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You can read more about products from the apra-group at www.apra-norm.com



From IT server cabinet to industry professional



The modular and fully symmetrical "TiRAX 318" cabinet system is the perfect shell both for structured cabling in the IT and industrial sectors and also for innovative and design-oriented automation engineers in plant construction.

The TiRAX cabinet rack is a sheet metal construction, which, with just one screw per corner, can be easily dismantled. The force and form-locked connection ensures both a very high level of stability and a high degree of protection (IP 54).

In addition to the complete solutions including

- 19" "plug & play" cabinet
- 19" "active/passive" cabinet
- 19" "cool-box" cabinet
- 19" "cool-roof" cabinet
- 19" EMC „60 dB" cabinet
- 19" "heavy-weight" pivot frame cabinet
- 19" computer cabinet
- 19" server cabinet

an extensive range of parts are available for individual configurations.

For use in office areas and in data centre environments, the TiRAX is also available in the IP 20 design as a project cabinet.



TiRAX

**completely dismantlable,
modular,
completely symmetric,
load capacity up to
1500 kgs**

- **Fully symmetrical cabinet design**
All doors and side panels can be mounted from any direction (e.g.: door hinge reversible).
- **Protection class IP 20 / IP 54**
The cabinet system is suitable for use in IT environments through to industrial applications.
- **Stylish design**
The two-tone design adds "colour" to data environments. In addition, by changing the colours of the vertical design profiles of your cabinet, you can create an individual look.
- **Modular assembly**
Cable entry and fan mounting are possible on the top and bottom frames plus the universal use of shortened trim panels.
- **Modular interior construction**
Symmetrical cabinet rack allows flexible positioning of cable ducts, multi-purpose struts etc.
- **Flexible cabinet dimensions**
The available cabinet heights range from 1200 mm (24 U) to 2200 mm (46 U). Depths start at 600 mm and are also available in 800 mm, 1000 mm and 1200 mm. The two standard cabinet widths of 600 mm and 800 mm are available.
- **"Cabinet mounting" - cost and time savings**
We supply your cabinet **completely pre-assembled** according to your wishes. No more looking after installation materials and no expensive rebuilding of the various cabinet and mounting parts.
The cabinet can be dismantled completely.
- **Stability / conductivity**
The milled and laser-welded vertical profile of the cabinet side rail provides high distortion rigidity and continuous electric conductivity.



(Fig. does not correspond to standard delivery)

TiRAX server cabinets IP 20

- dismantlable steel profile cabinet rack
- two lateral sash doors with quick lock mechanism
- front and rear perforated sheet metal door with three-point lock mechanism (perforated door surface: 80 %)
- installation of a profile half-cylinder possible
- 19" level 42 U, front and rear
- top panel with cable entry and/or fan module option
- base provided
- cover plates in the bottom area can be removed for cable entry
- for W=800 mm: metal cable clamps 66 mm x 125 mm at the front 19" level (10 pieces)
- earthing kit (installed)
- screw set M 5 (50x)

Finish:

Trim parts/base:

RAL 7035 light grey,
Design profile: RAL 5014
pigeon blue (other colours on request)
or

Trim parts/base:

RAL 9005 jet black,
Design profile: RAL 7037
dusty grey (other colours on request)

Delivery:

fully assembled, base provided



Order information

| Height mm | Width mm | Depth mm | Colour | Order no. |
|-----------|----------|----------|---------------------|------------|
| 2000 | 600 | 1000 | RAL 9005 jet black | 318-200-60 |
| 2000 | 800 | 1000 | RAL 9005 jet black | 318-200-61 |
| 2000 | 600 | 1200 | RAL 9005 jet black | 318-200-62 |
| 2000 | 800 | 1200 | RAL 9005 jet black | 318-200-63 |
| 2000 | 600 | 1000 | RAL 7035 light grey | 318-200-64 |
| 2000 | 800 | 1000 | RAL 7035 light grey | 318-200-65 |
| 2000 | 600 | 1200 | RAL 7035 light grey | 318-200-66 |
| 2000 | 800 | 1200 | RAL 7035 light grey | 318-200-67 |



TiRAX IP 20

- dismantlable steel profile cabinet rack
- front viewing door with tinted toughened safety glass
- rear sheet metal door (can also be mounted as side door if basic size is square)
- both doors can accommodate a profile half cylinder
- side panels (connector cabinet: without side panels, includes cabinet connectors)
- 19" level front and rear
- for W=800 mm: metal cable clamps 66 mm × 125 mm at the front 19" level
- top panel with cable entry and/or fan module option
- open bottom plate
- base provided
- earthing kit (installed)
- screw set M 5 (50×)

Finish:

Trim parts/base:

RAL 7035 light grey

Design profile:

RAL 3002 carmine red

(other colours on request)

Delivery:

fully assembled, base provided

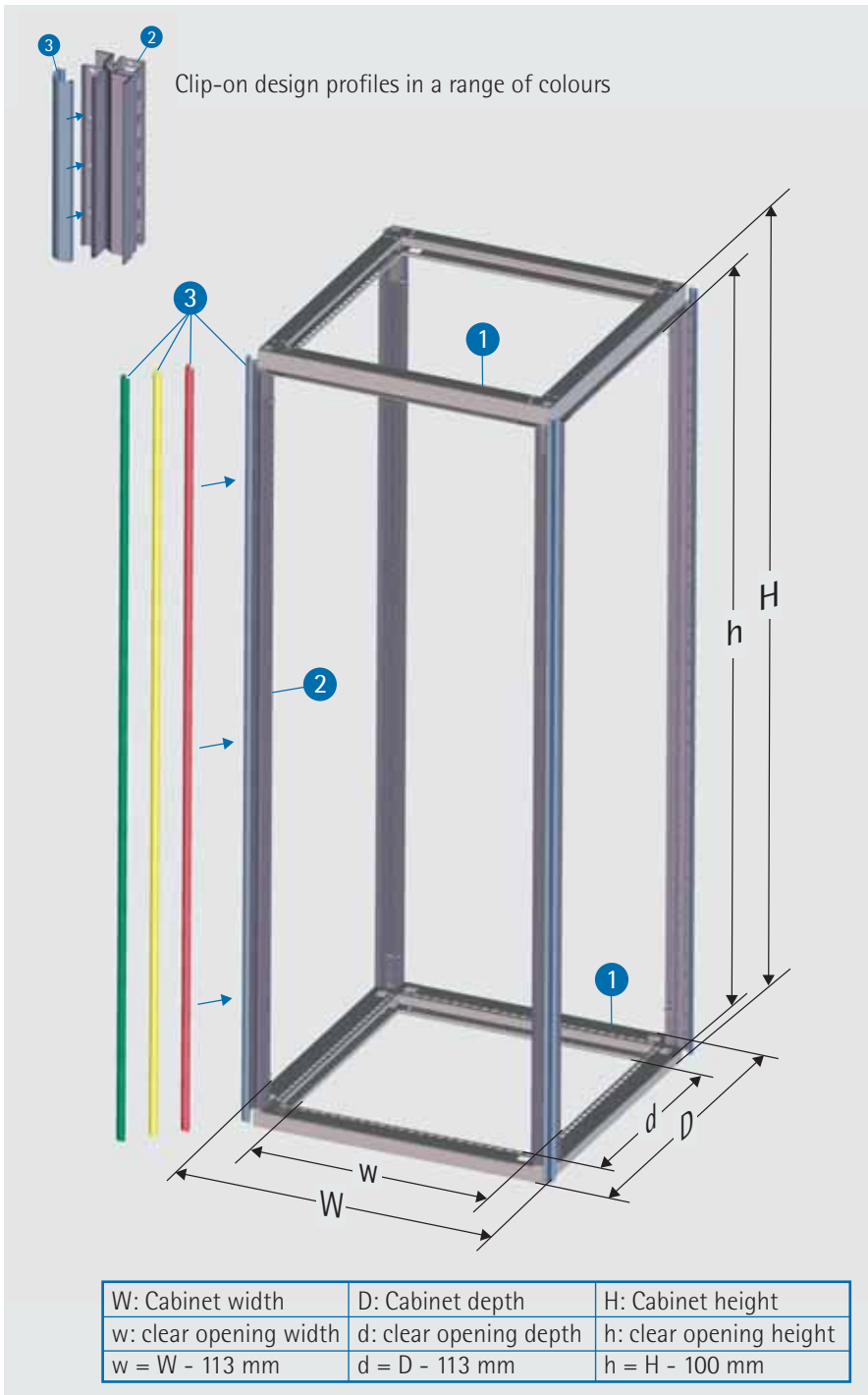


Design profile in RAL 3002 carmine red

Design profile in RAL 5014 pigeon blue

Order information

| Height mm | Width mm | Depth mm | Order no. Basic Cabinet | Order no. Connector Cabinet |
|-----------|----------|----------|-------------------------|-----------------------------|
| 1200 | 600 | 600 | 317-200-40 | 317-200-50 |
| 1200 | 800 | 600 | 317-200-41 | 317-200-51 |
| 1200 | 600 | 800 | 317-200-42 | 317-200-52 |
| 1200 | 800 | 800 | 317-200-43 | 317-200-53 |
| 2000 | 600 | 600 | 317-200-44 | 317-200-54 |
| 2000 | 800 | 600 | 317-200-45 | 317-200-55 |
| 2000 | 600 | 800 | 317-200-46 | 317-200-56 |
| 2000 | 800 | 800 | 317-200-47 | 317-200-57 |



Cabinet rack, dismantlable

The cabinet rack consists of two identical sheet metal frames **1**, four sheet metal functional profiles **2** and four painted sheet metal design profiles **3** clipped onto the functional profiles.

Finish:

- 1** Top/bottom frame:
RAL 7035 light grey
- 2** Functional profile:
galvanised
- 3** Design profile:
RAL 5014 pigeon blue

Delivery:

fully assembled

The design profile **3** can be matched to your company colour if desired.

The TiRAX "IT" cabinet system can be extended with all the classic TiRAX accessories such as the 19" extension, base, multi-purpose crossbars etc (from page 17).

Other preferred colours:

- RAL 1032 (broom yellow)
- RAL 5010 (gentian blue)
- RAL 3002 (carmine red)
- RAL 6029 (mint green)
- RAL 7037 (dusty grey)

Colour display similar!

| Dimensions (W × D) mm | Dimensions (H) mm | U | Order no. |
|-----------------------|-------------------|------------|------------|
| 600 × 600 | 1200 | 24 | 318-660-02 |
| 800 × 600 | 1200 | | 318-860-02 |
| 800 × 800 | 1200 | | 318-880-02 |
| 600 × 1000 | 1200 | | 318-601-02 |
| 800 × 1000 | 1200 | | 318-810-02 |
| 600 × 600 | 2000 | | 42 |
| 800 × 600 | 2000 | 318-860-10 | |
| 800 × 800 | 2000 | 318-880-10 | |
| 600 × 1000 | 2000 | 318-610-10 | |
| 800 × 1000 | 2000 | 318-810-10 | |



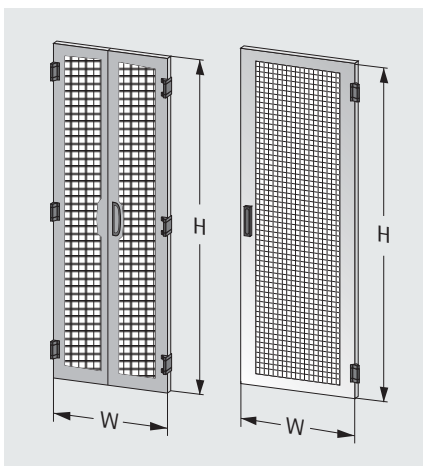
Viewing door



- with turning lever lock for profile half cylinder (with push button opening)

Finish: RAL 7035 light grey
Material: frame: sheet metal, toughened safety glass: 4 mm, grey

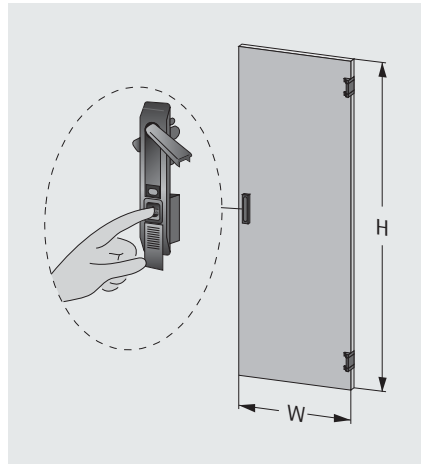
Door, perforated



- Perforation 80 %
- with turning lever lock for profile half cylinder (with push button opening)

Finish: RAL 7035 light grey
Material: sheet metal, perforated insert

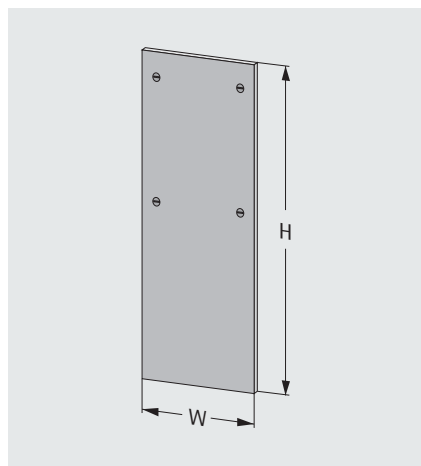
Door, solid



- with turning lever lock for profile half cylinder (with push button opening)

Finish: RAL 7035 light grey
Material: sheet metal

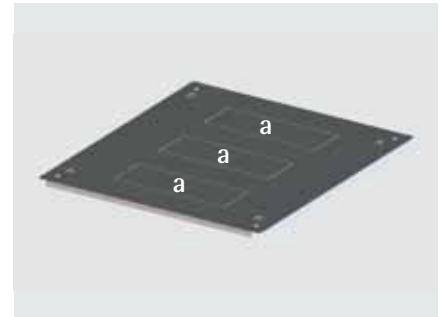
Sash door



- with 2 or 4 sash fasteners and "double bit key 5 mm" mechanism

Finish: RAL 7035 light grey
Material: sheet metal

Top

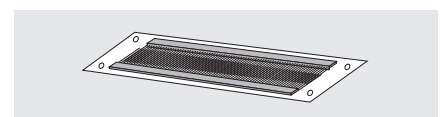


- can be raise mounted with lifting eye bolts (see below)
- for each pre-perforated field "a" extendable with **fan module** (see page 23) or **brush set** (see below)

Finish: RAL 7035 light grey
Material: sheet metal

| Dimensions (W x D) mm | No. of fields "a" | Order no. |
|-----------------------|-------------------|------------|
| 600 x 600 | 2 | 317-016-62 |
| 600 x 800 | 2 | 317-018-62 |
| 600 x 1000 | 2 | 317-020-64 |
| 800 x 600 | 2 | 317-018-62 |
| 800 x 800 | 3 | 317-018-82 |
| 800 x 1000 | 4 | 317-020-82 |

Brush set



- matches breakout "a"

| Order no. |
|------------|
| 316-111-10 |

Lifting eye bolts for top



- The further lifting (H=15 mm) of top panel is possible with additional lifting eye bolts.

Material: steel

| Order no. (4 pieces) |
|----------------------|
| 316-016-65 |

| Dimensions (H x W) mm | Viewing door | Door, solid | Door, perforated | Split door, perforated | Sash door |
|-----------------------|--------------|-------------|------------------|------------------------|------------|
| 1200 x 600 | 317-612-01 | 317-612-02 | 318-612-16 | - | 317-612-23 |
| 1200 x 800 | 317-812-01 | 317-812-02 | 318-812-16 | - | 317-812-23 |
| 1200 x 1000 | - | - | - | - | 317-012-23 |
| 2000 x 600 | 317-620-01 | 317-620-02 | 318-620-16 | - | 317-620-23 |
| 2000 x 800 | 317-820-01 | 317-820-02 | 318-820-16 | 318-820-25 | 317-820-23 |
| 2000 x 1000 | - | - | - | - | 317-020-23 |



TiRAX "plug & play"

- dismantlable steel profile cabinet rack
- two lateral sash doors with quick lock mechanism
- front viewing door with three-point locking and tinted toughened safety glass
- rear sheet metal door with three-point locking, installation as side door possible
- both doors can accommodate a profile half cylinder, L=40 mm
- 19" level 42 U/24 U, front and rear
- 10 metal cable clamps at the front 19" mount (6 clamps if H=1200 mm)
- two cable guard rails with integrated cable management bracket
- top plate 2-part, with triple fan module
- 19" power strip 1 U (9-way)
- multi-part bottom plate with

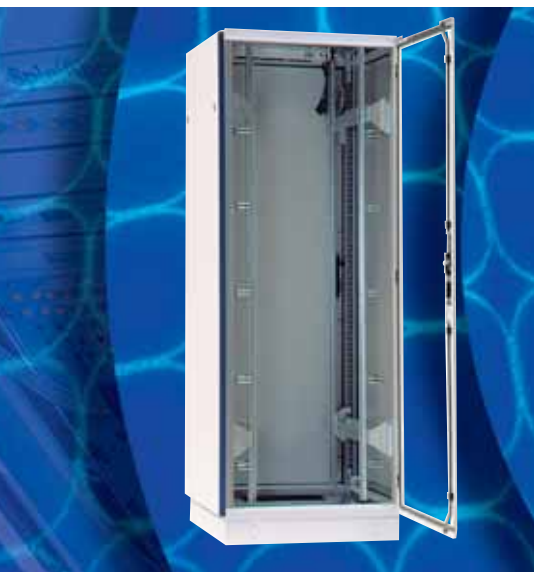
- rubber foam cable entry
- cabinet lamp with power outlet and magnetic holder
- earthing kit (installed)
- cable entry base H=100 mm
- screw set M 5 (50x)

Finish:

Trim parts/base:
RAL 7035 light grey
Design profiles:
RAL 5014 pigeon blue

Delivery: fully assembled, prewired on central socket and tested / base provided

| Dimensions H x W x D mm | Order no. |
|--------------------------|------------|
| (2000 + 100) x 800 x 800 | 318-200-01 |
| (1200 + 100) x 800 x 800 | 318-200-29 |



TiRAX "active"

- dismantlable steel profile cabinet rack
- two lateral sash doors with quick lock mechanism
- front viewing door with three-point locking and tinted toughened safety glass
- rear sheet metal door with three-point locking, installation as side door possible
- both doors can accommodate a profile half cylinder, L=40 mm
- 19" level 42 U/24 U, front and rear
- 10 metal cable clamps at the front 19" level
- 2-part cover plates in top sheet, with 3-way fan module

- 19" power strip 1 U (9-way)
- multi-part bottom plate with rubber foam cable entry
- earthing kit (installed)
- cable entry base H=100 mm
- screw set M 5 (50x)

Finish:

Trim parts/base:
RAL 7035 light grey
Design profiles:
RAL 5014 pigeon blue

Delivery: fully assembled/base provided

| Dimensions H x W x D mm | Order no. |
|--------------------------|------------|
| (2000 + 100) x 800 x 800 | 318-200-02 |
| (1200 + 100) x 800 x 800 | 318-200-09 |



TiRAX "passive" IP 54

- dismantlable steel profile cabinet rack
- two lateral sash doors with quick lock mechanism
- front viewing door with three-point locking and tinted toughened safety glass
- rear sheet metal door with three-point locking, installation as side door possible
- both doors can accommodate a profile half cylinder, L=40 mm
- 19" level 42 U/24 U, front and rear
- 10 metal cable clamps at the front 19" level
- top panel, single-piece, liftable if necessary

- multi-part bottom plate with rubber foam cable entry
- earthing kit (installed)
- cable entry base H=100 mm
- screw set M 5 (50x)

Finish:

Trim parts/base:
RAL 7035 light grey
Design profiles:
RAL 5014 pigeon blue

Delivery: fully assembled / base provided

| Dimensions H x W x D mm | Order no. |
|--------------------------|------------|
| (2000 + 100) x 800 x 800 | 318-200-03 |
| (1200 + 100) x 800 x 800 | 318-200-08 |





TiRAX "cool-box", IP 54 • TiRAX "cool-roof", IP 54

- dismantlable steel profile cabinet rack
- two lateral sash doors with quick lock mechanism
- front viewing door with three-point locking and tinted toughened safety glass
- rear sheet metal door with three-point locking
- both doors can accommodate a profile half cylinder, L=40 mm
- 19" level 42 U, front and back
- 10 metal cable clamps at the front 19" level
- top panel, single-piece
- 19" power strip 1 U (9-way)
- earthing kit (installed)
- door contact switch for shutdown of air conditioning if front door is opened
- cable entry base H=100 mm
- screw set M 5 (50x)
- multi-part bottom plate with rubber foam cable entry

TiRAX "cool-box":

- air conditioning 1050 W (Ta35/Ti35) installed on lateral hinged door (mounted alternatively right or left)

TiRAX "cool-roof":

- air conditioning 1050 W (Ta35/Ti35), installed on the top

Air conditioning units: cooling capacities of up to 6 KW are possible on request. Contact us to find out more!

Finish: Trim parts/base:

RAL 7035 light grey

Design profiles:

RAL 5014 pigeon blue

Delivery: partially assembled

(air conditioning mountable with 6 screws on lateral hinged door or on top panel)/base provided

| Description | Dimensions H x W x D mm | Order no. |
|---------------------------------------|-------------------------------|------------|
| TiRAX "cool-box" 24 U | (1200+100) x (800+140) x 800 | 318-200-55 |
| TiRAX "cool-box" 42 U | (2000+100) x (800+140) x 800 | 318-200-04 |
| TiRAX "cool-box" server cabinet 24 U | (1200+100) x (800+140) x 1000 | 318-200-54 |
| TiRAX "cool-box" server cabinet 42 U | (2000+100) x (800+140) x 1000 | 318-200-11 |
| TiRAX "cool-roof" 42 U | (2000+500) x 800 x 800 | 318-200-05 |
| TiRAX "cool-roof" server cabinet 42 U | (2000+500) x 800 x 1000 | 318-200-28 |





apra cooling system

Cooling units for data centres and server applications are listed on pages 77-84.





(Fig. does not correspond to standard delivery)



Cabinet bottom with pivot frame crossbar and flexible cable entry via foam rubber



19" TiRAX "heavy-weight" pivot frame cabinet

The "heavy-weight" pivot frame cabinet is based on the TiRAX cabinet series and enables a pivot integration of 19" plug-in units with **high loads of up to 250 kg** (e.g. power amplifiers).

