH, non-condensing
MTBF	120.000 h at +50°C, without fan
Safety	TÜV EN 60950 / UL 60950
EMV	CE
Fan	ball bearing fan, temperature regulated
Dimensions (LxBxH)	190 x 100 x 40 mm, ±0,5mm

2.6 Cooling

Figure 3: Fan Tray



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The CPCI boards are cooled by forced air convection through two 12 VDC axial fans (109 m³/h (64 cfm) each).

The operating temperature is from 0°C to 50°C, but note that the power supply starts derating at 50°C.

2.7 Remove/Install Fan Tray

The Fan Tray is locked into the chassis by a mini compression latch with indicator red/green. In closed position the indicator shows green, in open position the indicator shows red.

Remove Fan Tray:

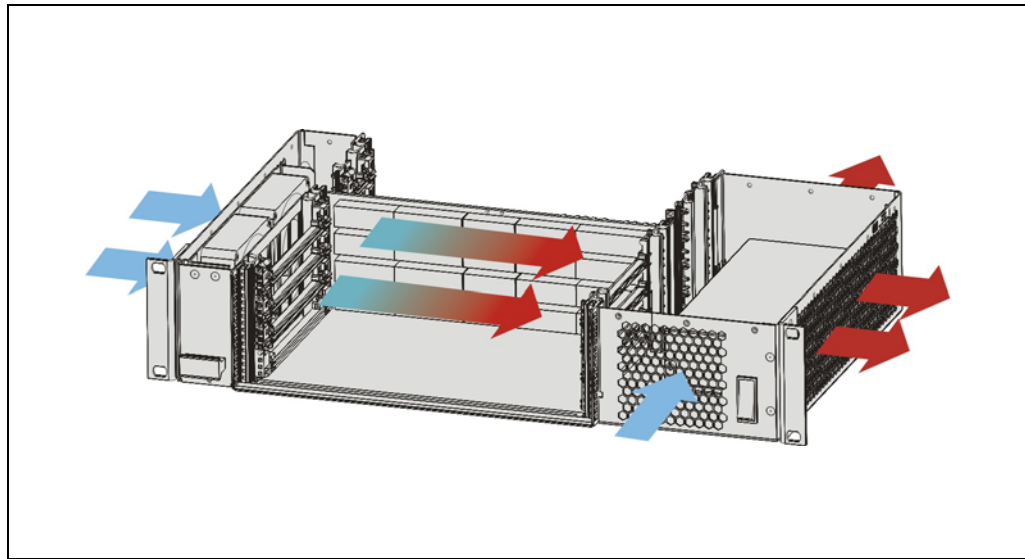
- Turn the knob counterclockwise until the indicator shows red.
- Pull out the Fan Tray:

Install Fan Tray:

- Insert the Fan Tray into the slot

Turn the knob clockwise until the Fan Tray is locked into the chassis. (By turning the knob clockwise, the cam is put into the latched position and the green indicator appears. Once latched, a further turning of the knob makes the cam start its compression feature until the Fan Tray is locked.)

Figure 4: Airflow



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Caution!

To maintain proper airflow, all open slots must be covered with filler panels. The filler panel should include an airflow baffle that extends to backplane.

3 Installation

3.1 General Installation Guidelines

3.1.1 Unpacking



Caution!

When opening the shipping carton, use caution to avoid damaging the system.

Consider the following when unpacking and storing the system:

- Leave the system packed until it is needed for immediate installation.
- After unpacking the system, save and store the packaging material in case the system must be returned.

If the packaging is damaged and possible system damage is present, report to the shipper and analyze the damage.

3.1.2 Ensuring Proper Airflow

- Install the system in an open rack whenever possible. If installation in an enclosed rack is unavoidable, ensure that the rack has adequate ventilation.
- Maintain ambient airflow to ensure normal operation. If the airflow is blocked or restricted, or if the intake air is too warm, an over temperature condition can occur.
- Ensure that cables from other equipment do not obstruct the airflow through the systems.
- Use filler panels to cover all empty chassis slots. The filler panel prevents fan air from escaping out of the front of an open slot.



Caution!

To maintain proper airflow, all open slots must be covered with filler panels. The filler panel should include an airflow baffle that extends to backplane.