- visually stylish cabinet system
- protection class IP 54
- consists of stable cabinet rack and easily detachable trim parts
- good accessibility for plant engineering and on-site installation
- cable entry possible as standard from below, above or from the sides
- optional mounting plate in the rear area enables the installation of connection splitters, cable ducts, c-profiles or top hat rails
- lateral offset mounting possible
- maximum mounting depth: 440 mm
- pivot frame can be hinged on the left as well as on the right side and is equipped with a double-bit key lock
- frame can be pivoted up to 95°

Finish:

RAL 7035 light grey
RAL 5014 pigeon blue

Delivery:

fully assembled/base provided

Further sizes on request!

| Dimensions H x W x D mm | Order no. |
|-------------------------|------------|
| (2000+100) x 800 x 800 | 318-200-40 |

Scope of delivery

| Item | Pc. | Description |
|------|-----|---|
| 1 | 1 | Cabinet rack |
| 2 | 1 | Heavy load pivot frame with 19" level 39 U |
| 3 | 1 | Viewing door with turning lever lock |
| 4 | 1 | Rear door with turning lever lock |
| 5 | 2 | lateral sash doors with quick lock mechanisms |

| Item | Pc. | Description |
|------|-----|---|
| 6 | 1 | Two piece bottom panel with cable entry |
| 7 | 1 | Top, height-adjustable (for passive ventilation) |
| 8 | 1 | Earthing kit, installed |
| 9 | 1 | Base H=100 mm, front side with ventilated cover panel |
| 10 | 1 | Screw set M 5 (50x) |

Accessories

Slide rails

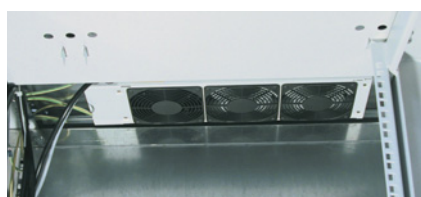


- to support heavy and/or deep plug-in units

Load capacity: 50 kg

| |
|-------------------------|
| Order no. (pair) |
| 318-129 |

3-way fan module



- air flow rate: unimpeded air flow: 345 m³/h
- complete with Earthing-pin connecting cable, temperature regulation and adapter for cabinet mounting

| |
|------------------|
| Order no. |
| 318-100-55 |

Pivot frame panel



- to cover the lateral area in case of offset installation

Finish: RAL 7035 light grey

| |
|------------------|
| Order no. |
| 318-129-22 |



www.apranet.de

19" EMC cabinet TiRAX "60 dB"

Based on the TiRAX cabinet series, the EMC cabinet "60 dB" offers a reliable EMC and IP protection even in rough industrial environment conditions.

- fully symmetrical cabinet construction: all doors and lateral sash doors are universally mountable
- protection class IP 54
- stylish design: two-tone look with coloured design profiles
- modular interior construction: symmetrical design of cabinet rack enables cable ducts, multi-purpose struts etc. to be universally mountable
- all enclosure parts are connected to each other conductively via EMC sealings
- double-walled trim parts
- the milled and laser welded profile of the cabinet's galvanised sheet metal side rail ensures high rigidity and permanent electrical conductivity

Finish:

Trim parts/base:

RAL 7035 light grey

Design profiles:

RAL 5014 pigeon blue

Delivery:

fully assembled

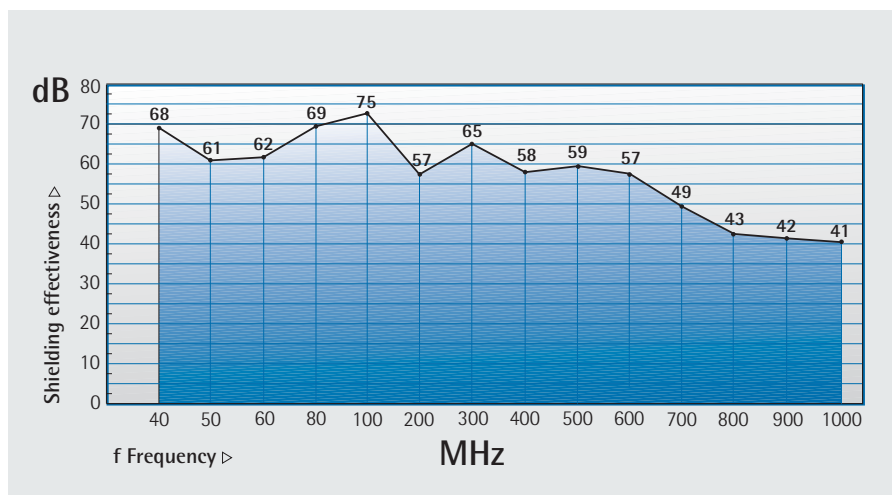


Scope of delivery

| Item | Pc. | Description |
|------|-----|---|
| 1 | 1 | Cabinet rack |
| 2 | 2 | 19" levels 42 U |
| 3 | 2 | Front and rear door, solid, with turning lever lock |
| 4 | 2 | Sash doors, lateral |
| 5 | 1 | Bottom panel, solid |
| 6 | 1 | Top panel, solid |
| 7 | 1 | Earthing kit, installed |
| 8 | 1 | Base H=100 mm |

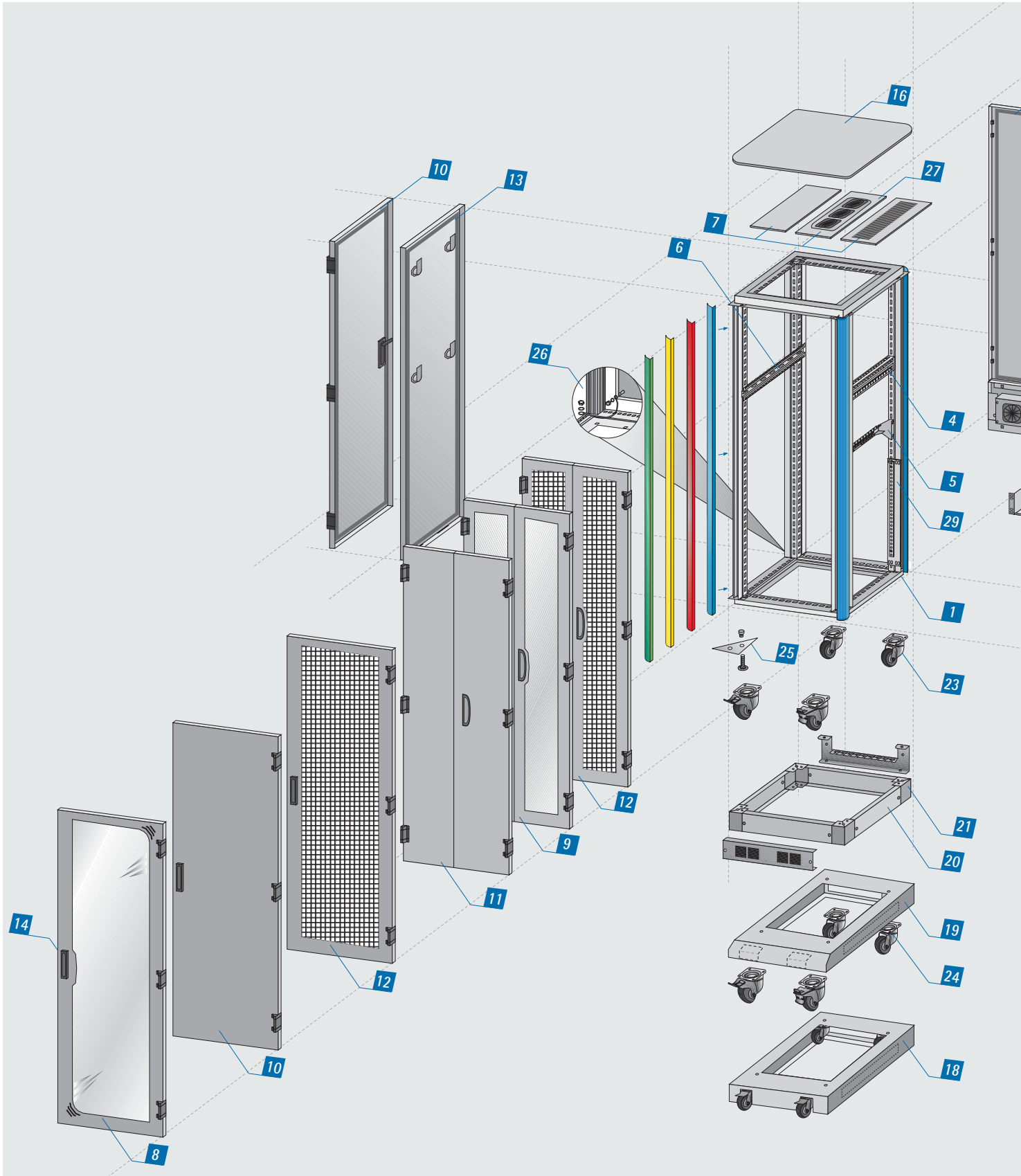
Further sizes on request!

| Dimensions H x W x D mm | Order no. |
|-------------------------|------------|
| (2000+100) x 600 x 800 | 318-210-10 |



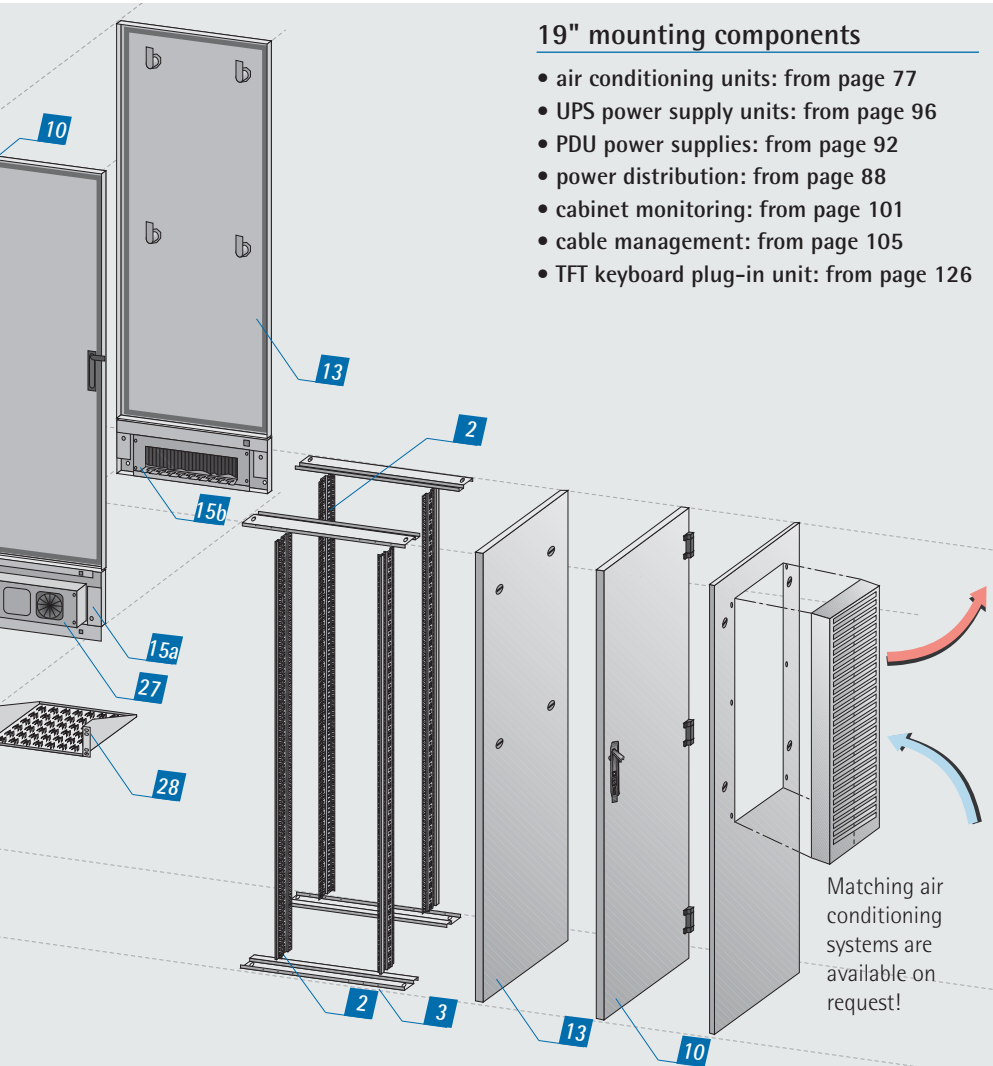


Individual configuration: Configure your own individual cabinet.





Select step by step the cabinet components you want:



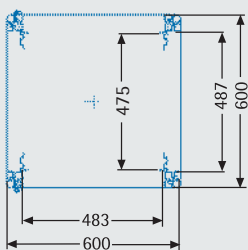
19" mounting components

- air conditioning units: from page 77
- UPS power supply units: from page 96
- PDU power supplies: from page 92
- power distribution: from page 88
- cabinet monitoring: from page 101
- cable management: from page 105
- TFT keyboard plug-in unit: from page 126

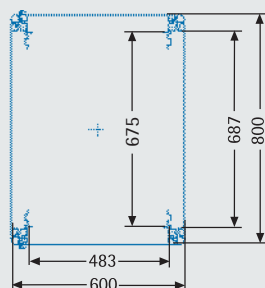
| Pos. | Bezeichnung | Seite |
|------|---------------------------------------|-------|
| 1 | Cabinet rack with design profiles | 16 |
| 2 | 19" vertical mountings | 17 |
| 3 | Crossbar for 19" installation | 17 |
| 4 | Multi-purpose crossbar | 17 |
| 5 | Reduction crossbar | 17 |
| 6 | Cable guard rail | 17 |
| 7 | Cover plates | 19 |
| 8 | Viewing door | 20 |
| 9 | Viewing door, split | 20 |
| 10 | Solid door | 20 |
| 11 | Split door, solid | 20 |
| 12 | Door, perforated | 20 |
| 13 | Sash door | 20 |
| 14 | Locking system for doors | 21 |
| 15a | Fan installation module | 21 |
| 15b | Cable entry module | 21 |
| 16 | Top panel, solid | 21 |
| 17 | Cabinet connection set (without fig.) | 21 |
| 18 | Castor base | 22 |
| 19 | Tilt prevention base | 22 |
| 20 | Base covers | 22 |
| 21 | Base corners | 22 |
| 22 | Filter set (without fig.) | 23 |
| 23 | Castor set | 22 |
| 24 | Castor set, tilt prevention | 22 |
| 25 | Adjusting foot | 22 |
| 26 | Earthing kit TiRAX | 22 |
| 27 | Fan base module | 23 |
| 28 | Shelves | 24 |
| 29 | Potential equalisation rail | 25 |

For more extension parts and accessories from page 22!

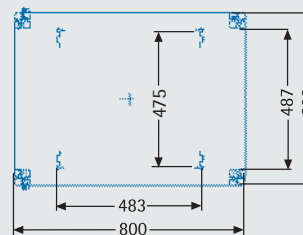
Technical information: max. 19" installation dimension



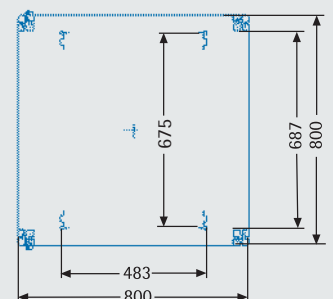
Top view cabinet rack
W x D = 600 x 600 mm



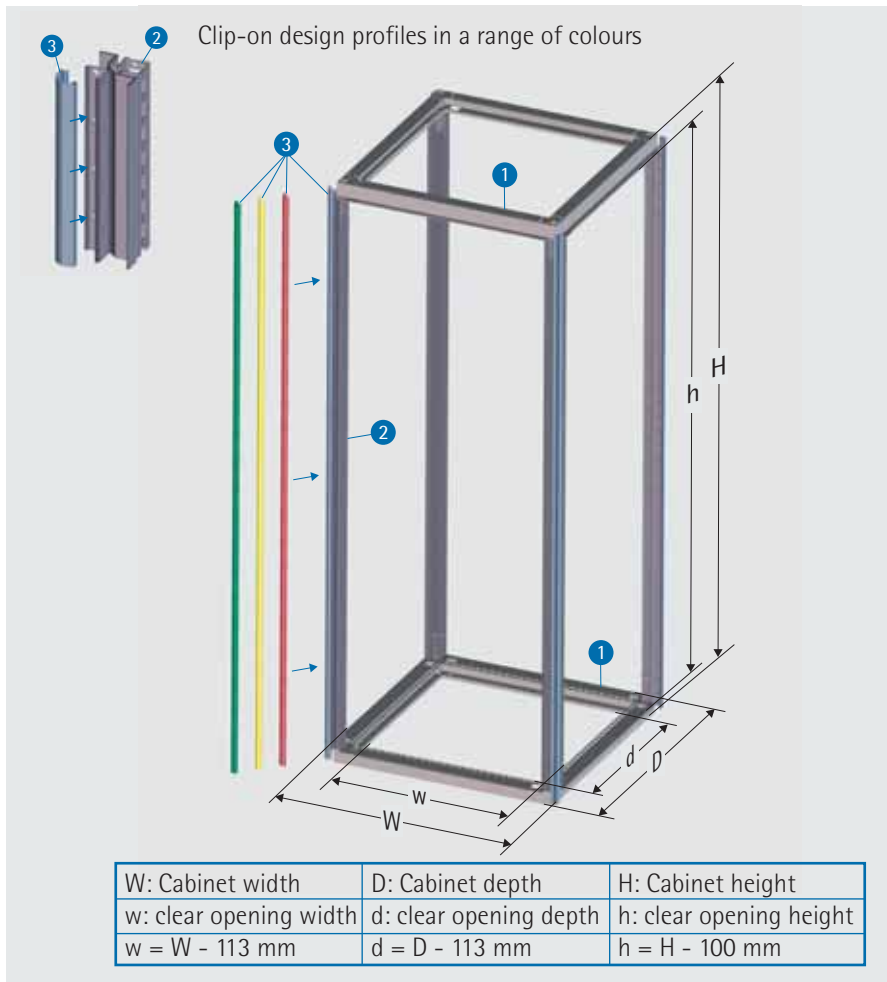
Top view cabinet rack
W x D = 600 x 800 mm



Top view cabinet rack
W x D = 800 x 600 mm



Top view cabinet rack
W x D = 800 x 800 mm



1 Cabinet rack, dismantlable

The cabinet rack consists of two identical sheet metal frames **1**, four sheet metal functional profiles **2** and four painted sheet metal design profiles **3** clipped onto the functional profiles.

Finish:

- 1** Top/bottom frame: RAL 7035 light grey
- 2** Functional profile: galvanised
- 3** Design profile: RAL 5014 pigeon blue

Delivery:

fully assembled

The design profile **3** can be matched to your company colour if desired.

| Dimensions (W × D) mm | Dimensions (H) mm | U | Order no. |
|-----------------------|-------------------|------------|------------|
| 600 × 600 | 1200 | 24 | 318-660-02 |
| 800 × 600 | 1200 | | 318-860-02 |
| 800 × 800 | 1200 | | 318-880-02 |
| 600 × 1000 | 1200 | | 318-601-02 |
| 800 × 1000 | 1200 | | 318-810-02 |
| 600 × 600 | 1600 | 33 | 318-660-06 |
| 800 × 600 | 1600 | | 318-860-06 |
| 800 × 800 | 1600 | | 318-880-06 |
| 600 × 600 | 1800 | 37 | 318-660-08 |
| 800 × 600 | 1800 | | 318-860-08 |
| 800 × 800 | 1800 | | 318-880-08 |
| 600 × 600 | 2000 | 42 | 318-660-10 |
| 800 × 600 | 2000 | | 318-860-10 |
| 800 × 800 | 2000 | | 318-880-10 |
| 600 × 1000 | 2000 | | 318-610-10 |
| 800 × 1000 | 2000 | | 318-810-10 |
| 600 × 1200 | 2000 | | 318-612-10 |
| 800 × 1200 | 2000 | 318-812-10 | |
| 600 × 600 | 2200 | 46 | 318-660-12 |
| 800 × 600 | 2200 | | 318-860-12 |
| 800 × 800 | 2200 | | 318-880-12 |
| 600 × 1000 | 2200 | | 318-610-12 |
| 800 × 1000 | 2200 | | 318-810-12 |
| 600 × 1200 | 2200 | | 318-612-12 |
| 800 × 1200 | 2200 | | 318-812-12 |

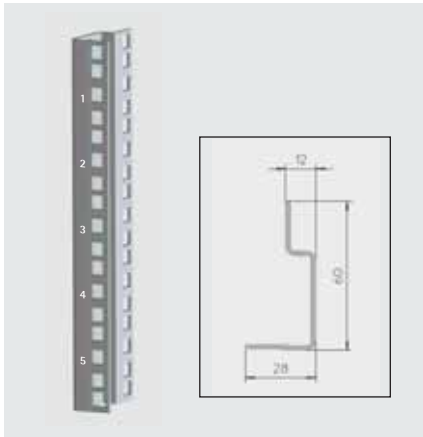
Other preferred colours:

- RAL 1032 (broom yellow)
- RAL 5010 (gentian blue)
- RAL 3002 (carmin red)
- RAL 6029 (mint green)
- RAL 7037 (dusty grey)

Colour display similar!



2 19" vertical mounting

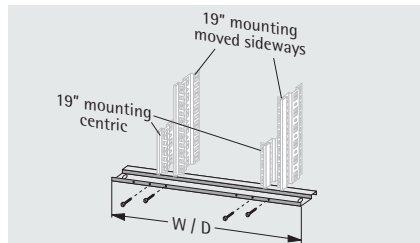


- ASA-perforation (1/2 19" perforation)
- with U-labelling

Material: sheet metal, galvanised

| U | Order no. |
|----|------------|
| 6 | 316-120-06 |
| 12 | 316-120-12 |
| 15 | 316-120-15 |
| 24 | 316-120-24 |
| 33 | 316-120-33 |
| 37 | 316-120-37 |
| 42 | 316-120-42 |
| 46 | 316-120-46 |

3 Crossbar for 19" installation



- to install the 19" vertical mountings two cross bars per 19" level are required
- infinitely depth adjustable
- at W=800 mm the 19" level can be moved laterally
- in case of partial mounting, multi-purpose crossbars **5** are needed

Material: sheet metal, galvanised

| U | Order no. W=600 mm | Order no. W=800 mm |
|----|-----------------------|-----------------------|
| 6 | 318-120-00 | 318-120-04 |
| 12 | 318-120-00 | 318-120-04 |
| 15 | 318-120-00 | 318-120-04 |
| 24 | 318-120-00 | 318-120-04 |
| 33 | 318-120-00 | 318-120-04 |
| 37 | 318-120-01 | 318-120-03 |
| 42 | 318-120-00 | 318-120-04 |
| 46 | 318-120-01 | 318-120-03 |

4 Multi-purpose crossbar

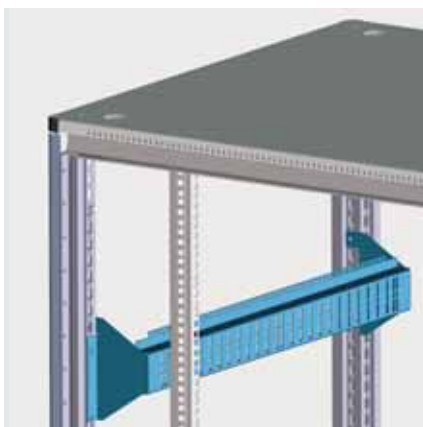


- for 19" partial mounting
- for clean cable entry
- infinitely depth adjustable

Material: sheet metal, galvanised

| Depth (D) / Width (W) mm | Order no. (1 piece) |
|-----------------------------|------------------------|
| 600 | 318-120-06 |
| 800 | 318-120-08 |
| 1000 | 318-120-19 |
| 1200 | 318-120-23 |

5 Reduction crossbar

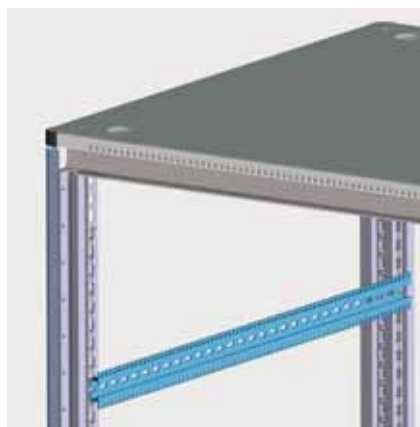


- reduces W=800 mm to 19"
- with integrated cable management bracket
- can be hung up or screwed on

Material: sheet metal, galvanised

| Depth (D) / Width (W) mm | Order no. (1 piece) |
|-----------------------------|------------------------|
| 600 | 318-120-10 |
| 800 | 318-120-12 |
| 1000 | 318-120-14 |
| 1200 | 318-120-21 |

6 Cable guard rail



- with integrated cable management bracket
- holds cables in place with cable ties and cable clips

Material: aluminium, anodised

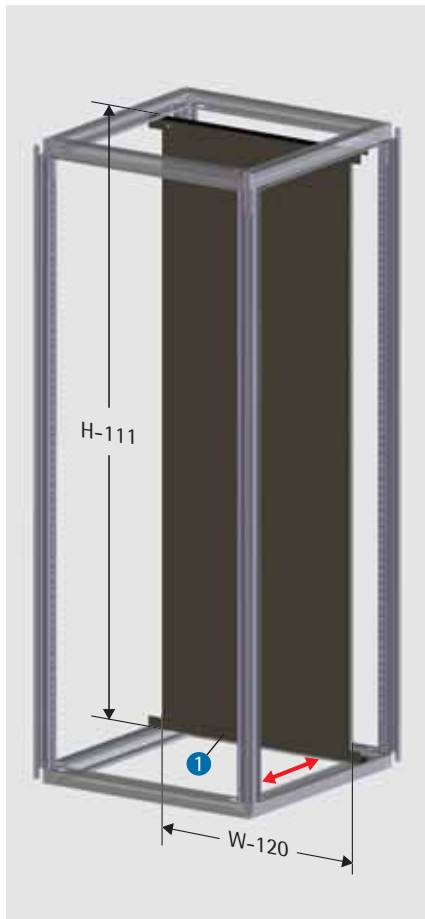
Scope of delivery: incl. mounting material

Cable clamps can be found on page 106.

| Depth (D) / Width (W) mm | Order no. |
|--------------------------|------------|
| 600 | 318-121-10 |
| 800 | 318-121-11 |



Mounting plate



- for mounting heavy components and top hat rails
- is mounted on the cabinet with mounting rails ① and can be pushed in laterally
- option to adjust the depth in 25mm steps
- multi-purpose crossbars are needed for partial mounting ②

Material: sheet metal, galvanised

| Height (H) mm | Order no. W=600 mm | Order no. W=800 mm |
|------------------|-----------------------|-----------------------|
| 1200 | 318-130-12 | 318-130-32 |
| 1600 | 318-130-16 | 318-130-36 |
| 1800 | 318-130-18 | 318-130-38 |
| 2000 | 318-130-20 | 318-130-40 |
| 2200 | 318-130-22 | 318-130-42 |

Multi-purpose crossbar

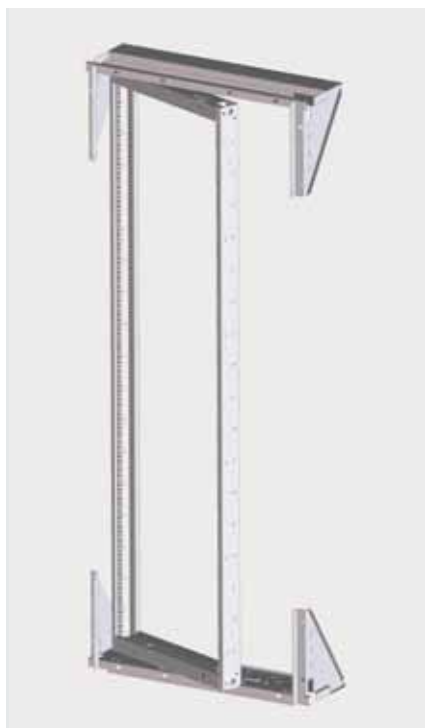


- for 19" partial mounting
- for clean cable entry
- infinitely depth adjustable

Material: sheet metal, galvanised

| Depth (D) / Width (W) mm | Order no. (1 piece) |
|-----------------------------|------------------------|
| 600 | 318-120-06 |
| 800 | 318-120-08 |
| 1000 | 318-120-19 |
| 1200 | 318-120-23 |

19" pivot frame



- for cabinet width 800 mm
- pivot angle 95°
- installation centric or asymmetrical

Finish: RAL 7035 light grey

Material: sheet metal

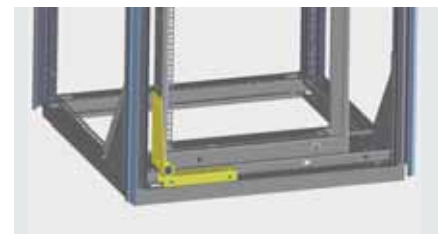
Load capacity: 200 kg

Insert usable depth: centric: 390 mm,
30 mm offset: 440 mm

Scope of delivery: incl. crossbars

| for cabinet height (H) mm | U | Order no. (1 piece) |
|------------------------------|----|------------------------|
| 1200 | 21 | 318-129-24 |
| 2000 | 39 | 318-129-30 |

180° hinge kit for pivot frame



- to increase the pivot angle of the 19" pivot frame to 180°

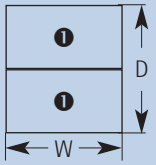
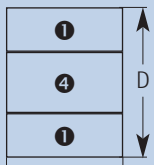
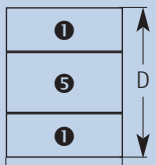
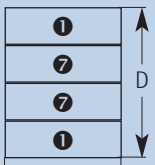
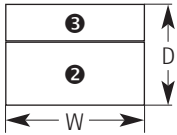
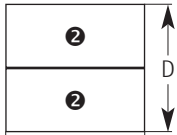
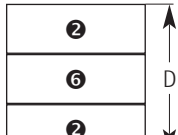
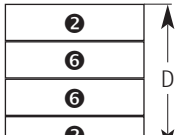
Insert depth: 70 mm, offset: 370 mm

| Order no. (set) |
|-----------------|
| 318-129-20 |







7 Cover plates Overview for determining cover plates for top and bottom frame

The cover plates can be mounted directly on the cabinet rack **1** (top or base) according to the layout shown.

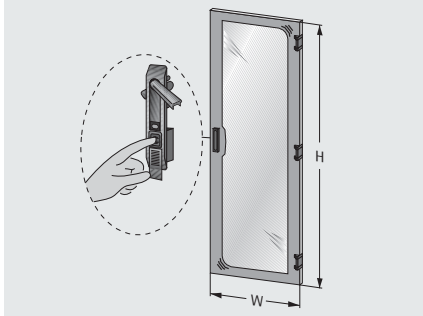
| | Depth (D) 600 mm | Depth (D) 800 mm | Depth (D) 1000 mm | Depth (D) 1200 mm |
|------------|---|---|--|---|
| (W) 600 mm |  |  |  |  |
| (W) 800 mm |  |  |  |  |

Order information

| Model | Size | Application | Dimensions (w x d) mm | Order no. |
|---|----------|---|-----------------------|------------|
| solid | | | | |
|  | 1 | Cover plate, solid individual break-throughs on request | 446 x 222 | 318-111-01 |
| | 2 | | 646 x 322 | 318-111-02 |
| | 3 | | 646 x 122 | 318-111-03 |
| | 4 | | 446 x 202 | 318-111-04 |
| | 5 | | 446 x 398 | 318-111-05 |
| | 6 | | 646 x 200 | 318-111-06 |
| | 7 | | 446 x 301 | 318-111-07 |
| for fan base module | | | | |
|  | 1 | Cover plate for mounting of fan modules 27 (also mountable with filter set 316-100-99) | 446 x 222 | 318-111-21 |
| | 2 | | 646 x 322 | 318-111-22 |
| perforated | | | | |
|  | 1 | Cover plate, perforated (also extendable with filter set 316-100-99) | 446 x 222 | 318-111-23 |
| | 2 | | 646 x 322 | 318-111-24 |
| for cable entry | | | | |
|  | 1 | Cover plate for sealed cable entry (suitable for CEE-plugs) | 446 x 222 | 318-111-25 |
| | 2 | | 646 x 322 | 318-111-26 |
| | 5 | | 446 x 398 | 318-111-37 |
| | 6 | | 646 x 200 | 318-111-38 |

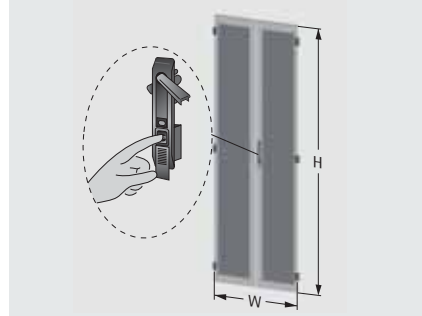


8 Viewing door



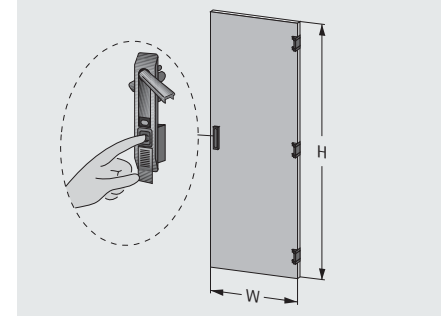
- with turning lever lock for profile half cylinder, L=40 mm (with push button opening)
- Finish:** RAL 7035 light grey
Material: frame: sheet metal, glass: toughened safety glass 4 mm, grey

9 Viewing door, split



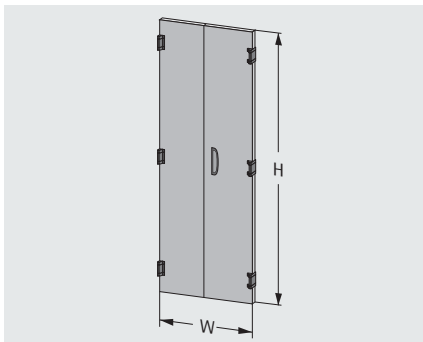
- with turning lever lock for profile half cylinder, L=40 mm (with push button opening)
- Finish:** RAL 7035 light grey
Material: frame: sheet metal, glass: toughened safety glass 5 mm, grey

10 Door, solid



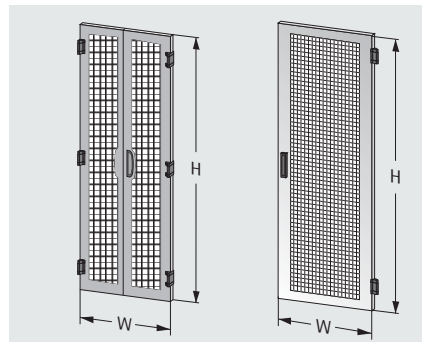
- with turning lever lock for profile half cylinder, L=40 mm (with push button opening)
- Finish:** RAL 7035 light grey
Material: sheet metal

11 Split door, solid



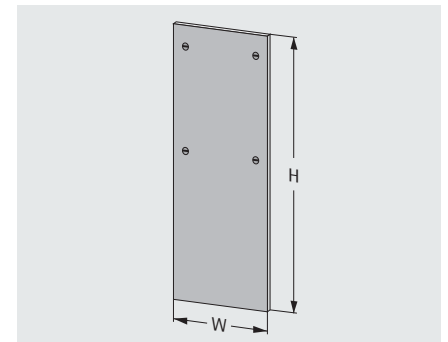
- with turning lever lock for profile half cylinder, L=40 mm (with push button opening)
- Finish:** RAL 7035 light grey
Material: sheet metal

12 Door, perforated



- perforation (80 %)
 - with turning lever lock for profile half cylinder, L=40 mm (with push button opening)
- Finish:** RAL 7035 light grey
Material: sheet metal, perforated insert

13 Sash door

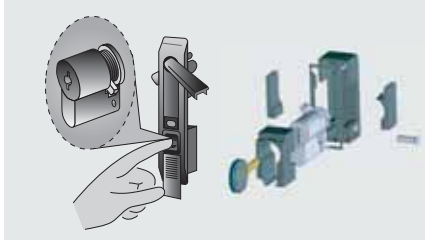


- with 2 or 4 sash fasteners and "double bit key 5 mm" mechanism
- Finish:** RAL 7035 light grey
Material: sheet metal

| Dimensions (H x W) mm | 8 Viewing door | 9 Viewing door, split | 10 Door, solid | 11 Split door, solid | 12 Door, perforated | 12 Split door, perforated | 13 Sash door |
|-----------------------|--------------------------|---------------------------------|--------------------------|--------------------------------|-------------------------------|-------------------------------------|------------------------|
| 1200 x 600 | 318-612-01 | - | 318-612-02 | - | 318-612-16 | - | 318-612-03 |
| 1200 x 800 | 318-812-01 | - | 318-812-02 | - | 318-812-16 | - | 318-812-03 |
| 1200 x 1000 | - | - | - | - | - | - | 318-012-03 |
| 1600 x 600 | 318-616-01 | - | 318-616-02 | - | 318-616-16 | - | 318-616-03 |
| 1600 x 800 | 318-816-01 | - | 318-816-02 | - | 318-816-16 | - | 318-816-03 |
| 1800 x 600 | 318-618-01 | - | 318-618-02 | - | 318-618-16 | - | 318-618-03 |
| 1800 x 800 | 318-818-01 | - | 318-818-02 | - | 318-818-16 | - | 318-818-03 |
| 2000 x 600 | 318-620-01 | - | 318-620-02 | - | 318-620-16 | - | 318-620-03 |
| 2000 x 800 | 318-820-01 | 318-820-08 | 318-820-02 | 318-820-26 | 318-820-16 | 318-820-25 | 318-820-03 |
| 2000 x 1000 | - | - | - | - | - | - | 318-020-03 |
| 2000 x 1200 | - | - | - | - | - | - | 318-020-48 |
| 2200 x 600 | 318-622-01 | - | 318-622-02 | - | 318-622-16 | - | 318-622-03 |
| 2200 x 800 | 318-822-01 | 318-822-08 | 318-822-02 | 318-822-26 | 318-822-16 | 318-822-25 | 318-822-03 |
| 2200 x 1000 | - | - | - | - | - | - | 318-022-03 |
| 2200 x 1200 | - | - | - | - | - | - | 318-022-48 |



14 Locking systems for doors



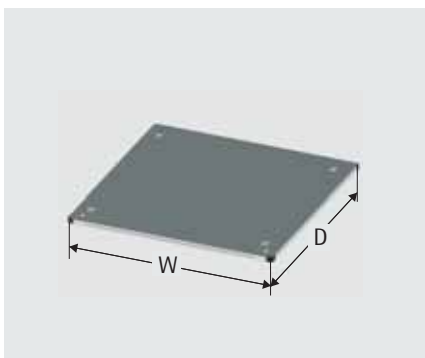
- profile half cylinder with EK333 lock for turning lever lock of doors **8** to **12**



- sash fastener with EK333 lock for locking the sash door **13**
- adapter for installing an individual cylinder (DIN 18252) (without fig.)

| Description | Order no. |
|-----------------------|------------|
| Profile half cylinder | 676-316-00 |
| Sash fastener | 676-181 |
| Adapter | 676-316-10 |
| Spare key EK333 | 676-200 |

16 Top, solid

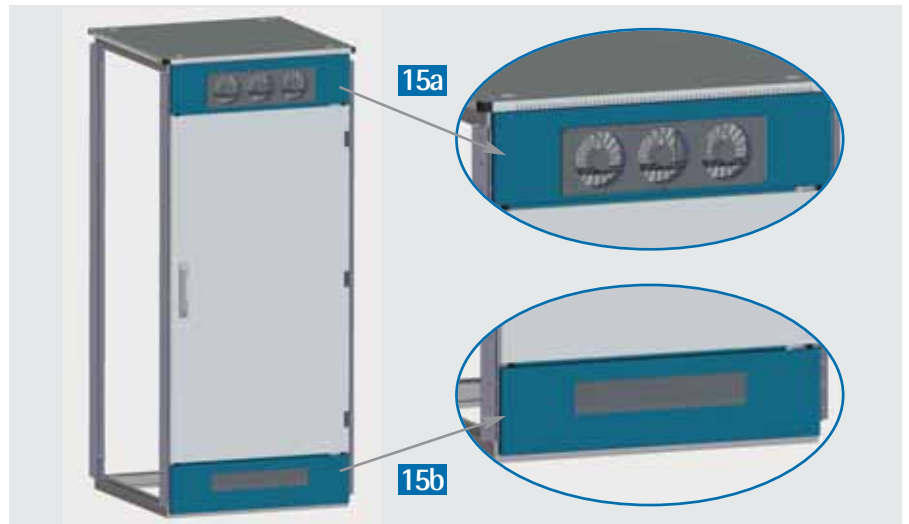


- can be raised up to 11mm for ventilation (using lifting eye bolts, see page 9)
- suitable for IP 54

Finish: RAL 7035 light grey

| W x D mm | Order no. |
|------------|------------|
| 600 x 600 | 318-016-60 |
| 600 x 800 | 318-016-80 |
| 600 x 1000 | 318-020-60 |
| 600 x 1200 | 318-022-60 |
| 800 x 600 | 318-018-60 |
| 800 x 800 | 318-018-80 |
| 800 x 1000 | 318-020-80 |
| 800 x 1200 | 318-022-80 |

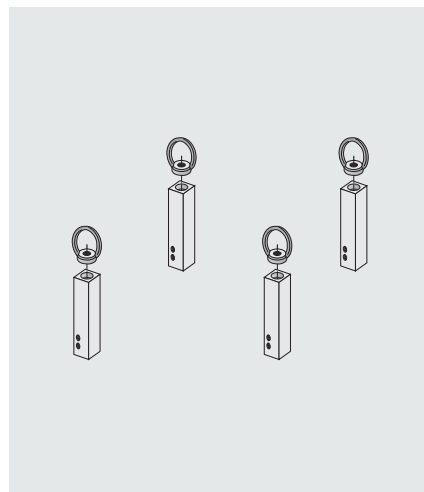
15 Universal modules



- can be used with shortened doors **8** and **10** or sash doors **13**
- modules can be positioned freely above and/or below the doors shortened by 200 mm
- the fan installation module **15a** is suitable for use with the basic fan module **27**

| Description | Width (W)/ Depth (D) mm | Order no. |
|------------------------------------|-------------------------|--------------------------|
| 15a Fan installation module | 600 800 | 318-700-00 318-800-10 |
| 15b Cable entry module | 600 800 | 318-600-02 318-800-02 |

Eye bolt kit



- lifting eye bolts for cabinet relocation
- set = 4 pieces

Load capacity: 500 kg

| Order no. (set) |
|-----------------|
| 318-026-20 |

17 Cabinet connection set



- for connecting as many cabinets as required next to or behind each other
- the design profile of the cabinet remains unchanged

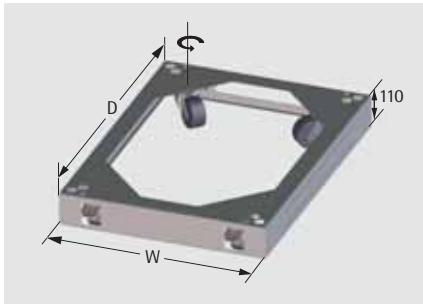
Scope of delivery:

connecting plates, clip-on seals; mounting material included

| Order no. (set) |
|-----------------|
| 318-105-10 |



18 Castor base

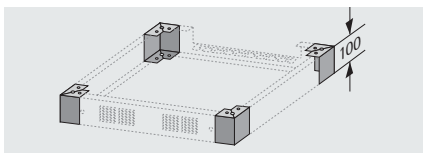


- 4 swivel castors (2 with parking brake)
- cable entry from rear (opening with brush) and side

Load capacity: 450 kg
Finish: RAL 7035 light grey

| Width (W) mm | Depth (D) mm | Order no. |
|-----------------|-----------------|------------|
| 600 | 600 | 318-126-60 |
| 600 | 800 | 318-126-80 |
| 800 | 600 | 318-128-60 |
| 800 | 800 | 318-128-80 |

21 Base corner set



- Set = 4 pieces
- includes mounting materials

Material: sheet metal
Finish: RAL 7035 light grey

| Height (H) mm | Order no. (set) |
|---------------|-----------------|
| 100 | 318-100-00 |

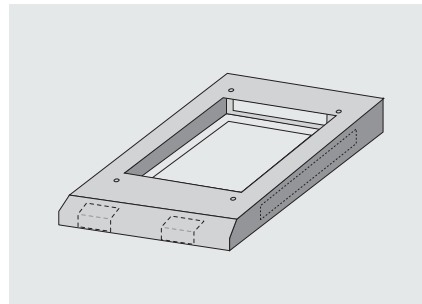
24 Castor set, tilt prevention base



- to be screwed to tilt prevention base **19**
 - 4 swivel castors (2 with parking brake)
- Load capacity:** 450 kg

| |
|-----------------------------------|
| Order no. (set = 4 pieces) |
| 316-026-50 |

19 Tilt prevention base

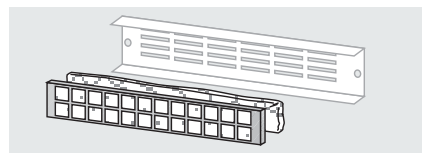


- static base with integrated tilt prevention
- offers secure standing when drawers with heavy equipment are extracted
- rear or lateral cable entry

Finish: RAL 7035 light grey
Material: sheet metal

| Width (W) mm | Depth (D) mm | Order no. |
|-----------------|-----------------|------------|
| 600 | 1000 | 318-026-11 |
| 800 | 1000 | 318-028-11 |

22 Filter set for base covers



- matches base covers "Type **2** ventilated" (see **21**)