3.2 Rack-Mounting

This subrack system can be installed in 19" equipment racks. The rack must be accessible from the front and rear for equipment installation.

Mounting Instructions:

- Ensure that the rack is constructed to support the weight and dimensions of the system.
- Install any stabilizers that came with your equipment rack before mounting or servicing the system in the rack.
- Load the rack from the bottom to the top, with the heaviest system at the bottom, avoid uneven mechanical loading of the rack.

3.3 Initial Operation



Warning!

Voltages over 60 VDC can be present in this equipment. This equipment is intended to be accessed, to be installed and maintained by qualified and trained service personnel only.

This equipment is designed in accordance with protection class 1!

It must therefore be operated only with protective GND/earth connection!

- Ensure that the system has not been damaged during transport, storage or assembly.
- Check the Protective Earth (PE) resistance, should be < 0,1 Ohm.
- Switch on the system and check all CPCI voltages directly on the backplane connectors before the board assembly.
Note: The ATX power supply requires a minimum load!
- Plug-in the boards
- Cover all open Slots with filler panels.

4 Service

4.1 Technical support and Return for Service Assistance

We generally recommend to return the complete subrack system. For all product returns and support issues, please contact your Schroff sales distributor or www.schroff.biz.

We recommend that you save the packing material. Shipping without the original packing material might void the warranty.

4.2 Declaration of Conformity

SCHROFF CompactPCI system subracks are developed and manufactured according to EN 60950-1.

SCHROFF CompactPCI system subracks are not end-products with independent functionality as described in the definition of the EMC regulations, and therefore a CE marking is not required. However, when CPCI cards are assembled according to specification, the systems fulfill the requirements in accordance with EMC Directive 2004/108/EG and Low-voltage Directive 2006/95/EG.

Interference resistance and interference emissions are factors which are heavily influenced by the type and quantity of CPCI cards used in the system assembly. Through the use of high quality line filters and EMC optimized enclosure design, SCHROFF offers CPCI systems which serve as an ideal base for system integrators, which comply with the prescribed limits of EN 6100-6-3 and EN 61000-6-2

The systems are generally equipped with power supplies which possess CE markings in accordance with EN 60950-1, EN 61000-6-3, EN 61000-6-2).

Before delivery a high-voltage, protective earth and functionality test is carried out on each individual system.

4.3 Scope of Delivery

Quantity	Description
1	19" subrack, shielded, black powder coated (RAL9005)
1	CPCI backplane (PICMG2.0 R.3.0), 4 slot 6 U
1	Front card cage for max. 4 boards 6 U 160 mm deep IEEE guide rails inc. ESD clips (ESD clip assembled at the right)
1	Rear card cage for max. 4 boards 6 U 80 mm deep IEEE guide rails inc. ESD clips
1	250 W ATX power supply with input range of 100 VAC to 240 VAC with 4 voltages: 3,3 V / 14 A; 5 V / 23 A; 12 V / 16 A; -12 V / 0,5 A)
1	Complete AC/DC cabling
1	DC switch
1	Fan Tray, hot swappable

4.4 Accessories

Order No.	Description
20848-7xx	Slot covers with front panel and EMC shielding for vacant slots. For dimensions, please see catalogue.
34562-8xx	Slot covers for vacant slots. For dimensions, please see catalogue.
24579-03x	Printed Circuit Board covers (solder side covers). For dimensions, please see catalogue

4.5 Spare Parts

On request.