Material: sheet metal galv. / filter fleece

| Width/Depth mm | Order no. (set) |
|----------------|-----------------|
| 600 | 318-100-16 |
| 800 | 318-100-26 |

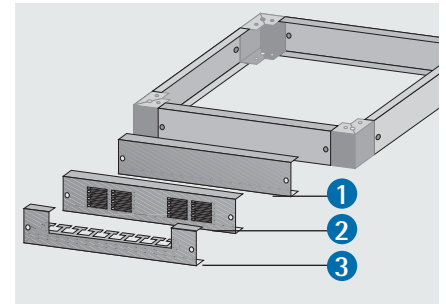
25 Adjusting feet (set =4 pieces)



- to be screwed onto the rack **1** or to the corners of the base

| Description | Order no. (set) |
|------------------|-----------------|
| mounting on rack | 318-026-00 |
| mounting on base | 318-026-02 |

20 Base covers



- for individual base construction
- four covers are needed to compl. one base

Type **1** : solid

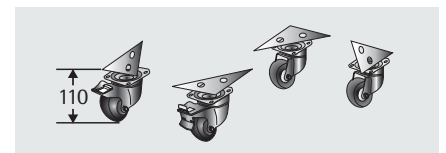
Type **2** : ventilated

Type **3** : with cable entry

Material: sheet steel, RAL 7035 light grey

| Type | Width/Depth Cabinet Rack mm | Order no. |
|----------|--------------------------------|------------|
| 1 | 600 | 318-100-10 |
| | 800 | 318-100-20 |
| | 1000 | 318-100-30 |
| | 1200 | 318-100-50 |
| 2 | 600 | 318-100-12 |
| | 800 | 318-100-22 |
| 3 | 600 | 318-100-14 |
| | 800 | 318-100-24 |

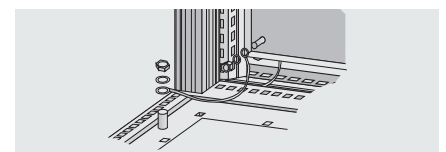
23 Castor set



- to be screwed directly onto the cabinet rack **1**
 - 4 swivel castors (2 with parking brake)
- Load capacity:** 450 kg

| |
|-----------------------------------|
| Order no. (set = 4 pieces) |
| 318-026-10 |

26 Earthing kit TiRAX



- for earthing according to VDE standards
- for conductive connection of the cabinet's components (cable cross section 2,5 mm²)

| |
|------------------------|
| Order no. (set) |
| 318-150-00 |



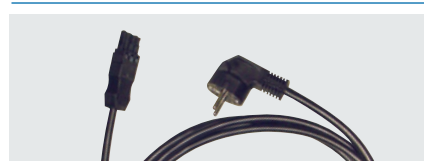
27 Basic fan module



- fan module, fully pre-wired
- ventilation or extraction, depending on assembly position
- for installation in the top/bottom area of the cabinet
- different power cords available (see right side)

Dimensions (H x W x D):
44 mm x 450 mm x 140 mm
Surface: similar to RAL 9005 jet black
Material: polycarbonate UL 94 V-0

Power cord, standard



| Type of connection | Length | Order no. |
|-----------------------------------|--------|------------|
| Earthing-pin | 3m | 640-044-05 |
| Cooling devices | 3m | 230-500-15 |
| Without plug for fixed connection | 3m | 230-500-16 |

Power cord with thermostat 0-60°C

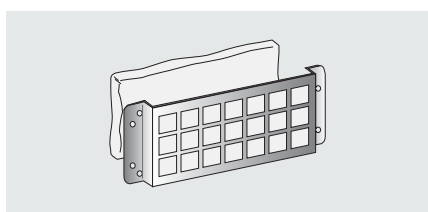


| Type of connection | Length | Order no. |
|-----------------------------------|--------|------------|
| Earthing-pin | 3m | 230-500-04 |
| Cooling devices | 3m | 230-500-05 |
| Without plug for fixed connection | 3m | 230-500-06 |

The fan characteristics and noise levels can be found in the diagrams on page 81.

| Description | Unimpeded air flow | Basic module | Extension module |
|---------------------|----------------------|--------------|------------------|
| fan module 1-fold | 115m ³ /h | 230-500-01 | 230-500-11 |
| fan module 2-fold | 230m ³ /h | 230-500-02 | 230-500-12 |
| fan module 3-fold | 345m ³ /h | 230-500-03 | 230-500-13 |
| fan module "silent" | 240m ³ /h | 230-500-43 | - |

Filter set for fan module and/or cover plate perforated



Material: aluminium/filter fleece

| Filter set | Spare filter (5 pcs.) |
|------------|-----------------------|
| 316-100-99 | 671-200-05 |

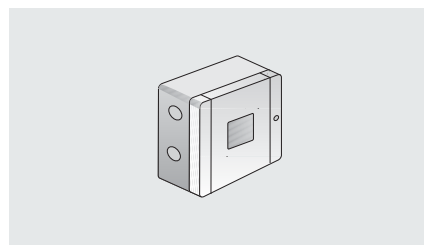
Door contact switch



- e.g. or switching control cabinet lamps, etc. on and off
- Scope of delivery:** inc. mounting material

| Order no. |
|------------|
| 640-071-00 |

Terminal box



- for use as a cable distribution socket
- simple and quick installation

| Order no. |
|-----------|
| 640-059 |

LED cabinet lamp



- cost-optimised LED technology with a power consumption of 5W (light intensity equivalent to a 75W light bulb)
- internal power supply unit with wide range voltage 100-230V / AC
- long-life and no maintenance (service life at 20 °C = 60,000 h)
- magnetic attachment for individual mounting in the cabinet

Connections must be ordered separately!

| Description | Order no. |
|---------------------------------------|------------|
| LED cabinet lamp with on/off switch | 640-143-05 |
| LED cabinet lamp with motion detector | 640-143-06 |
| Connection with Euro plug, L=2.5 m | 640-143-08 |



Noise absorption foam



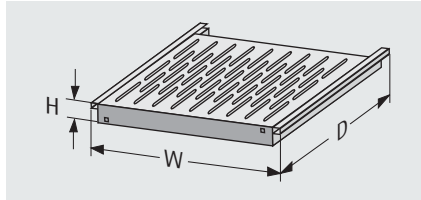
- absorbs up to 10 dB/A of sound in enclosures (e.g. fan noise)
- self-adhesive on one side
- thermal conductivity: 0.033 W/mk (to DIN 52612)
- temperature range: -40°C to +100 °C

Material: PUR ester foam (10 mm), colour grey, with pattern of indentations, partially compressed (air permeable)
Delivery: unmounted

If required, we will be happy to affix the noise absorption foam for you before delivering your cabinets or enclosures!

| Order no. (1 m ²) |
|-------------------------------|
| 671-211 |

28 Shelf without 19" extension "fixed installation"

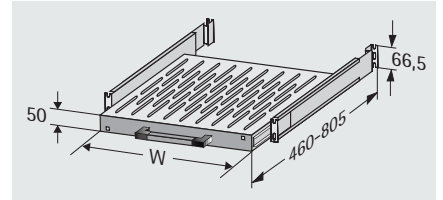


- for mounting into cabinet rack without 19" level
- extraction length 500 mm

Finish: RAL 7035 light grey
Material: sheet metal
Dimensions (H x W x D): 1.5 U (66,5 mm) x 465 x 410 mm
Load capacity: 80 kg (distributed load)

| Cabinet width | Order no. |
|---------------|------------|
| 600 mm | 318-141-08 |
| 800 mm | 318-141-05 |

28 Shelf without 19" extension "extractable"

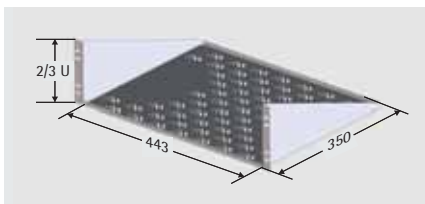


- for mounting into cabinet rack without 19" level
- extraction length 500 mm
- simple one-person assembly

Finish: Shelf: RAL 7035 light grey
Material: sheet metal
Dimensions (H x W x D): 1.5 U (66,5 mm) x 465 x 410 mm
 1.5 U (66,5 mm) x 665 x 410 mm
Load capacity: 60 kg (distributed load)

| Cabinet width | Order no. |
|---------------|------------|
| 600 mm | 318-141-04 |
| 800 mm | 318-141-06 |

28 19" shelf, fixed

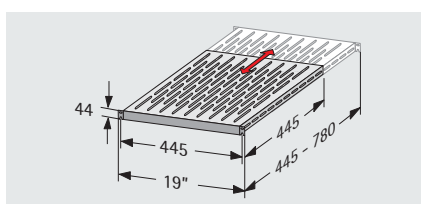


- simple assembly on a 19" grid (only one 19" level required)
- ventilated

Finish: RAL 7035 light grey
Material: sheet metal
Load capacity: 15 kg (distributed load)

| Height | Order no. |
|--------|------------|
| 2 U | 315-810-20 |
| 3 U | 315-810-00 |

28 19" shelf 1 U "fixed" VARIplain

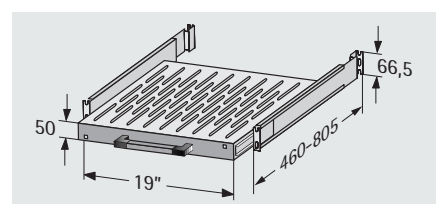


- fixed installation
- depth variable due to VARIplain technology
- telescopic: 445 - 780 mm (see fig.)
- simple one-person assembly through open long hole in the 19" front (hook-in)

Finish: RAL 7035 light grey
Material: sheet metal
Dimensions (H x W x D): 1 U (44 mm) x 19" (482.6 mm) x 445 mm-780 mm
Floor space (w x d): 445 mm x (445 mm-780 mm)
Load capacity: 150 kg (distributed load/statisch)

| Order no. |
|------------|
| 316-036-99 |

28 19" shelf 1.5 U "extractable"



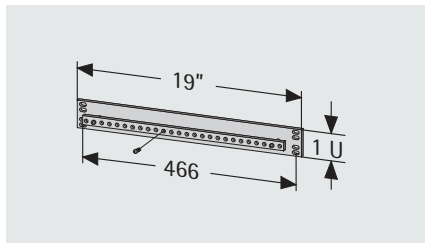
- variable-depth installation
- extraction 500 mm
- simple one-person assembly

Finish: RAL 7035 light grey
Material: sheet metal
Dimensions (H x W x D): 1.5 U (66.5 mm) x 19" (482.6 mm) x 465 / 665 mm
Storage space (w x d): 410 x 465 / 665
Load capacity: 60 kg (distributed load)

| Depth | Order no. |
|--------|------------|
| 465 mm | 318-141-00 |
| 665 mm | 318-141-01 |



29 19" Potential equalisation rail



- for 19" or cabinet rack installation
- connection options: 27 x M 5
- rail cross-section: 50 mm²

Material: sheet steel/copper

| |
|------------------|
| Order no. |
| 640-028-00 |

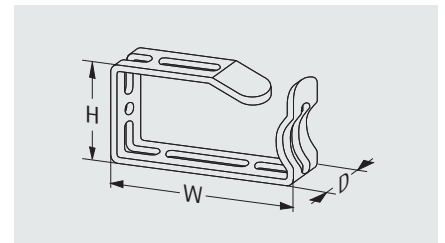
Screw set M 5 / M 6 (50x)



- for positioning 19" components on vertical mountings

| Description | Order no. (set) |
|-------------|-----------------|
| M 5 | 630-991 |
| M 6 | 630-994 |

Cable clamp set, metal (set)

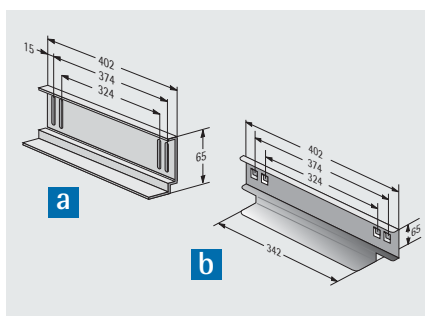


- for securing cables vertically to a 19" rack (for 800 mm wide cabinets)
- set = 10 pieces

Scope of delivery: inc. mounting materials

| H x W x D mm | Order no. (set) |
|---------------|-----------------|
| 44 x 85 x 23 | 640-036-11 |
| 66 x 125 x 23 | 640-036-12 |
| 88 x 125 x 23 | 640-036-13 |

Slide rail, screwable / hook-in



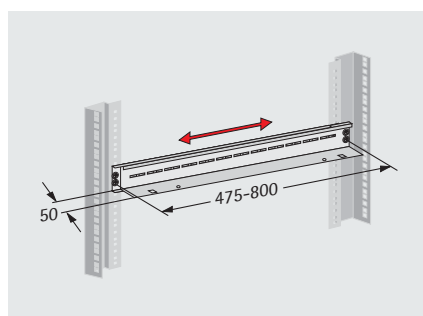
- **screwed/hooked** in onto 19" vertical mountings
- to support heavy 19" plug-in units
- two 19" levels are required for mounting

Material: sheet metal, galvanised

Load capacity: 50 kg

| screwable a | hook-in b |
|--------------------|------------------|
| 312-544 | 316-544-00 |

Slide rail, variable depth



- depth-adjustable
- to accommodate 19" plug-in units (e.g. servers) irrespective of the clearance between the first and second 19" level
- for use as of a cabinet depth of 800 mm

Material: sheet steel 1.5 mm, galvanised

Load capacity: 50 kg

| |
|-------------------------|
| Order no. (pair) |
| 316-544-20 |

TiRAX screw set



- for rotating mounting in TiRAX cabinet racks

Scope of delivery:

- each with 20x special cage nuts M6, lens head screw M6 x 16 and U-glass

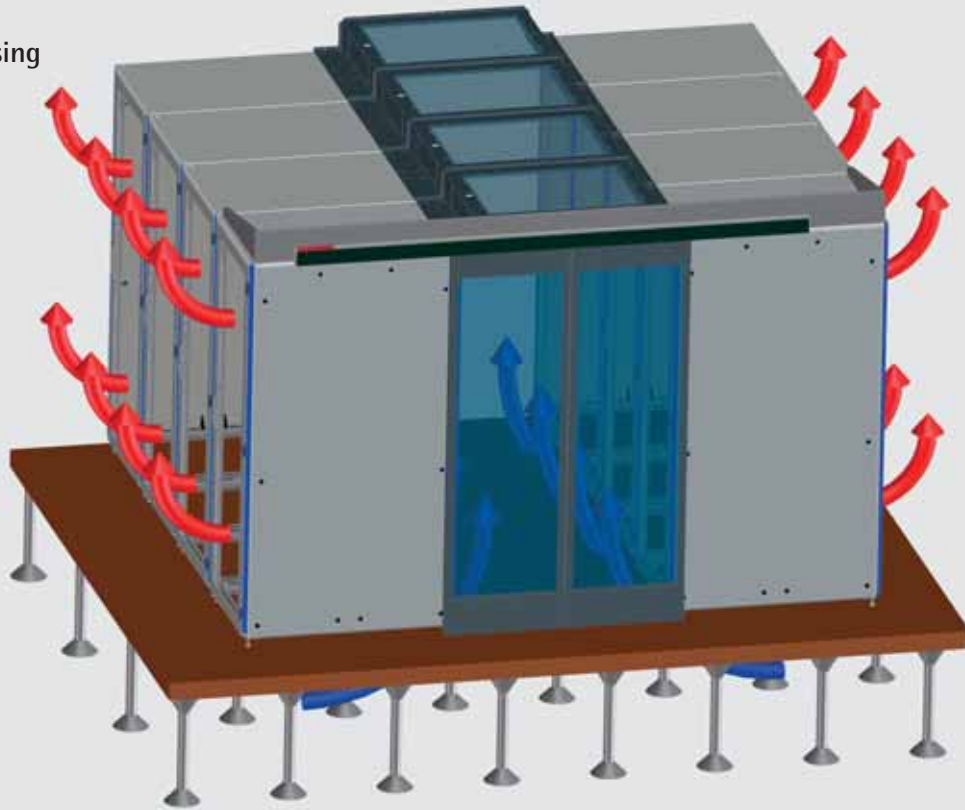
| |
|------------------------|
| Order no. (set) |
| 630-998 |



Other accessories can be found in this catalogue in the corresponding sections.

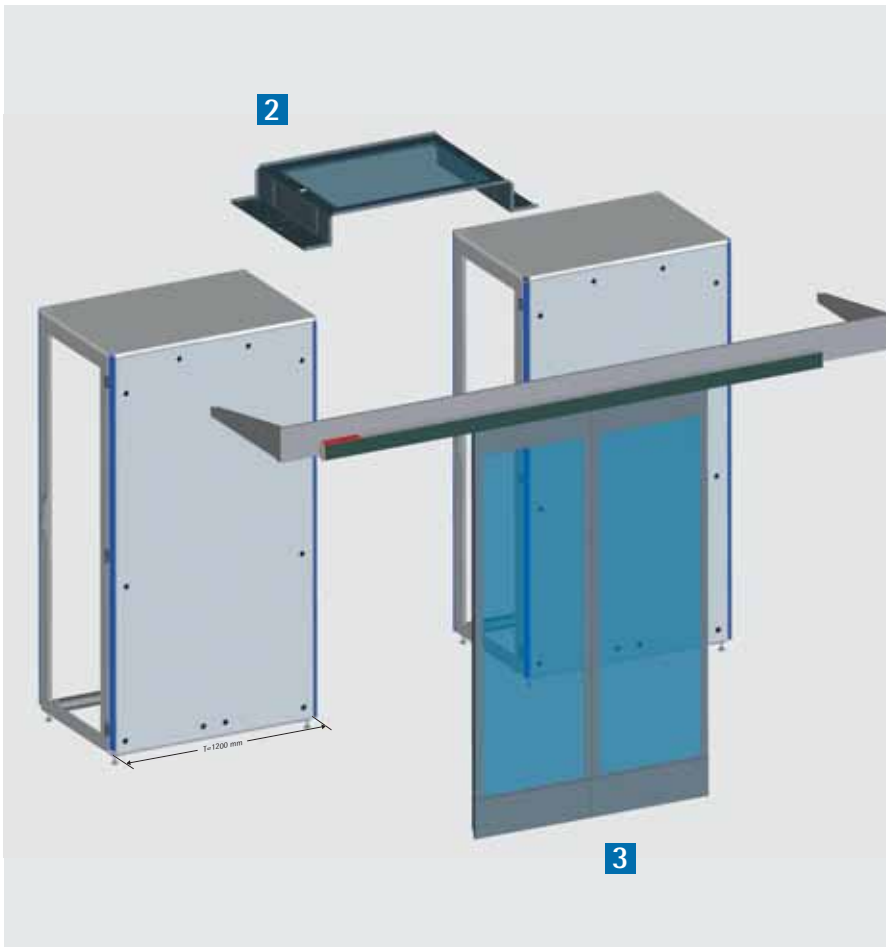


System graphic
cool corridor housing

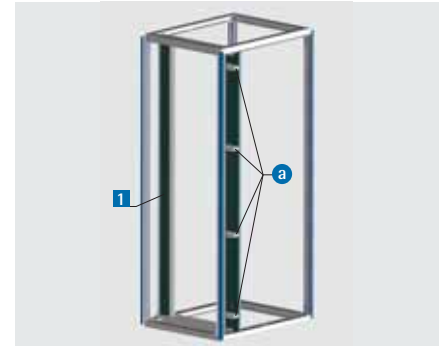


Cooling corridor system
with TiRAX cabinet system





1 Partition panel kit

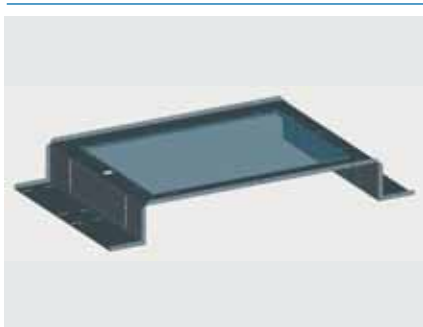


- to partition the lateral movable space for 800 mm wide cabinet between 19" level and side panel
- 3 × 1 U field per panel
- with cable clamps **a** (max. 4 pieces per panel) extendable (see page 25)

Material: sheet metal

| Height mm | RAL 7035 | RAL 9005 |
|-----------|------------|------------|
| 2000 | 318-121-84 | 318-121-85 |
| 2200 | 318-121-87 | 318-121-88 |

2 Corridor cover for cooling corridor



- for easy mounting on the cabinet system
- with 19" 3 U mounting section for power distributors, light systems etc.
- with toughened safety glass
- for cooling corridor with width 1.2 m

Material: sheet metal,
toughened safety glass

| Width mm | Finish | Order no. |
|----------|----------|------------|
| 600 | RAL 7035 | 318-124-66 |
| 600 | RAL 9005 | 318-124-67 |
| 800 | RAL 7035 | 318-124-32 |
| 800 | RAL 9005 | 318-124-75 |

3 Sliding door system



- for cabinet depth D=1200 mm
- simple and quick installation
- for cooling corridor with width 1.2m
- height adjustment towards floor is possible

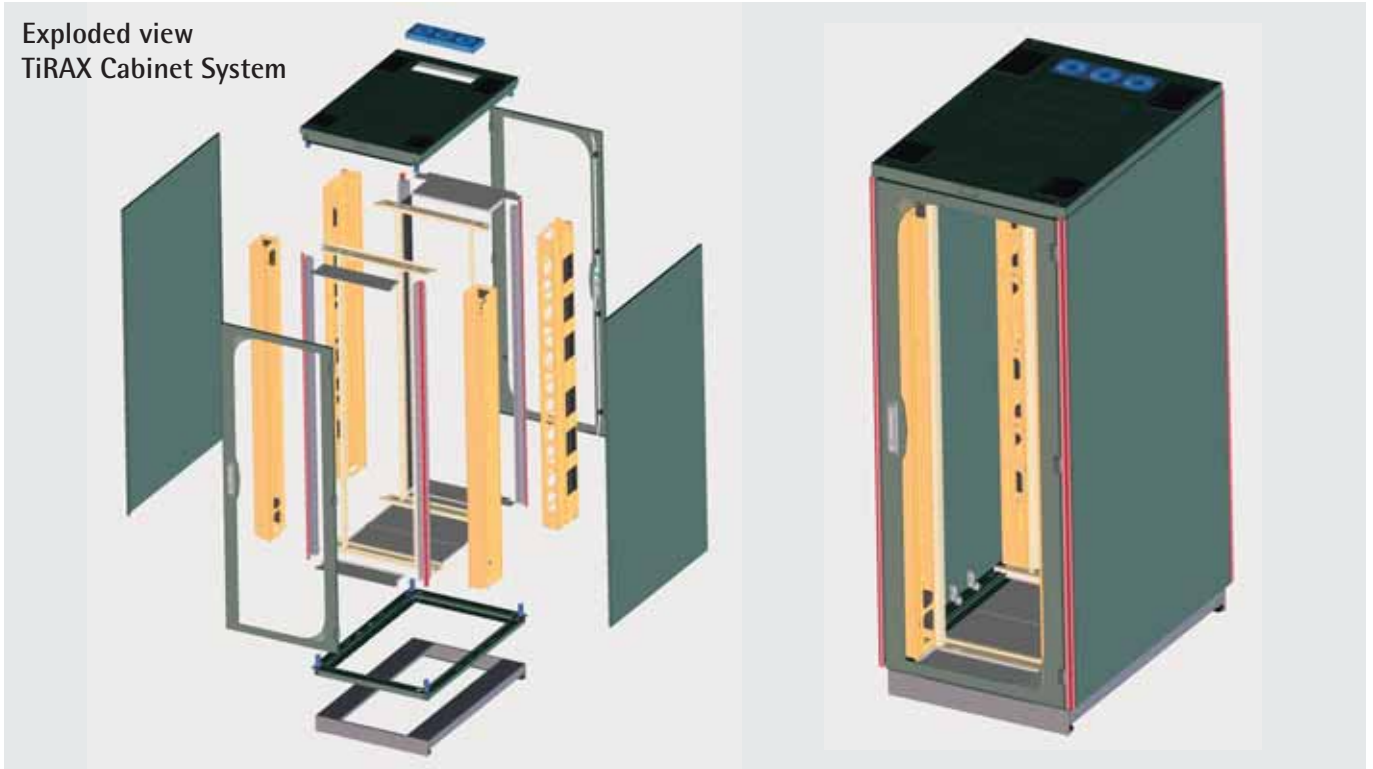
Material: sheet metal,
toughened safety glass

| Height mm | Finish | Drive | Order no. |
|-----------|----------|----------|------------|
| 2000 | RAL 7035 | manual | 318-124-70 |
| 2000 | RAL 9005 | manual | 318-124-80 |
| 2000 | RAL 7035 | electric | 318-125-00 |
| 2000 | RAL 9005 | electric | 318-125-05 |
| 2200 | RAL 7035 | manual | 318-124-55 |
| 2200 | RAL 9005 | manual | 318-124-65 |
| 2200 | RAL 7035 | electric | 318-125-10 |
| 2200 | RAL 9005 | electric | 318-125-15 |



From conceptual planning to installation in your

Exploded view
TiRAX Cabinet System



Project:
Data centre





data centre - everything from a single source!





For your notes

Important notes:

Questions for the sales team:



19" TiRAX cabinet system

from page 3



19" NETcell cabinet system

from page 31



Open 19" racks

from page 43



Wall-mounting/stand-alone distribution systems

from page 53



Wall-mounting enclosure systems

from page 63



Air conditioning technology

from page 77



Power distribution system

from page 85



Cabinet monitoring

from page 101



Cable management

from page 105



Workstation systems

from page 109



General accessories/
distribution technology

from page 123



You can read more about products from the apra-group at www.apra-norm.com



NETcell



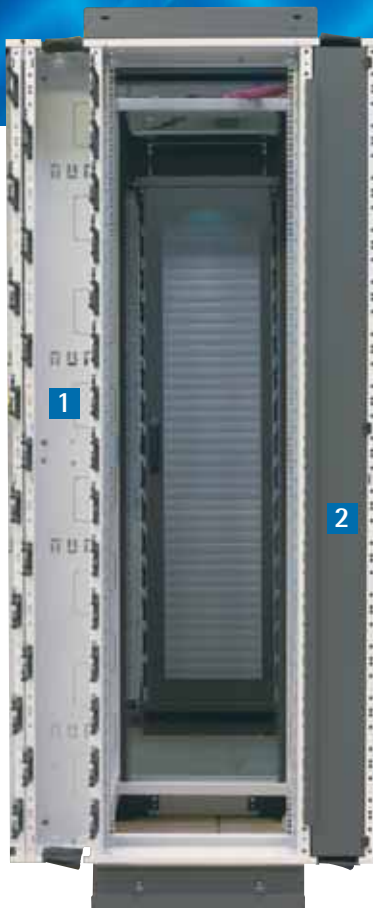
Cable tray for excess length of cable

- with connected rack installation it can also be used as trunking system



Modular cable trays

- for separate routing of data and power cables



Cable duct

- designed for large-volume routing of data and power cables (vertical and horizontal)
- **breakouts a** for individual cable routing from front to back and/or sideways
- **with cable clamps 1**
- for quick installation and to ensure a clear layout
- **with hinged panel 2**
- with locking of spacious cable ducts (pivotable 180°)





The future-oriented 19" rack system for data centres



Corridor cover

- toughened safety-glass pane is easily dismountable to ensure better accessibility to the cooling corridor
- with 3 U increases mounting section for power supply, light systems etc.



Internal view cooling corridor



Sliding door, split

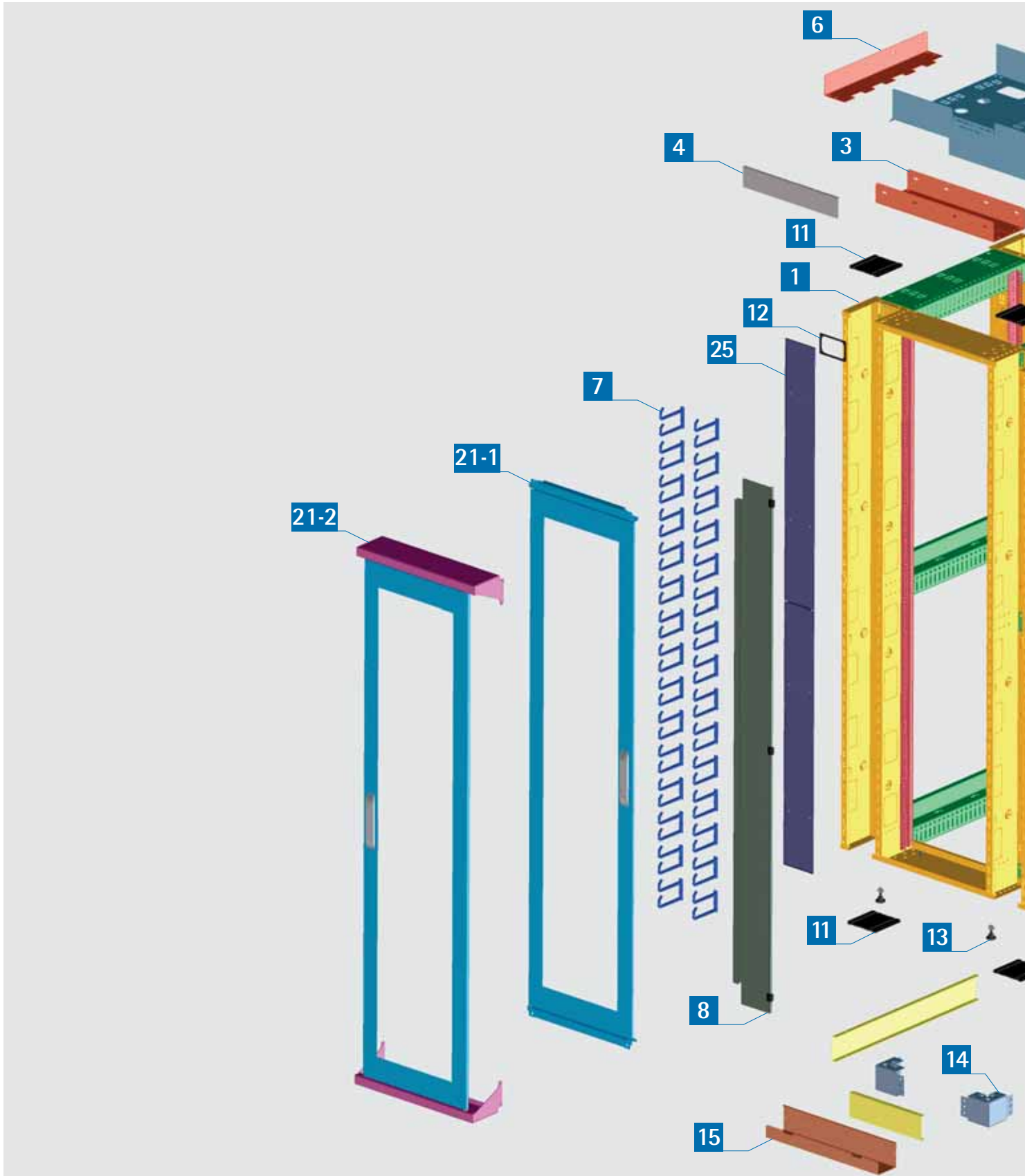
- manual or electric design
- can be fitted with lockable cylinders

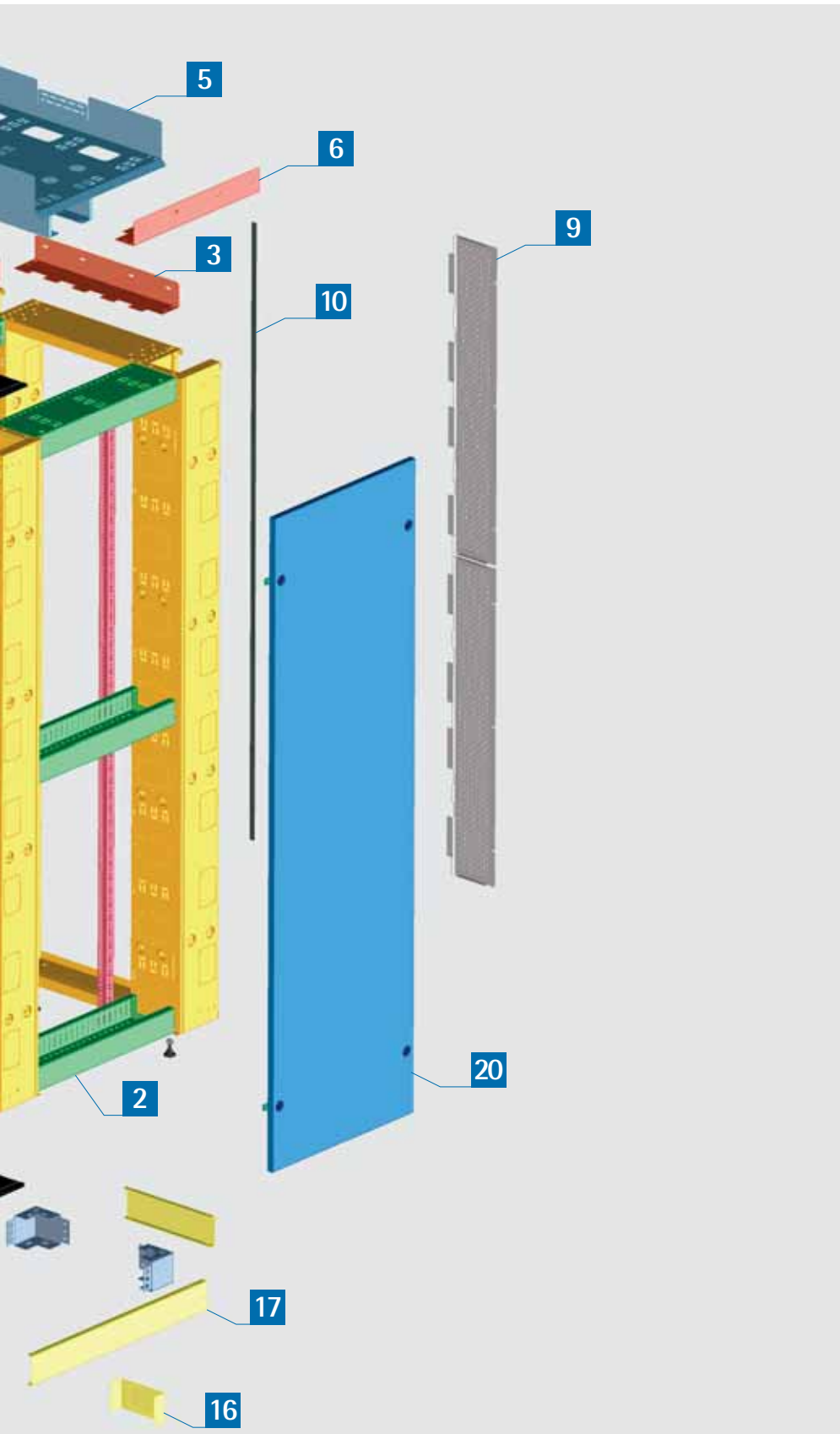
NETcell

completely dismountable,
flexible cable management,
load capacity up
to 1500 kg



Individual configuration: Configure your own cabinet system

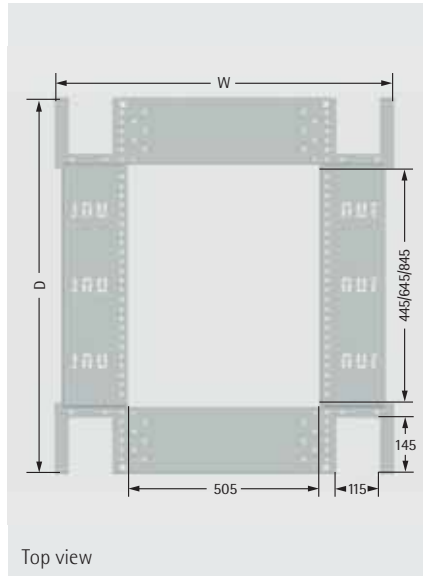
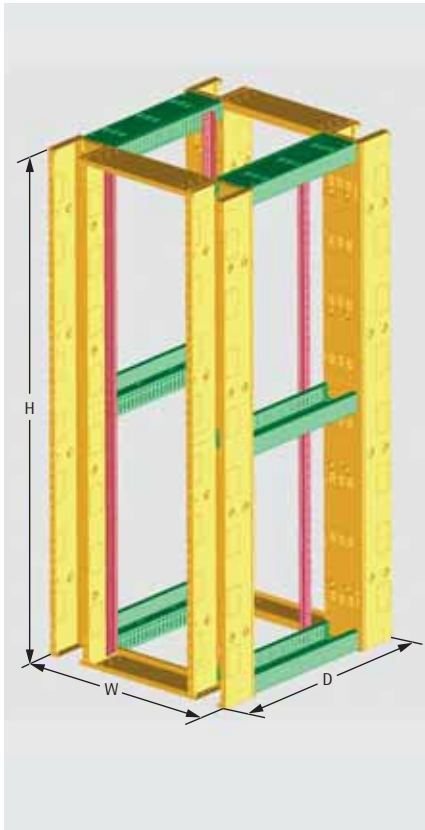




| Item | Description | Page |
|------|---|------|
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| 2 | Cable tray (cross bar) | 37 |
| 3 | Cable routing angle bracket | 37 |
| 4 | Connecting cover for cable routing angle bracket | 37 |
| 5 | Cable tray for excess length of cable | 37 |
| 6 | End cover for excess cable tray | 37 |
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| 11 | Brush set for cable duct | 38 |
| 12 | Edge protection frame | 38 |
| 13 | Adjusting feet set | 38 |
| 14 | Base corner set | 39 |
| 15 | Cable routing tray for mounting on cabinet base | 39 |
| 16 | Socket infill panel | 39 |
| 17 | Base covers | 39 |
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| 20 | Side panel | 40 |
| 21-1 | Door perforated (80 %) flush-mounted | 40 |
| 21-2 | Door perforated (80 %) for cable clamp set | 40 |
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| 25 | Locking panel for cable duct | 41 |
| 26 | Corridor covering for cooling corridor (without fig.) | 41 |
| 27 | Sliding door system (without fig.) | 41 |



1a Basic system "900", dismantlable



The cabinet system consists of two identical frames with integrated cable ducts, cross bars and a 19" extension level with end covers at the front.

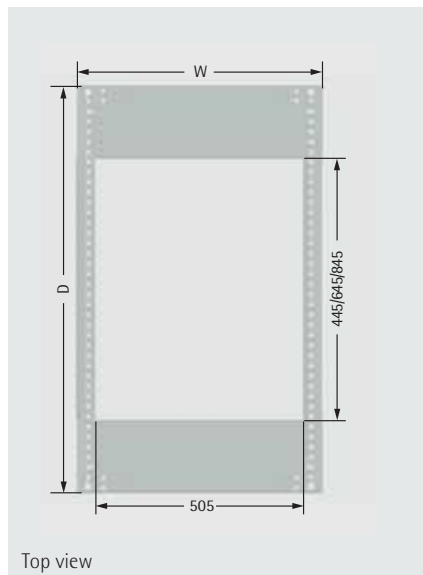
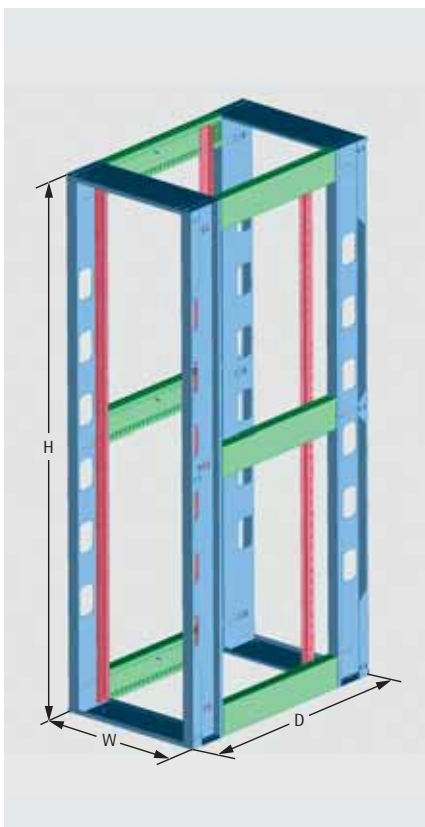
Basic system "900" consists of:

- frame with integrated cable ducts (2 ×)
- cross bars (cable tray) (6 ×)
- 19" extension (2 ×)
- end cover for 19" grid (2 ×)

Ultimate load: 1500 kg (static)

| Dimensions (W × H) mm | Dimensions (D) mm | Finish | Order no. |
|-----------------------|-------------------|----------|------------|
| 900 × 2130 (46 U) | 800 | RAL 7035 | 583-908-12 |
| | 1000 | RAL 7035 | 583-910-12 |
| | 1200 | RAL 7035 | 583-912-12 |
| 900 × 2130 (46 U) | 800 | RAL 9005 | 583-908-82 |
| | 1000 | RAL 9005 | 583-910-82 |
| | 1200 | RAL 9005 | 583-912-82 |

1b Connector System "600", dismantlable



The connector system consists of two identical frames, crossbars and 19" extension with end covers at the front.

Connector System "600" consists of:

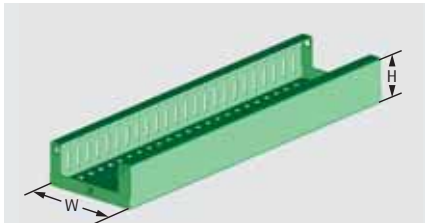
- frame (2 ×)
- crossbars (6 ×)
- 19" extension (2 ×)
- end cover for 19" grid (2 ×)

Ultimate load: 1500 kg (static)

| Dimensions (W × H) mm | Dimensions (D) mm | Finish | Order no. |
|-----------------------|-------------------|----------|------------|
| 600 × 2130 (46 U) | 800 | RAL 7035 | 583-608-12 |
| | 1000 | RAL 7035 | 583-610-12 |
| | 1200 | RAL 7035 | 583-612-12 |
| 600 × 2130 (46 U) | 800 | RAL 9005 | 583-608-82 |
| | 1000 | RAL 9005 | 583-610-82 |
| | 1200 | RAL 9005 | 583-612-82 |



2 Cable tray

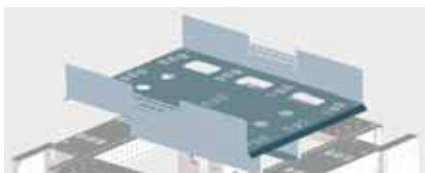
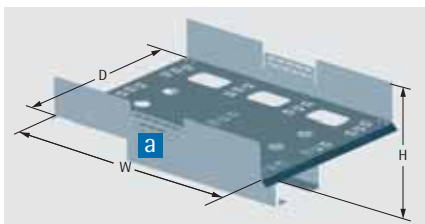


- for basic system
- for cable routing
- for mounting between front and rear frame
- H = 80 mm, W = 175 mm

Material: sheet metal

| Finish | Depth mm | Order no. |
|----------|----------|------------|
| RAL 7035 | 800 | 583-000-01 |
| RAL 9005 | 800 | 583-005-01 |
| RAL 7035 | 1000 | 583-000-69 |
| RAL 9005 | 1000 | 583-005-69 |
| RAL 7035 | 1200 | 583-000-02 |
| RAL 9005 | 1200 | 583-005-02 |

5 Cable tray for excess length of cable

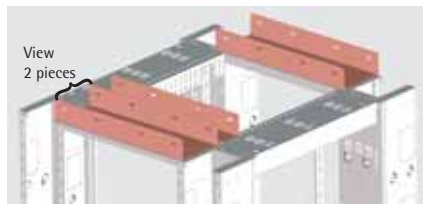
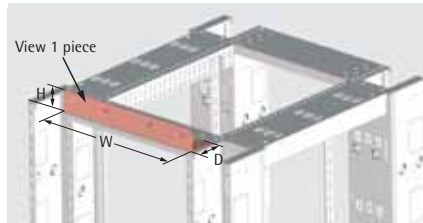


- for basic and connector system
- for storage of excess cable length or as trunking system for row install. of cabinets
- suitable for accommodation of the cable tray **24 a**
- H = 290 mm, D = 580 mm

Material: sheet metal

| Finish | Width mm | Order no. |
|----------|----------|------------|
| RAL 7035 | 600 | 583-000-94 |
| RAL 9005 | 600 | 583-005-94 |
| RAL 7035 | 900 | 583-000-72 |
| RAL 9005 | 900 | 583-005-72 |

3 Cable routing angle bracket

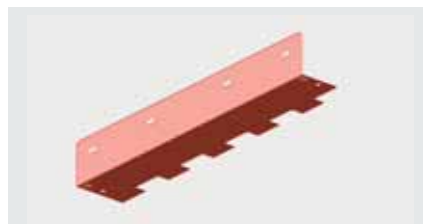


- for basic and connector system
- to set up a cable duct system on the cabinet system
- H x W x D: 80 x 570 x 100 mm

Material: sheet metal

| Finish | Order no. |
|----------|------------|
| RAL 7035 | 583-000-73 |
| RAL 9005 | 583-005-73 |