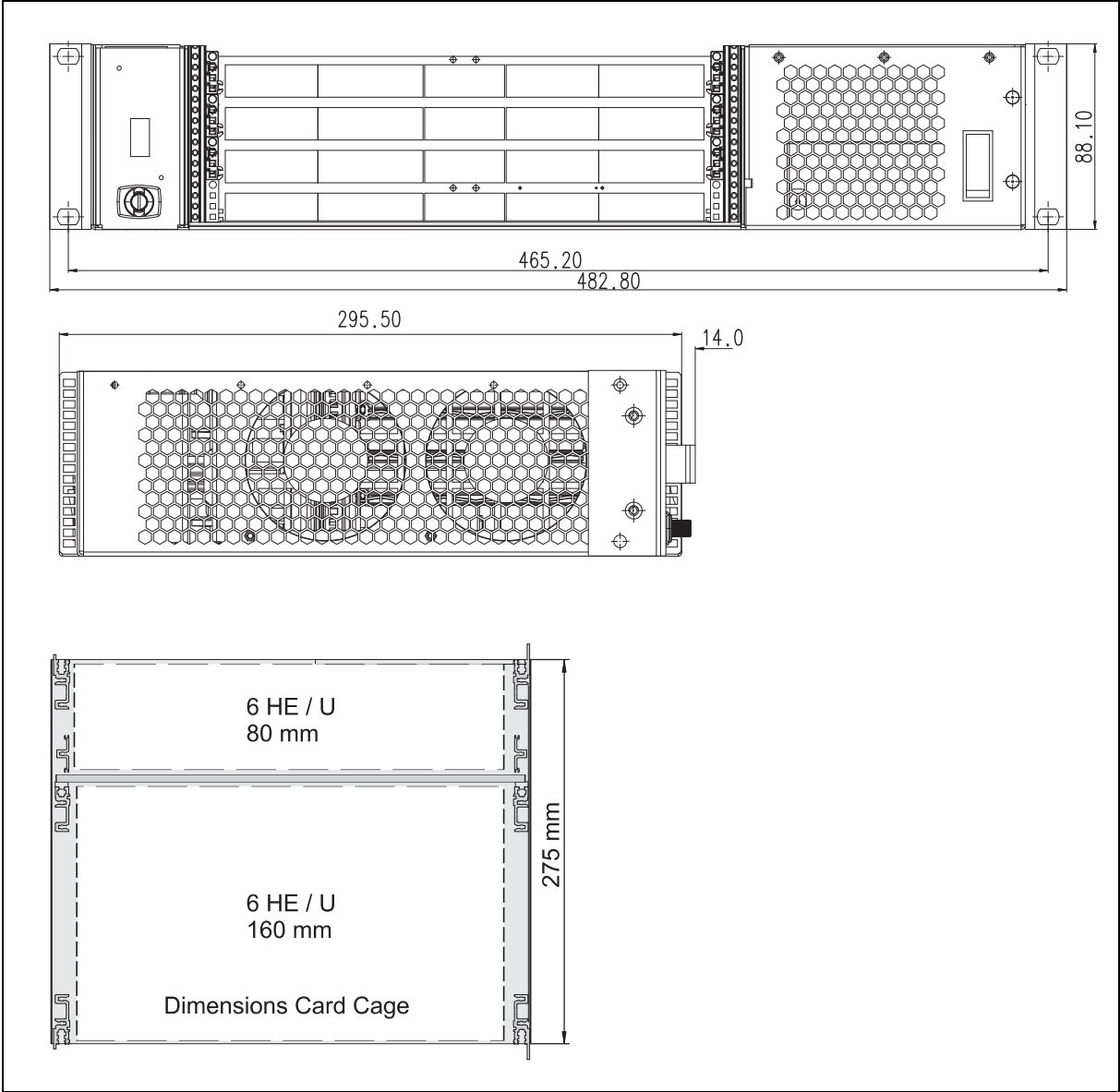
5 Technical Data

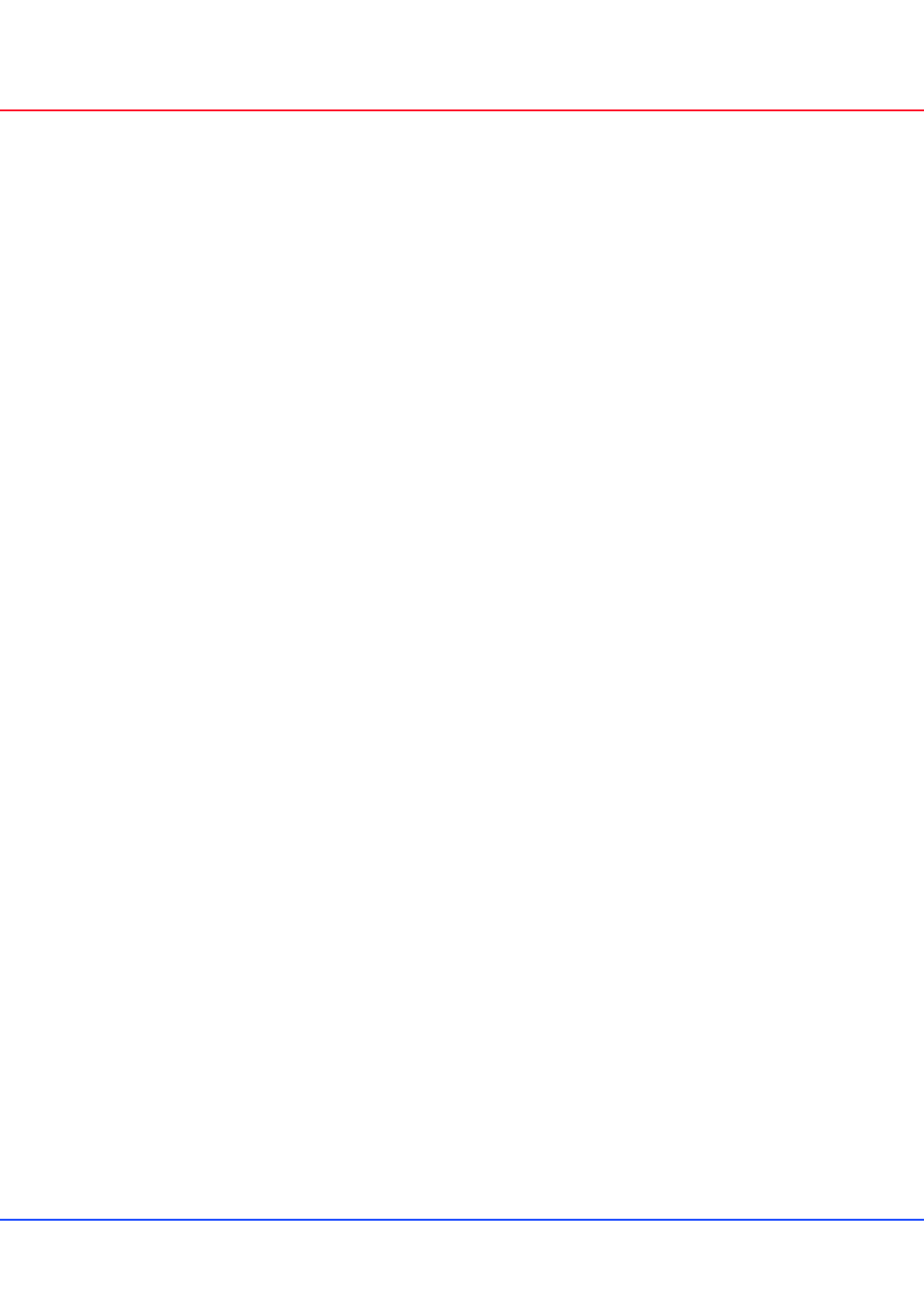
Table 2: Technical Data

Dimensions	
Height	88.10 mm (2 U)
Width	482.80 mm (19")
Depth (Card cage)	275 mm
Depth (Overall with handles)	309 mm
Weight	
Completely assembled	5 kg
Power Supply	
Input Voltage	100 VAC bis 240 VAC
Frequency	50 / 60 Hz
Power input	up to 250 W
Cooling	
2 x 12 VDC fans	109 m ³ /h (64 cfm) each, free blow
Ambient Temperature	
Operation	+0 °C to +50 °C
Storage	-40 °C to +85 °C
Humidity	
Admissible humidity	30 % to 80 %, non-condensing
EMC, fulfils requirements for:	
Transient Emissions	EN 61000-6-3
Interference Resistance	EN 61000-6-2
Safety	
Test voltages according to EN 60950	Input - Output: 4,3 kVDC Input - PE: 2,2 kVDC Output - PE: 0,7 kVDC Output - Output: 0,7 kVDC
Shock and vibration:	EN 60068-2-6 and EN 60068-2-27
Electromagnetic Shielding	
Shielding attenuation	typ. 40 dB at 1 GHz if shielded front panels are used.

6 Dimensions

Figure 5: Dimensions





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