6 End cover for excess cable tray

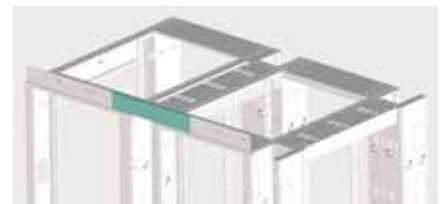


- for covering the excess cable tray on the front ends

Material: sheet metal

| Finish | Order no. |
|----------|------------|
| RAL 7035 | 583-000-73 |
| RAL 9005 | 583-005-73 |

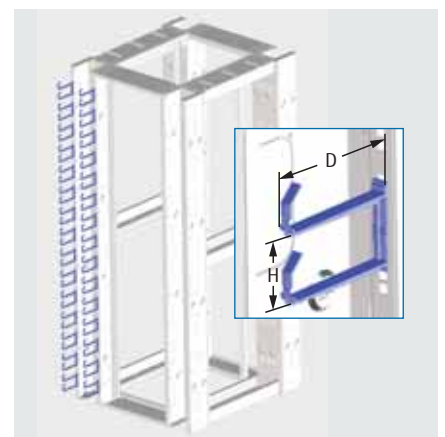
4 Connecting cover for cable routing angle bracket



- for basic and connector system
- for installation in cabinet rows
- conceals space between two cable routing angle brackets on the front end of the system

| Finish | Order no. |
|----------|------------|
| RAL 7035 | 583-000-74 |
| RAL 9005 | 583-005-74 |

7 Cable clamp set



- for basic system
- to be clipped onto the front of the cable duct
- H = 55 mm, D = 115 mm
- set = 30 pieces (1 cable duct)

Material: plastic

| Order no. |
|------------|
| 583-001-12 |



8 Hinged panel



- for basic system, W = 900 mm
- for covering the cable duct
- with hinges for quick opening and closing

Material: sheet metal

| Finish | Order no. |
|----------|------------|
| RAL 7035 | 583-000-83 |
| RAL 9005 | 583-005-83 |

9 Mounting plate



- for basic system
- for the mounting of PDU, radii delimiter, etc.
- mounting in cable duct (rear panel)
- W = 160 mm, H = 880 mm
- up to two mounting plates per cable duct can be mounted

Material: sheet metal

| Finish | Order no. (1 pc.) |
|----------|-------------------|
| RAL 7035 | 583-000-98 |
| RAL 9005 | 583-005-98 |

10 Universal guide rail for cable duct

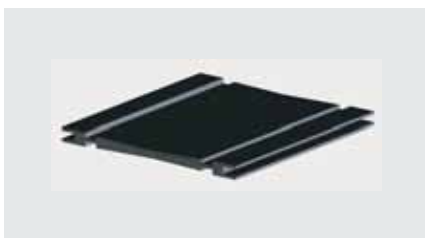


- for basic system
- mounting possible on all sides of the cable duct (max. 2 per side)
- for individual mounting of PDU, cable clamps etc.
- attachment of components with sliding nuts (4 pcs. included in scope of delivery)
- Length: 2m

Material: sheet metal, galvanised

| Description | Order no. |
|-----------------------------------|------------|
| Universal guide rail | 583-001-11 |
| Sliding nuts M5 (set = 10 pieces) | 630-015-11 |

11 Brush set for cable duct



- for basic system
- to be used on the top and bottom on the cable duct
- set = 8 pieces

Material: plastic

| Order no. (set) |
|-----------------|
| 583-001-15 |

12 Edge protection frame



- for basic and connector system
- retrofittable edge guard for use in cable ducts
- set = 10 pieces

Material: plastic

| Order no. (set) |
|-----------------|
| 583-001-10 |

13 Adjusting feet set



- for basic and connector system
- to be screwed onto the cabinet frame or to the base corners
- set = 4 pieces

Material: steel, plastic

| Description | Order no. (set) |
|------------------|-----------------|
| Mounting on rack | 500-001-28 |
| Mounting on base | 318-026-02 |



14 Base corner set

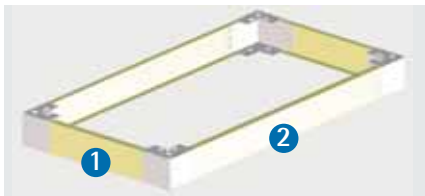


- for basic and connector system
- H = 100 mm
- set = 4 pieces

Material: sheet metal

| Finish | Order no. (set) |
|----------|-----------------|
| RAL 7035 | 318-100-00 |
| RAL 9005 | 318-200-00 |

17 Base covers, solid

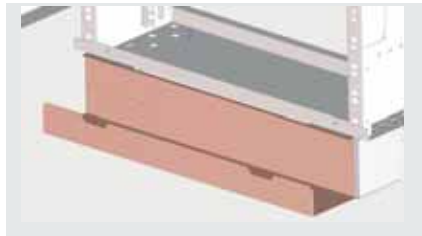


- for basic and connector system
- 4 covers (and four base corners Item 14) complete one base

Material: sheet metal

| Type | W/D | Finish | Order no. |
|------|------|--------|------------|
| 1 | 900 | 7035 | 318-100-10 |
| | 900 | 9005 | 318-100-18 |
| | 600 | 7035 | 316-100-10 |
| | 600 | 9005 | 316-200-10 |
| 2 | 800 | 7035 | 318-100-20 |
| | 800 | 9005 | 318-100-23 |
| | 1000 | 7035 | 318-100-30 |
| | 1000 | 9005 | 318-100-61 |
| | 1200 | 7035 | 318-100-50 |
| | 1200 | 9005 | 318-100-51 |

15 Cable routing tray



- for basic and connector system
- to be used with base corner set
- two mounting positions possible
- for cable entry

Material: sheet metal

| Finish | Order no. |
|----------|------------|
| RAL 7035 | 583-000-70 |
| RAL 9005 | 583-005-70 |

18 19" blind panels

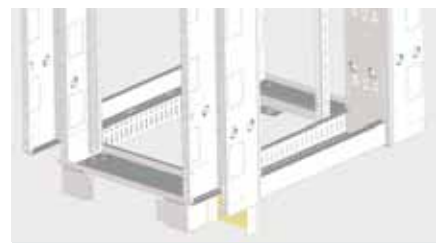
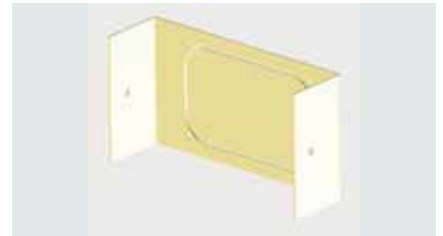


- to be clipped onto the 19" grid
- for quick mounting without tools
- set = 10 pieces

Material: plastic

| U | RAL 7035 | RAL 7016 |
|---|------------|------------|
| 1 | 213-156-30 | 213-156-25 |

16 Socket infill panel

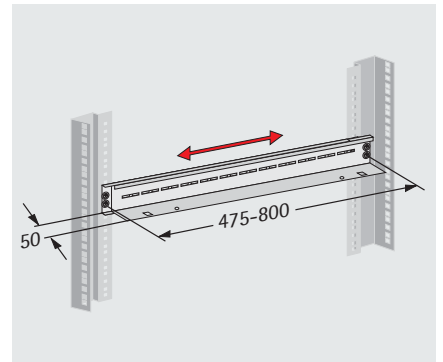


- for basic system
- conceals space between two cabinet frames when mounting on cabinet base

Material: sheet metal

| Finish | Order no. |
|----------|------------|
| RAL 7035 | 583-000-71 |
| RAL 9005 | 583-005-71 |

19 Slide rail, variable depth



- depth-adjustable
- to accommodate 19" plug-in units (e.g. servers) irrespective of the clearance between the first and second 19" level

Load capacity: 50 kg

Material: sheet metal, galvanised

| Order no. (pair) |
|------------------|
| 316-544-20 |



20 Side panel



- with 4 sash fasteners ("double-bit" 5 mm mechanism)

Material: sheet metal

| Finish | Depth | Order no. |
|----------|-------|------------|
| RAL 7035 | 800 | 583-000-04 |
| RAL 9005 | 800 | 583-005-14 |
| RAL 7035 | 1000 | 583-000-84 |
| RAL 9005 | 1000 | 583-005-84 |
| RAL 7035 | 1200 | 583-000-07 |
| RAL 9005 | 1200 | 583-005-07 |

23 Cabinet connector set



- to connect basic or connector cabinets

| Order no. |
|------------|
| 583-000-97 |

21 Door ventilated (80 % perforated)

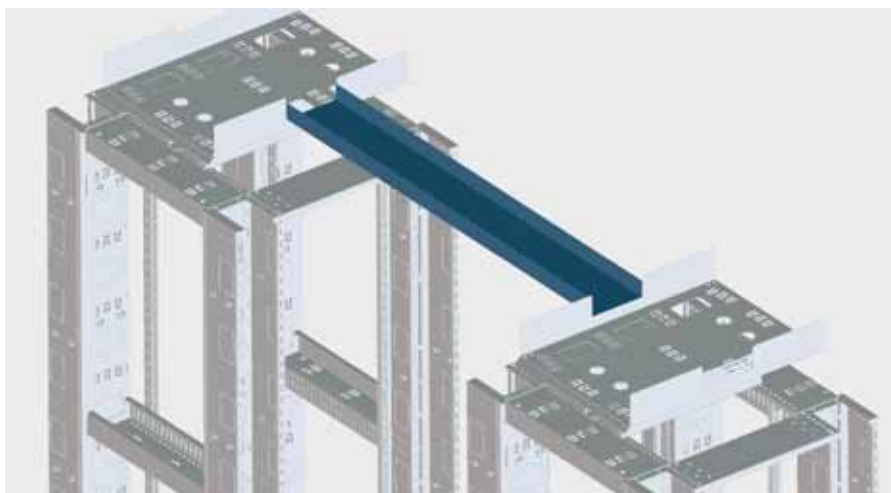


- version **21-1**: flush-mounted with frame
- version **21-2**: flush-mounted with the cable clamp
- with turning lever lock for profile half cylinder, L=40 mm (with push button opening)

Material: sheet metal

| Type | W/D | Finish | Order no. |
|----------|-----|--------|------------|
| 1 | 900 | 7035 | 583-000-76 |
| | 900 | 9005 | 583-005-76 |
| | 600 | 9005 | 583-005-76 |
| 2 | 600 | 7035 | 583-000-54 |
| | 600 | 9005 | 583-005-54 |
| | 900 | 7035 | 583-000-80 |
| | 900 | 9005 | 583-005-80 |

24 Cable tray

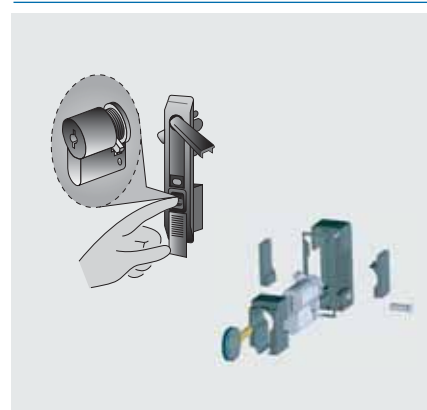


- to guide cables above cooling or heating corridor
- may also be used together with corridor cover (cooling corridor)
- Dimensions (W×H×D): 200 × 60 × 1500 mm

Material: sheet metal, hot dip galvanised

| Order no. |
|------------|
| 583-000-91 |

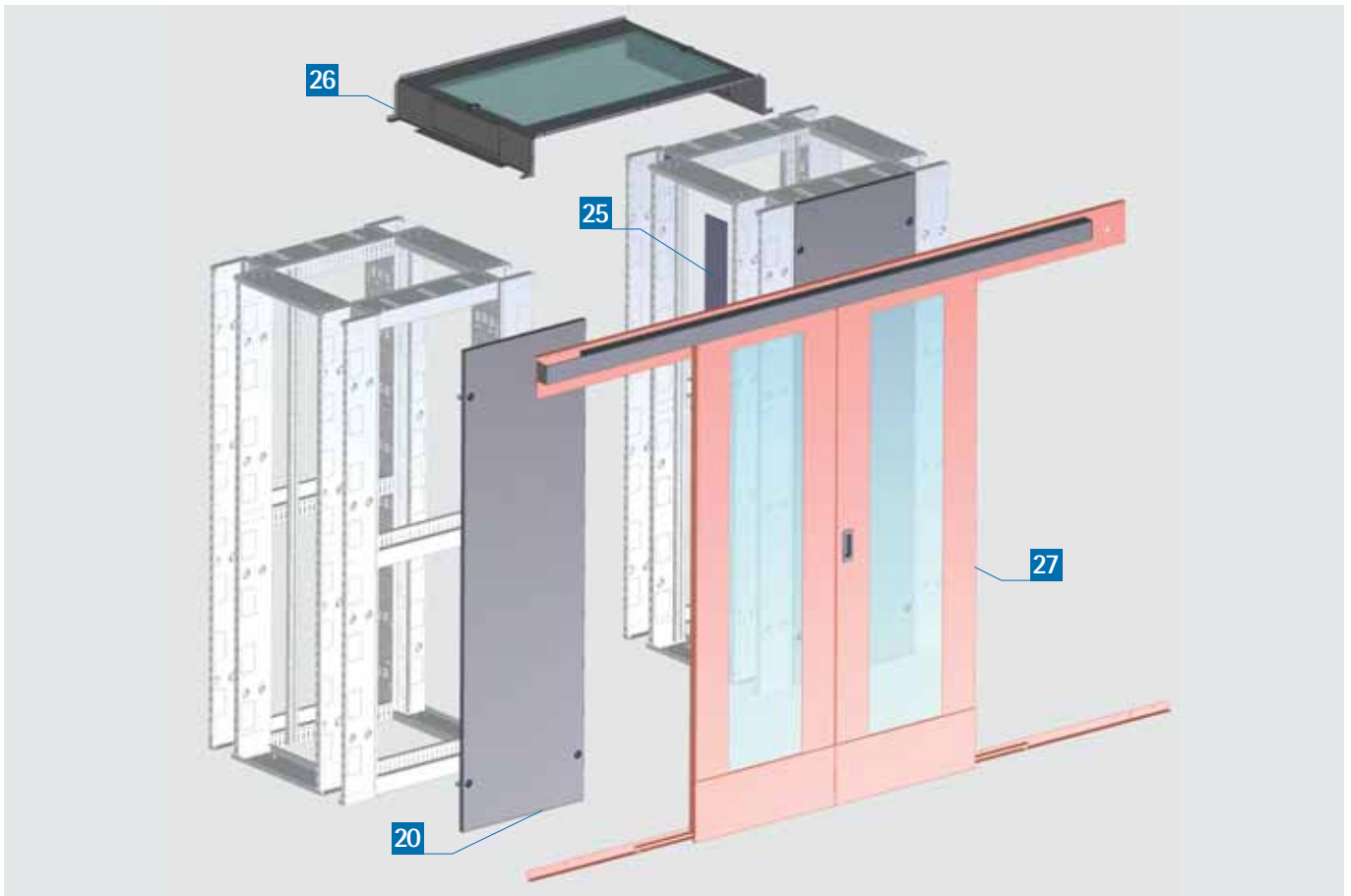
22 Locking systems for doors and side panel



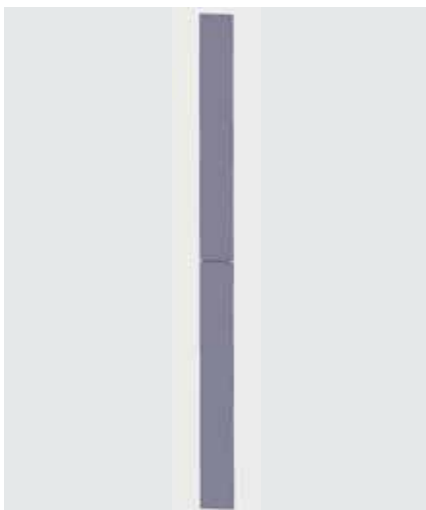
- profile half cylinder, L=40 mm with EK333 lock for turning lever lock of door **21**
- adapter for installing an individual cylinder (DIN 18252) (without fig.)
- sash fastener with EK333 lock for locking the side panel **20**



| Description | Order no. |
|-----------------------|------------|
| Profile half cylinder | 676-316-00 |
| Sash fastener | 676-181 |
| Adapter | 676-316-10 |
| Spare key EK333 | 676-200 |



25 Locking panel for cable duct

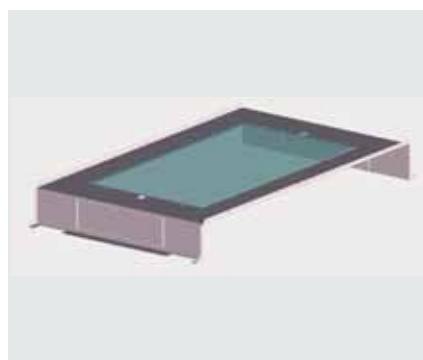


- to partition cooling corridor of cable duct
- mounted on the rear of cable ducts (can only be used for standard assembly of crossbars)
- set = 2 pieces (1 duct)

Material: sheet metal

| Finish | Order no. |
|----------|------------|
| RAL 7035 | 583-000-96 |
| RAL 9005 | 583-005-96 |

26 Corridor covering for cooling corridor



- for easy mounting on the cabinet system
- with 19" 3 U mounting section for power supplies, light systems etc.
- with toughened safety glass
- for cooling corridor with width 1.2m

Material: sheet metal, toughened safety glass

| Finish | Width | Order no. |
|----------|-------|------------|
| RAL 7035 | 900 | 583-000-75 |
| RAL 9005 | 900 | 583-005-75 |
| RAL 7035 | 600 | 583-000-63 |
| RAL 9005 | 600 | 583-005-63 |

27 Sliding door system



- simple and quick installation
- for cooling corridor with width 1.2m
- height adjustment towards floor is possible

Material: sheet metal, toughened safety glass

| Finish | Version | Order no. |
|----------|----------|------------|
| RAL 7035 | manual | 583-000-59 |
| RAL 9005 | manual | 583-005-59 |
| RAL 7035 | electric | 583-001-13 |
| RAL 9005 | electric | 583-001-16 |



Our service all comes from a single source:

- ✓ take advantage of our expertise
- ✓ save time and money

Air conditioning, power supply, cable routing solutions, plug-and-play versions and pre-wiring for enclosures and cabinet systems

At the apra Group, we place particular emphasis on individual and flexible system solutions. Our enclosures and 19" cabinet systems are equipped with components such as a power supply/distribution system and air conditioning technology in line with customer requirements and are supplied with full pre-wiring on request. This enables us to fulfil the most challenging of customer requirements.

From development right through to the finished product, you can benefit from our expertise and flexibility!

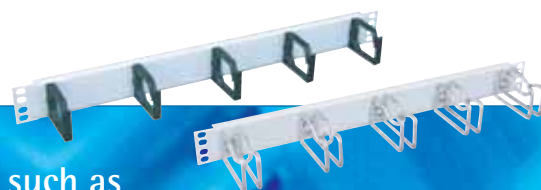
Additional accessories for your cabinet and enclosure system can be found here:



Multiple socket strips, PDUs and other power supply components can be found in the section "Power distribution" from page 85.



A wide range of ventilation and air conditioning components can be found in the section "Air conditioning technology" from page 77.



Suitable cable routing solutions such as cable clamps, patch bays, etc. can be found in the section "Cable management" from page 105.



19" TiRAX cabinet system

from page 3



19" NETcell cabinet system

from page 31



Open 19" racks

from page 43



Wall-mounting/stand-alone
distribution systems

from page 53



Wall-mounting enclosure
systems

from page 63



Air conditioning technology

from page 77



Power distribution system

from page 85



Cabinet monitoring

from page 101



Cable management

from page 105



Workstation systems

from page 109

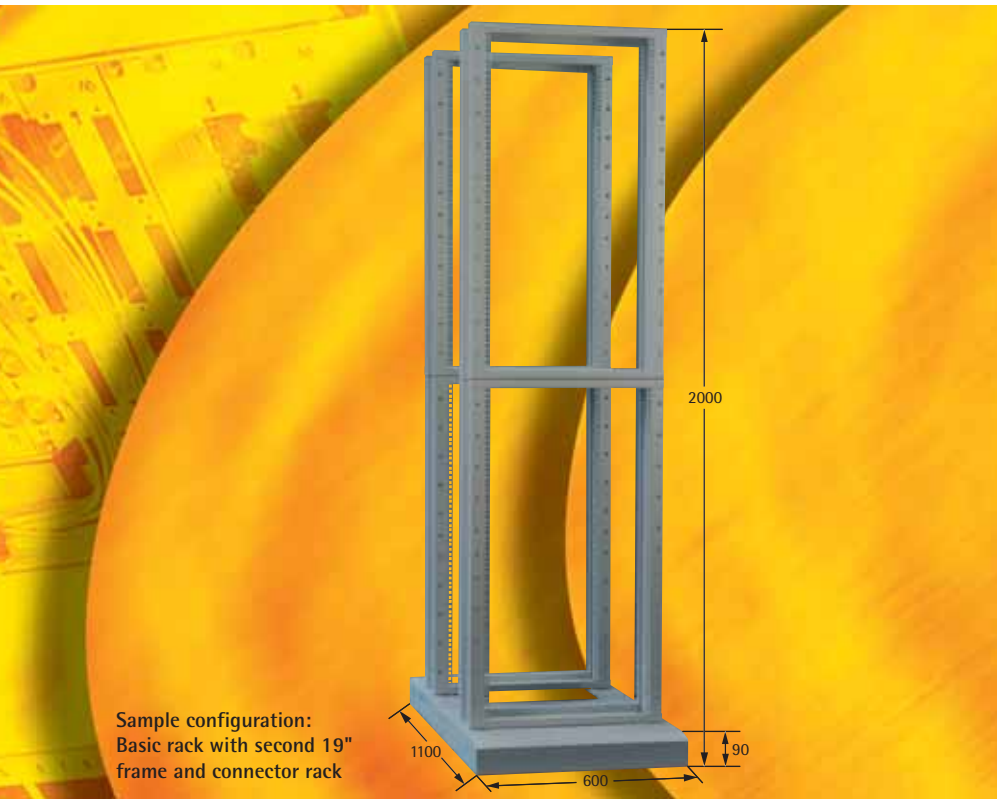


General accessories/
distribution technology

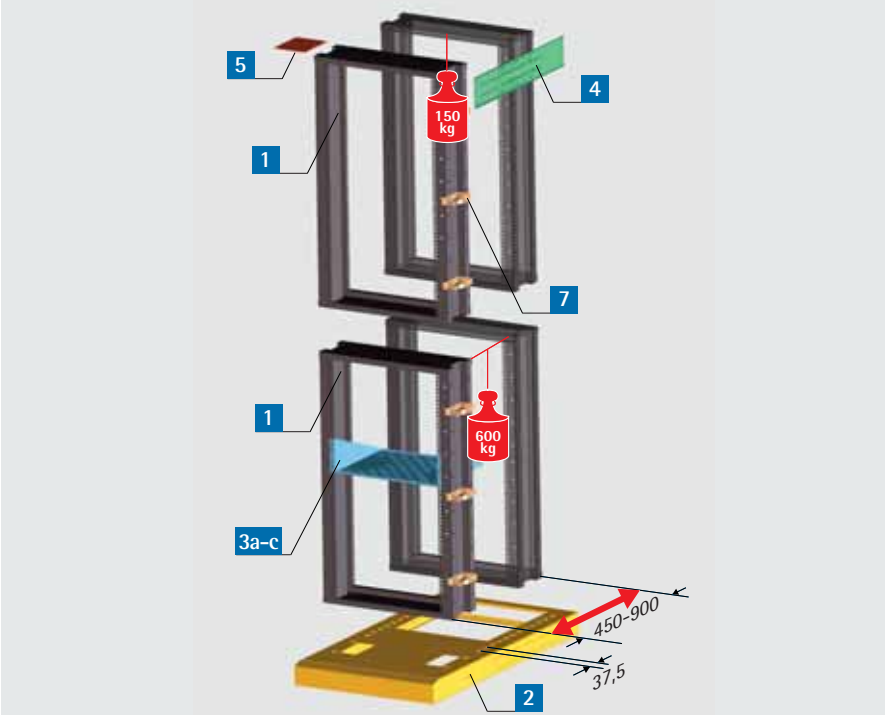
from page 123



You can read more about products from the apra-group at www.apra-norm.com



Configure and install your own distribution rack
Select the components you want step by step.



Open distribution rack easyVARI

- can be completely dismantled
- easy transport to installation site
- simple assembly and installation of passive and active network components without interfering with cabinet mounts
- easy ventilation and installation, since no trim parts interfere
- 10 metal clamps are attached to every rack for cable entry. Cross-connection between individual racks is realised through the base
- 19" frame, variable depth 450-900 mm in 50 mm jumps

Finish: RAL 7035 light grey

Material: sheet metal

Delivery: unmounted

Components (see drawing left)

| Item | Description | Page |
|------|------------------------------|------|
| 1 | 19" frame 21 U | 44 |
| 2 | Base, H=100 mm | 44 |
| 3a-c | 19" shelves | 45 |
| 4 | Depth struts, variable depth | 45 |
| 5 | Cabinet connector set | 45 |
| 6a-c | Slide rails (without fig.) | 45 |
| 7 | Cable clamps | 45 |

Scope of delivery **Basic Rack**

| Item | Pc. | Description |
|------|-----|--|
| 1 | 2 | 19" frame 21 U |
| 2 | 1 | Anti-tip base H = 100 mm, D = 1150 mm Cable inputs/outputs back and side |
| 7 | 10 | Cable clamps 125 x 66 mm |

Scope of delivery **Connector rack**

| Item | Pc. | Description |
|------|-----|--|
| 1 | 2 | 19" frame 21 U |
| 2 | 1 | Anti-tip base H = 100 mm, D = 1150 mm Cable inputs/outputs back and side |
| 5 | 1 | Cabinet connector set |
| 7 | 10 | Cable clamps 125 x 66 mm |

Scope of delivery **Extension frame**

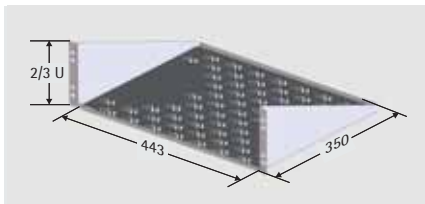
| Item | Pc. | Description |
|------|-----|----------------|
| 1 | 2 | 19" frame 21 U |

Order information

| Description | H x W x D mm | Order no. |
|-----------------|-------------------|------------|
| Basic rack | 2100 x 600 x 1100 | 582-101-00 |
| Connector rack | 2100 x 600 x 1100 | 582-101-10 |
| Extension frame | 1970 x 600 x 190 | 582-101-15 |



3a 19" shelf 1 U / 2 U fixed installation



- simple assembly on a 19" grid (only one 19" level required)
- ventilated

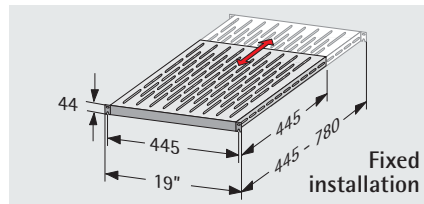
Finish: RAL 7035 light grey

Material: sheet metal

Load capacity: 15 kg (distributed load)

| Height | Order no. |
|--------|------------|
| 2 U | 315-810-20 |
| 3 U | 315-810-00 |

3b 19" shelf 1 U **VARIplain** fixed installation



- variable depth with VARIplain technology
- telescopic: 445 - 780 mm (see diagram)
- simple one-person assembly through open long hole in the 19" front (hook-in)

Finish: RAL 7035 light grey

Material: sheet metal

Dimensions (H x W x D):

1 U (44 mm) x 19" (482.6 mm) x 445 mm

Floor space (w x d):

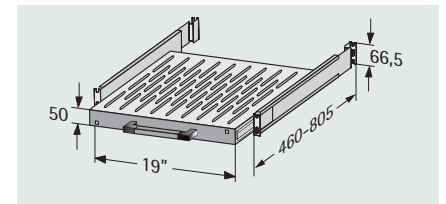
445 mm x (445 mm-780 mm)

Load capacity:

150 kg (distributed load/static)

| Order no. |
|------------|
| 316-036-99 |

3c 19" shelf 1.5 U extractable



- variable-depth installation
- extraction length 500 mm
- simple one-person assembly

Finish: RAL 7035 light grey

Material: sheet metal

Dimensions (H x W x D):

1.5 U (66.5 mm) x 19" (482.6 mm) x

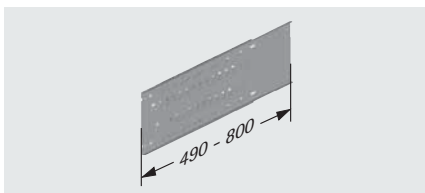
465 / 665 mm

Floor space (w x d): 410 x 465 x 665 mm

Load capacity: 60 kg (distributed load)

| Depth | Order no. |
|--------|------------|
| 465 mm | 318-141-00 |
| 665 mm | 318-141-01 |

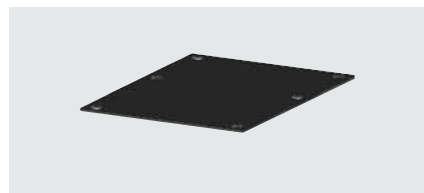
4 Depth struts, variable depth



- to connect two 19" frames installed one behind the other

| Order no. |
|------------|
| 582-101-32 |

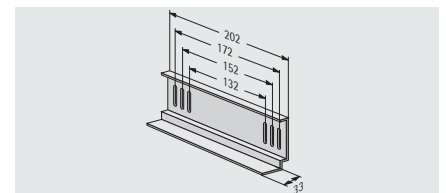
5 Cabinet connector set



- for the lateral connection of other distribution racks

| Order no. |
|------------|
| 582-101-34 |

6a Slide rail

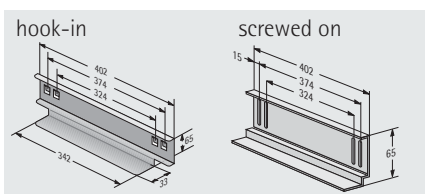


- for the installation on one 19" level 21 U

Load capacity: 50 kg

| Order no. (pair) |
|------------------|
| 312-543 |

6b Slide rail, hook-in/screwed on

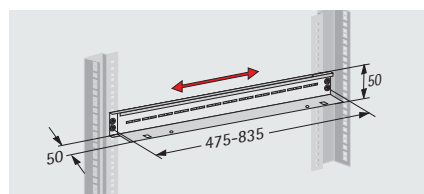


- to support heavy 19" plug-in units
- two 19" levels are required for mounting

Load capacity: 50 kg

| Version | Order no. (pair) |
|------------|------------------|
| hook-in | 316-544-00 |
| screwed on | 312-544 |

6c Slide rail, variable depth

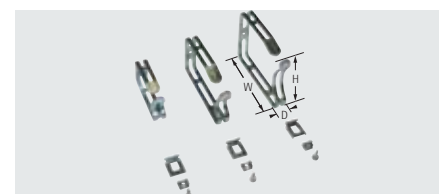


- depth-adjustable
- to support 19" plug-in units (e.g. servers) irrespective of the clearance between the first and second 19" level

Load capacity: 50 kg

| Order no. (pair) |
|------------------|
| 316-544-20 |

7 Cable clamp set



- for positioning cables vertically on the 19" frame
- set = 10 pieces

Material: steel

| H x W x D mm | Order no. |
|---------------|------------|
| 66 x 125 x 23 | 640-036-12 |
| 88 x 125 x 23 | 640-036-13 |



585 • 19" laboratory rack



Sample configuration

19" laboratory rack 21 U

- for frequent access to 19" equipment, for example in laboratories, development and test departments: this 19" laboratory rack is a cost-effective alternative to a cabinet.

Finish:

RAL 7035 light grey

Pedestal RAL 7037 (dusty grey)

Material: sheet metal, die cast**Load capacity:** 120 kg**Delivery:** unmounted**Options:**

- expandable with set of rollers (see below)
- cable entry either at front or rear (see "Accessories" page 123)

Scope of delivery Laboratory rack

| Pc. | Description |
|-----|--|
| 1 | 19" sheet metal frame 21 U with grid in front and rear |
| 2 | Pedestal with integrated adjusting feet |
| 1 | Mounting material |

Scope of delivery Extension module

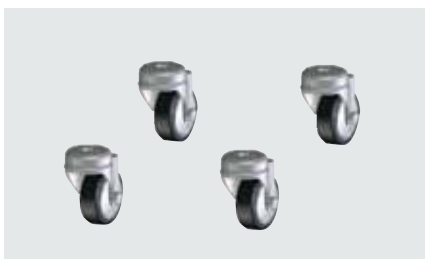
| Pc. | Description |
|-----|---|
| 1 | 19" sheet steel frame 21 U with front and rear grid |
| 1 | Mounting material |

The following can be used as accessories: Shelves 1 U / 2 U **3a** and cable clamp set **7** (for both see page 45).

Order information

| Description | H x W x D mm | Order no. |
|--------------------------------|------------------|------------|
| Laboratory rack 21 U | 1044 x 561 x 770 | 585-010-20 |
| Extension module 21 U a | 984 x 561 x 190 | 585-010-22 |

Castor set for laboratory rack



- for installation on the pedestal set
- H = 100 mm

Load capacity: 225 kg

| Order no. |
|------------|
| 582-101-30 |



19" networking rack 4 U

- the small 19" frame is ideal for space-saving yet secure mounting of 19" components
- can be mounted both horizontally and vertically
- with two extra drill holes in the bottom panel, it can also be mounted under a desktop or as simple wall rack
- includes raised floor shelf to accommodate excess cable lengths
- fast time-saving assembly
- cost-saving solution for small networks
- designed as simple assembly stands for 19" components in laboratories or test rooms

Material: sheet metal

Finish: RAL 7035 light grey

Dimensions (H x W x D):

190 mm x 502 mm x 250 mm

Delivery: unmounted

Scope of delivery

| Item | Pc. | Description |
|------|-----|------------------------------------|
| 1 | 1 | Basic plate |
| 2 | 1 | Side part left |
| 3 | 1 | Side part right |
| | 16 | Screws M 5 x 12 |
| | 16 | Decorative washers M 5 with collar |
| | 16 | Cage nuts M 5 - 8 |
| | 1 | Mounting material |

| |
|------------------|
| Order no. |
| 582-004-00 |





582 • 19" wall rack



Sample configuration

19" wall rack

The 19" level can be depth adjusted from 300 mm up to a maximum of 500 mm providing enough space for cable routing even for deep plug-in units.

A second 19" level at the rear of the rack allows the assembly of sliding rails to accept heavy plug-in units. The cable feed above and below is fitted with an integrated strain-relief strip.

The 19" wall rack is simple to mount since the fixing holes can be marked to the wall by using the mounted 19" rack and subsequently be drilled and screwed.

Construction:

The 19" wall rack comprises two wall brackets **1**, upper and lower extraction rails **2** and a front and/or rear 19" level **3**.

The 19" wall rack represents a flexible, effective and cost-effective 19" alternative in the wall distribution sector.

Finish:

Wall bracket RAL 7035 light grey
Extraction rails /19" level: galvanised

Load capacity:

19" level front: 60 kg
19" level front and rear 100 kg

Delivery: unmounted

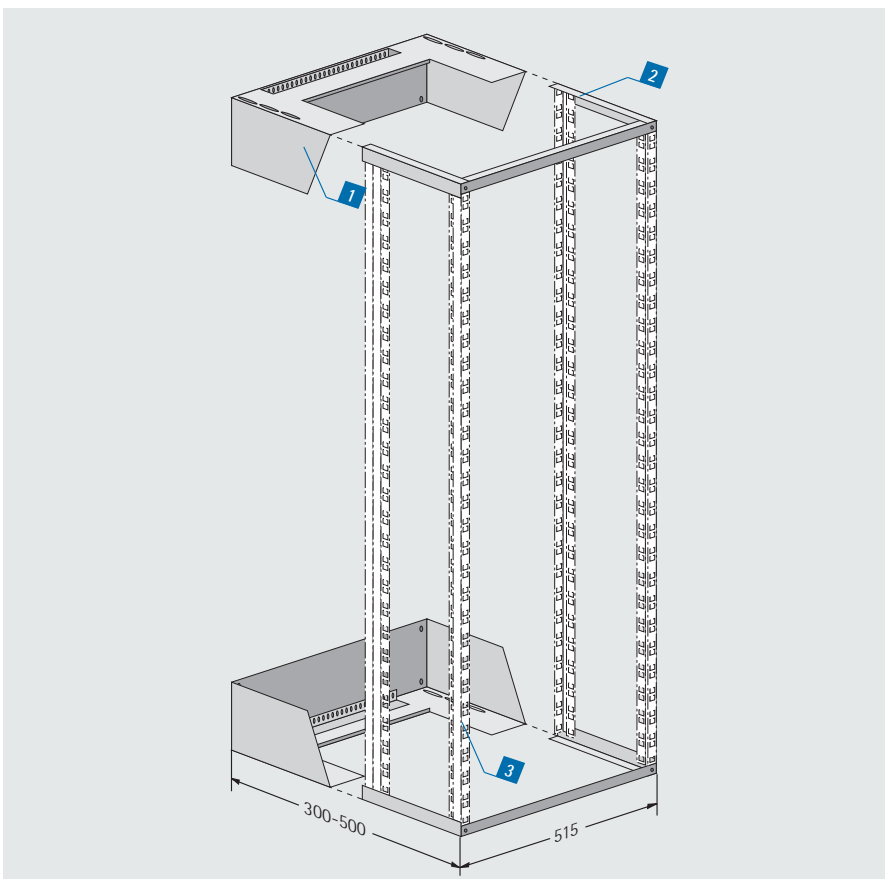
Scope of delivery

| Item | Pc. | Description |
|----------|-----|-------------------|
| 1 | 2 | Wall bracket |
| 2 | 2 | Mounting material |

Order information

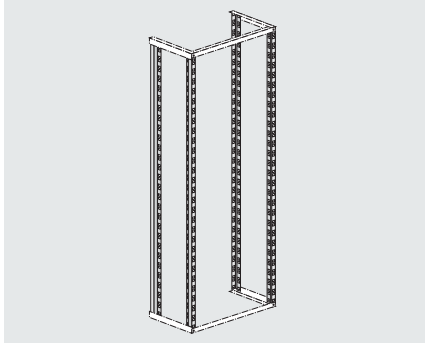
| |
|------------------|
| Order no. |
| 582-010-00 |

A maximum of 4 vertical mountings can be integrated into the open wall rack. 19" vertical mountings **3** please order separately based on your U requirements (see page 49).





3 19" vertical mountings for wall rack

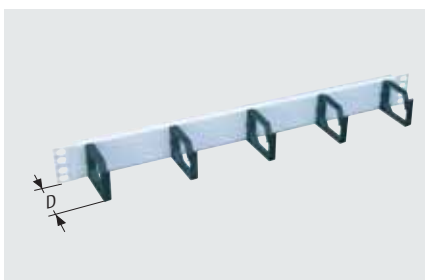


Finish: galvanised

A maximum of 4 vertical mountings can be incorporated into the open wall rack.

| U | Order no. (piece) |
|----|-------------------|
| 9 | 500-309 |
| 12 | 500-312 |
| 15 | 500-315 |
| 18 | 500-318 |
| 24 | 500-324 |

19" cable entry panel 1 U with plastic clips



- for clear, neat horizontal cable entry in the 19" level
- incl. 5 cable clips and mounting material

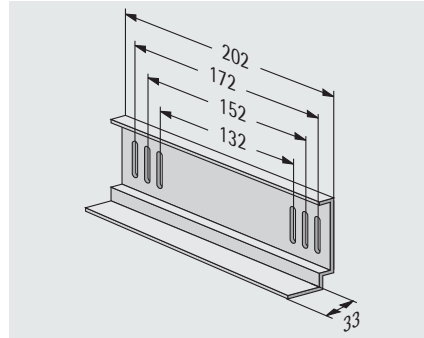
Finish:
RAL 7035 light grey or
RAL 9005 jet black

Dimensions (H x W x D):
44 mm x 482.6 mm x 60 mm

Scope of delivery: with mounting material

| U | RAL 7035 | RAL 9005 |
|---|------------|------------|
| 1 | 213-145-00 | 213-145-30 |

Slide rail for 19" vertical mounting



- to support heavy plug-in units
- includes mounting material

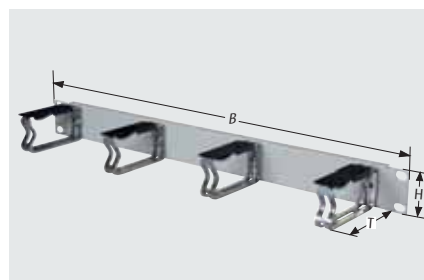
Finish: galvanised
Material: sheet metal

Scope of delivery: with mounting material

Four 19" vertical mountings are required for mounting

| Order no. (pair) |
|------------------|
| 312-543 |

19" cable entry panel 1 U / 2 U with metal clips



- for controlled and clearly arranged horizontal cable guiding at the 19" level
- including 4 cable hoops and lockings

Finish: painted/chrome-plated
RAL 7035 light grey or
RAL 9005 jet black

Dimensions (H x W x D):
for 1 U: 44 mm x 482.6 mm x 90 mm
for 2 U: 88 mm x 482.6 mm x 130 mm

| U | RAL 7035 | RAL 9005 |
|---|------------|------------|
| 1 | 213-145-41 | 213-145-42 |
| 2 | 213-145-43 | 213-145-44 |

Cable clamp set

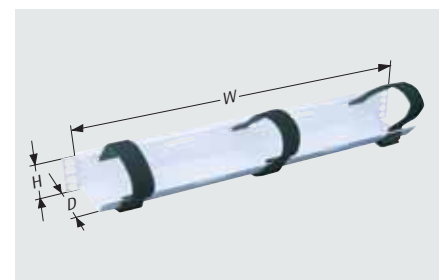


- for positioning cables vertically on the 19" frame
- set = 10 pieces

Material: steel

| H x W x D mm | Order no. (set) |
|---------------|-----------------|
| 66 x 125 x 23 | 640-036-12 |
| 88 x 125 x 23 | 640-036-13 |

19" cable entry panel 1 U with Velcro fasteners

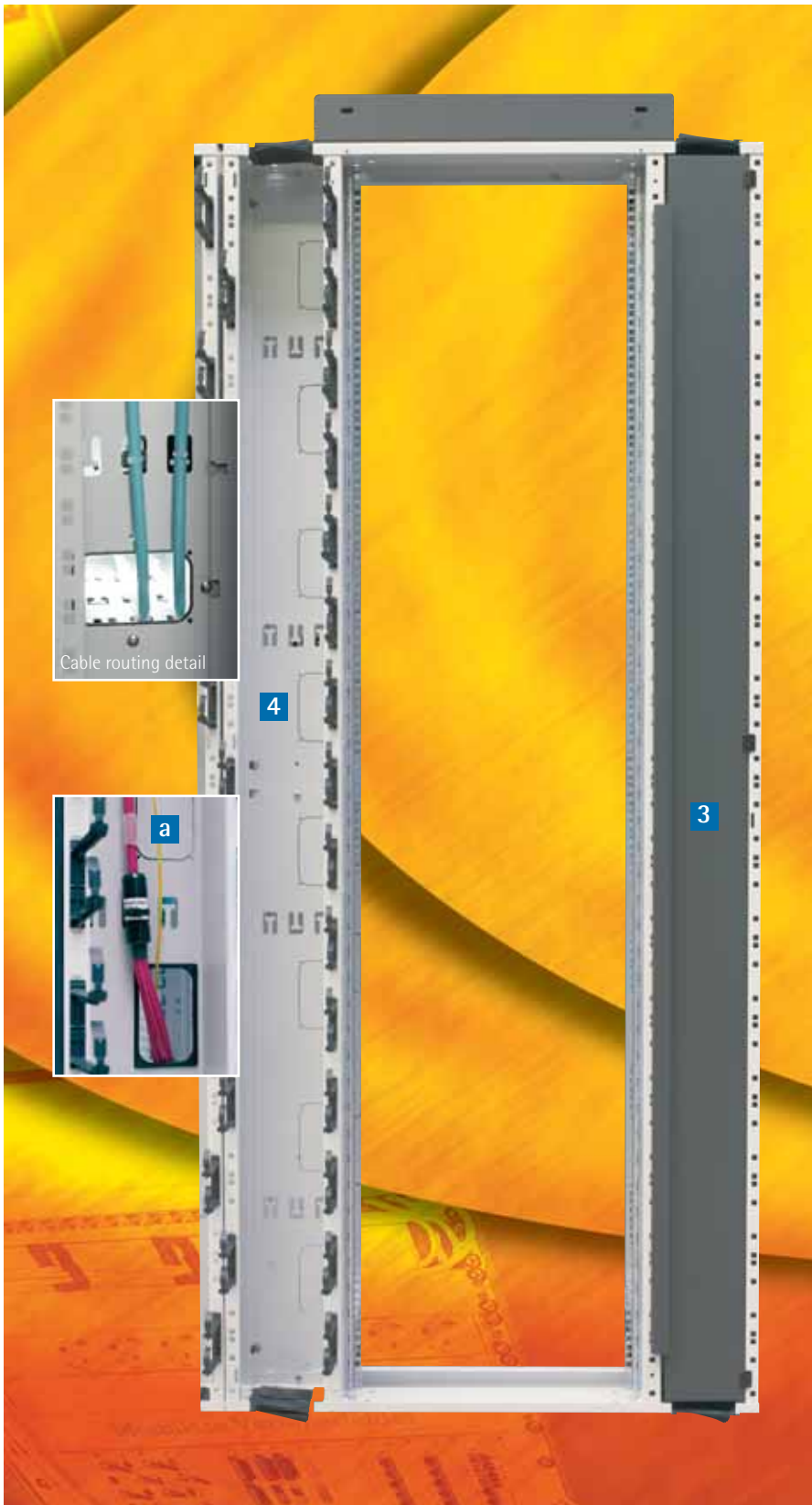


- for clear and neat horizontal cable entry at the 19" level with Velcro fastener
- incl. 3 Velcro strips and mounting material

Finish:
RAL 7035 light grey or
RAL 9005 jet black

Dimensions (H x W x D):
44 mm x 482.6 mm x 90 mm

| U | RAL 7035 | RAL 9005 |
|---|------------|------------|
| 1 | 213-161-00 | 213-161-10 |



1 NETcell "easy" 46 U

- 19" frame rack with surrounding cable ducts
- the rack can be closed with perforated doors **2**

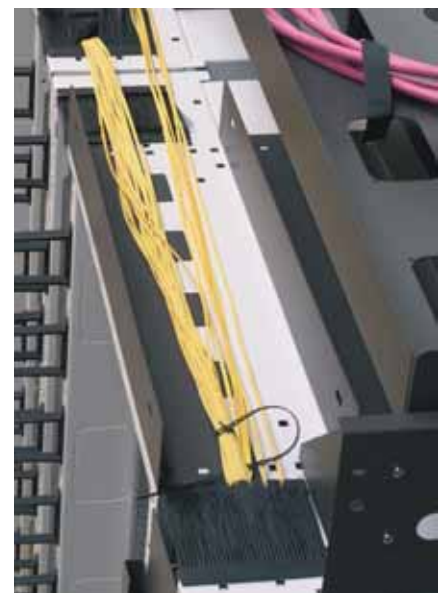
Material: sheet metal
Finish: RAL 7035 light grey

Cable duct

- designed for easy routing of high volume of data and power cables (vertical and horizontal)
- with self-locking cable duct door **3** to cover the spacious cable channels (pivot 180°)
- with cable clamps **4** for quick installation and to ensure a clear layout
- breakouts **a** for individual cable management from front to back and/or sideways

modular cable trays

- for separate routing of data and power cables

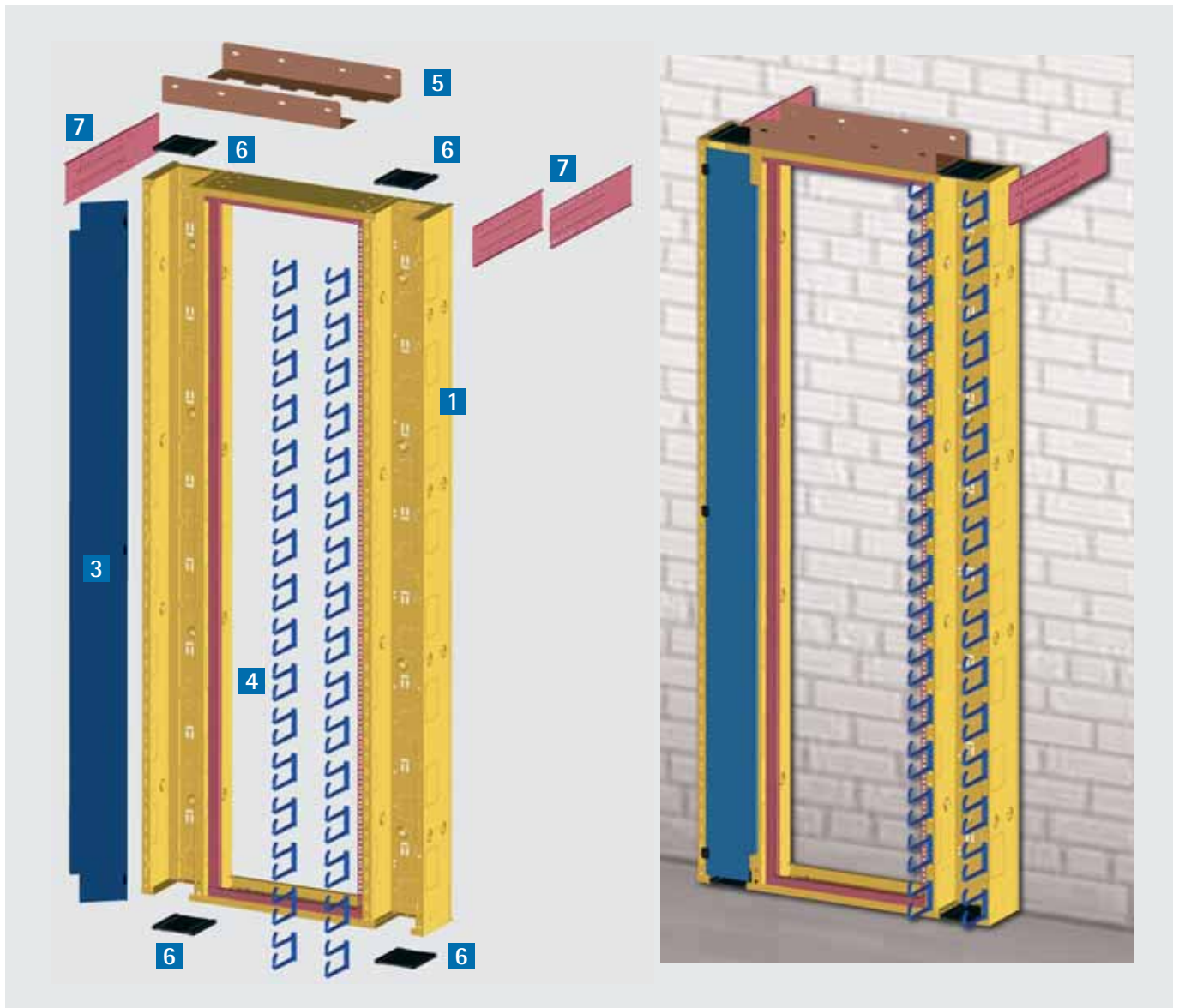


Scope of delivery

| Pc. | Description |
|-----|-----------------------------------|
| 1 | Frame with integrated cable ducts |
| 1 | 19" extension (46 U) |

Order information

| Description | H × W × D mm | Order no. |
|---------------------|-------------------------|------------|
| NETcell "easy" 46 U | 2130 × 900 × 190 (46 U) | 583-002-00 |



| Item | Description |
|------|--|
| 1 | Basic system |
| 2 | Door ventilated |
| 3 | Hinged panel |
| 4 | Cable clamp set |
| 5 | Cable routing angle |
| 6 | Brush set for cable duct |
| 7 | Wall bracket set, variable depth |
| 8 | Universal guide rail for cable duct (without fig.) |

2 Door ventilated (80 % perforated)



- for mounting on the frame of the basic system
- Version **2a**: flush-mounted with the frame
- Version **2b**: flush-mounted with the cable clamp **4**
- with turning lever lock for profile half cylinder (with push button opening on delivery)

Material: sheet metal
Finish: RAL 7035 light grey
Load capacity: 300 kg (static)

| Version | W/D mm | Order no. |
|-----------|--------|------------|
| 2a | 900 | 583-000-76 |
| 2b | 900 | 583-000-80 |



3 Hinged panel



- for covering the cable duct
- with hinges for quick opening and closing

Material: sheet metal

Finish: RAL 7035 light grey

| |
|------------------|
| Order no. |
| 583-000-83 |

4 Cable clamp set

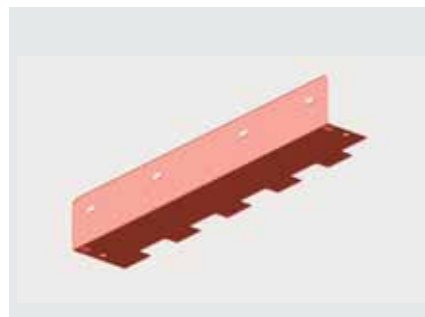


- to be clipped onto the front of the cable duct
- set = 30 pieces (1 cable duct)

Material: plastic, black

| |
|------------------------|
| Order no. (set) |
| 583-001-12 |

5 Cable routing angle bracket



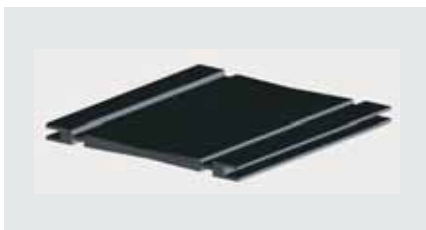
- to set up a cable duct system on the cabinet system

Material: sheet metal

Finish: RAL 7035 light grey

| |
|----------------------------|
| Order no. (1 piece) |
| 583-000-73 |

6 Brush set for cable duct

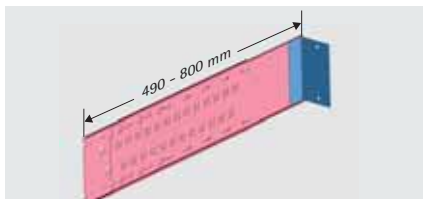


- set = 8 pieces

Material: plastic, black

| |
|------------------------|
| Order no. (set) |
| 583-001-15 |

7 Wall bracket system, variable depth



- to connect the NETcell "easy" system to the building wall
- set = depth-variable guide rails + wall-mounting bracket and screw set (for above-mentioned items)

NOTE:

without wall screws and rawl plugs

Material: sheet metal, hot dip galvanised

| |
|------------------------|
| Order no. (set) |
| 583-001-09 |

8 Universal guide rail for cable duct



- mounting possible on all sides of the cable duct (max. 2 per side)
- for individual mounting of e.g. PDU, cable clips etc.
- fastening of components with sliding nuts (4 included in scope of delivery)
- Length: 2 m

Material: steel

| |
|------------------------|
| Order no. (set) |
| 583-001-11 |

Adjusting feet set



- to screw onto the NETcell "easy"
- set = 2 pieces

Material: steel / plastic

| |
|------------------------|
| Order no. (set) |
| 583-001-07 |

Velcro strip "Universal"



- for quickly securing non 19"-compatible components
- Length: 300 mm, Width: 20 mm
- back to back mounting
- set = 10 pieces

Material: velcro, black

| |
|------------------------|
| Order no. (set) |
| 671-122-08 |

Edge protection frame



- retrofittable edge guard for use in cable ducts

- set = 10 pieces

Material: plastic, black

| |
|------------------------|
| Order no. (set) |
| 583-001-10 |



19" TiRAX cabinet system

from page 3



19" NETcell cabinet system

from page 31



Open 19" racks

from page 43



Wall-mounting/stand-alone distribution systems

from page 53



Wall-mounting enclosure systems

from page 63



Air conditioning technology

from page 77



Power distribution system

from page 85



Cabinet monitoring

from page 101



Cable management

from page 105



Workstation systems

from page 109



General accessories/
distribution technology

from page 123

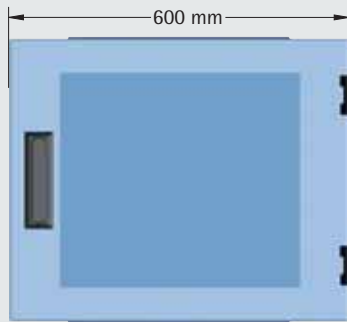


You can read more about products from the apra-group at www.apra-norm.com

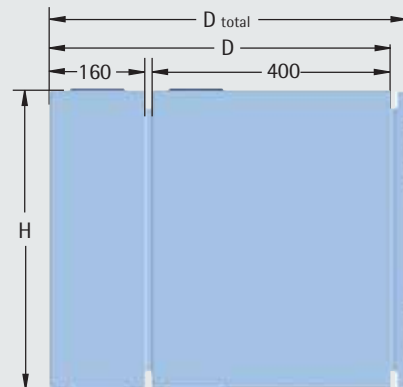


Technical information

3-piece wall-mounting pivot enclosure, unventilated



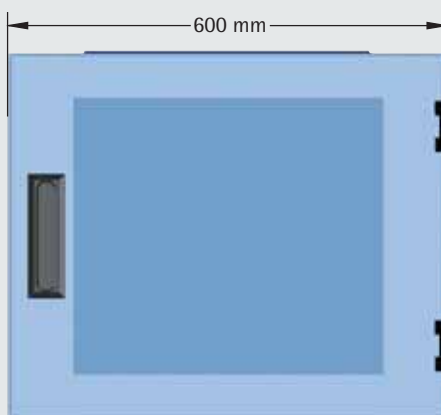
Front view



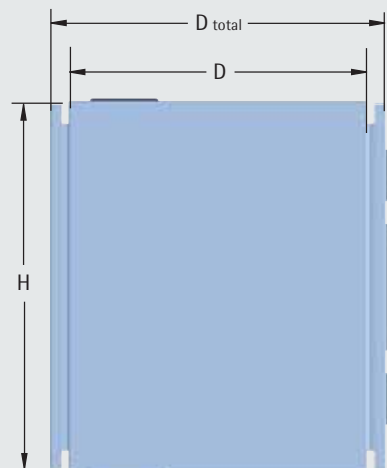
Side view

Installation depth: up to 400 mm
Load: up to 40 kg

2-piece wall-mounting enclosure, unventilated



Front view



Side view

Installation depth: for 400 mm up to 360 mm
for 600 mm up to 560 mm
Load: up to 50 kg

D: Nominal dimensions of enclosure depth
D_{tot}: Total depth (without lock)
H: Enclosure height

Application:

Variable use as wall, stand-alone and pivot enclosure for industrial use and in network areas

Material:

sheet metal

Finish:

RAL 7035 light grey

Delivery:

mounted as single unit



Complete solutions:

19" wall-mounting pivot enclosure, VARI 500, 3-part

- wall-mounting distribution enclosure with pivotable central part and internal lock for wall-mounting enclosure (ventilated from H=750 mm)
- 19" level front
- viewing door with toughened safety glass turning lever lock for profile half cylinder
- four breakouts for individual cable flange plate mounting

Please order cable flange plates separately (see page 59).

Dimensions (H x W x D):

H x 600 mm x 590 mm

Finish: RAL 7035 light grey

Delivery: mounted as single unit

| H mm | U | D _{tot} mm | D mm | Order no. |
|------|----|---------------------|------|------------|
| 350 | 6 | 590 | 570 | 500-201-06 |
| 500 | 9 | 590 | 570 | 500-201-09 |
| 600 | 12 | 590 | 570 | 500-201-12 |
| 750 | 15 | 590 | 570 | 500-201-15 |
| 900 | 18 | 590 | 570 | 500-201-18 |
| 1150 | 24 | 590 | 570 | 500-201-24 |

19" wall-mounting enclosure, VARI 500, 2-part

- basic enclosure (from H=750 mm ventil.)
- 19" level front
- viewing door with toughened safety glass turning lever lock for profile half cylinder
- detachable rear wall
- two breakouts for cable flange plates

Please order cable flange plates separately (see page 59).

Dimensions (H x W x D):

H x 600 mm x 400 mm

Finish: RAL 7035 light grey

Delivery: mounted as single unit

| H mm | U | D _{tot} mm | D mm | Order no. |
|------|----|---------------------|------|------------|
| 350 | 6 | 450 | 400 | 500-202-06 |
| 500 | 9 | 450 | 400 | 500-202-09 |
| 600 | 12 | 450 | 400 | 500-202-12 |
| 750 | 15 | 450 | 400 | 500-202-15 |
| 900 | 18 | 450 | 400 | 500-202-18 |
| 1150 | 24 | 450 | 400 | 500-202-24 |



19" wall-mounting enclosure, 3-part

Scope of delivery

| Item | Pc. | Description |
|------|-----|--------------------------------------|
| 1 | 1 | Wall-mounting encl. D=160 mm |
| 2 | 1 | Basic enclosure D=400 mm |
| 3 | 1 | Viewing door with turning lever lock |

| Item | Pc. | Description |
|------|------|---------------------------|
| 4 | 2 | Vertical mountings |
| 5 | 1/2* | Locking system "Vari 500" |
| 6 | 1 | Screw set M 5 (50x) |
| 7 | 1 | Earthing kit |

* From height H = 600 mm, 2 pcs in scope of delivery!



19" wall-mounting enclosure, 2-part

Scope of delivery

| Item | Pc. | Description |
|------|-----|--------------------------------------|
| 1 | 1 | Basic enclosure D=400 mm |
| 2 | 1 | Viewing door with turning lever lock |
| 3 | 1 | Rear wall |

| Item | Pc. | Description |
|------|-----|---------------------|
| 4 | 1 | Wall bracket set |
| 5 | 2 | Vertical mountings |
| 6 | 1 | Screw set M 5 (50x) |
| 7 | 1 | Earthing kit |



500 • 19" wall-mounting enclosure **VARI 500**



Sample configuration

19" stand-alone distribution system 24 U

- front viewing door with turning lever lock for profile half cylinder
- rear door, solid
- cables can be entered from top and bottom
- 19" level front, 24 U, depth-adjustable
- cable entry base H = 100 mm with totally detachable panels

Please order cable flange plates separately (see page 59).

Dimensions (H x W x D):

1150 + 100 mm x 600 mm x 600 mm

Finish: RAL 7035 light grey

Delivery: assembled

Scope of delivery

| Item | Pc. | Description |
|------|-----|--|
| 1 | 1 | Basic enclosure, ventilated, H=1150 mm |
| 2 | 1 | Door, solid |
| 3 | 1 | Viewing door with turning lever pivot lock |
| 4 | 2 | 19" vertical mountings 24 U |
| 5 | 1 | Base H=100 mm |
| 6 | 1 | Screw set M 5 (50x) |
| 7 | 1 | Earthing kit |

Order no.

500-000-60



Sample configuration

VARI 500 "cool-box" 24 U

- basic enclosure, ventilated, H=1150 mm
*incl. cover plates for the perforated area
- front viewing door with turning lever lock for profile half cylinder
- rear door, solid
- break-out in the floor with covered foam rubber panel for cable entry
- 19" level front and back, 24 U, depth-adjustable
- cable entry base H = 100 mm with totally detachable panels
- top mounted cooling unit (output 410 W)

Please order cable flange plates separately (see page 59).

Dimensions (H x W x D):

1700 mm x 600 mm x 800 mm

Finish: RAL 7035 light grey

Delivery: assembled

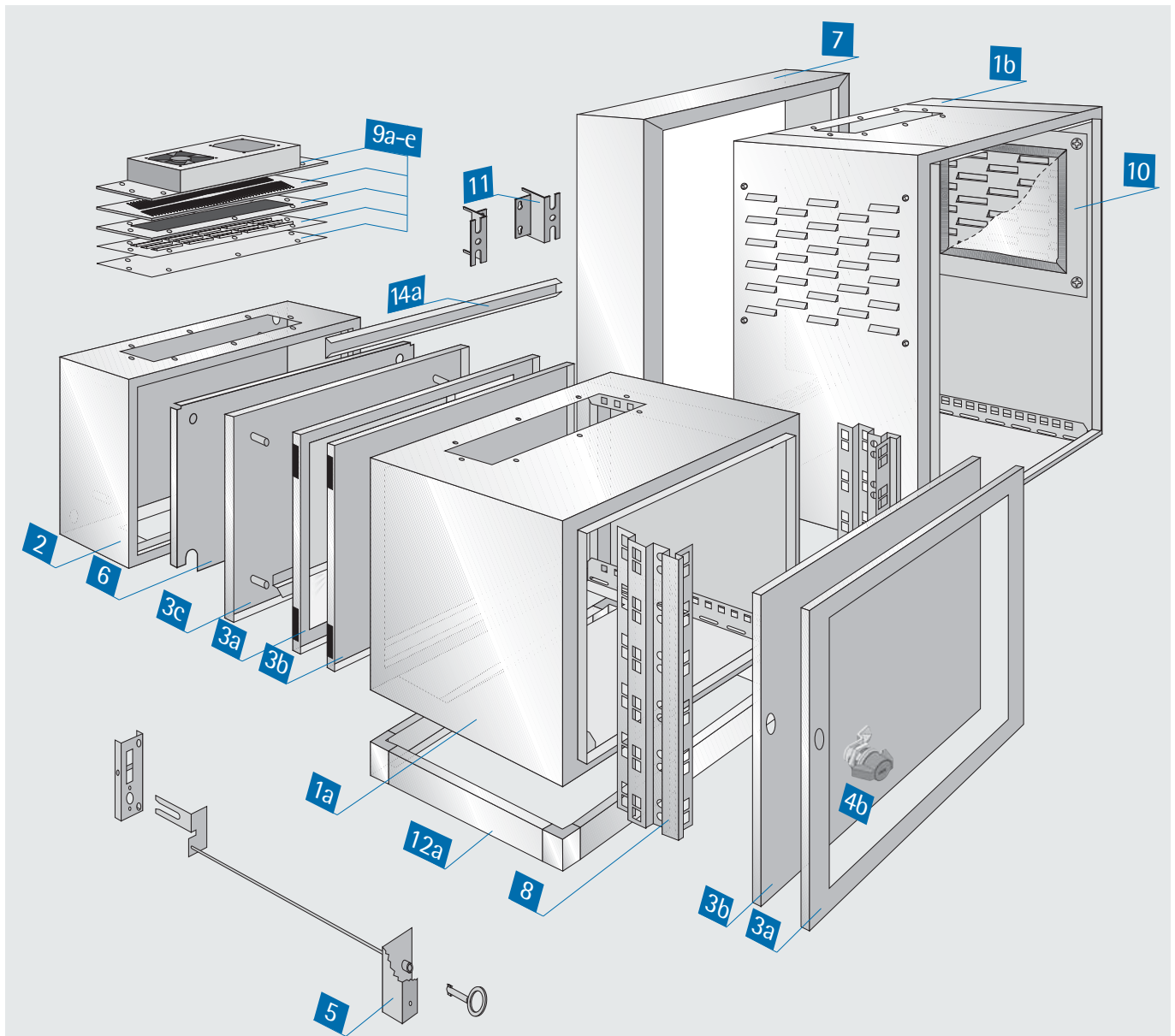
Order no.

500-000-89



Individual configuration:

Configure your own wall-mounting enclosure.
Select the enclosure components you want step by step:



| Item | Description | Page |
|------|---|------|
| 1a | Basic enclosure, solid | 58 |
| 1b | Basic enclosure, ventilated | 58 |
| 2 | Wall-mounting enclosure | 58 |
| 3a | Viewing door with toughend safety glass | 58 |
| 3b | Door, solid | 58 |
| 3c | Rear wall for basic enclosure | 58 |
| 4a | Lock: Profile half cylinder | 58 |
| 4b | Lock: pivoting lever lock | 58 |
| 5 | Locking system "VARI 500" | 58 |
| 6 | Mounting plate | 59 |
| 7 | Stacking frame | 59 |
| 8 | 19" vertical mounting | 59 |

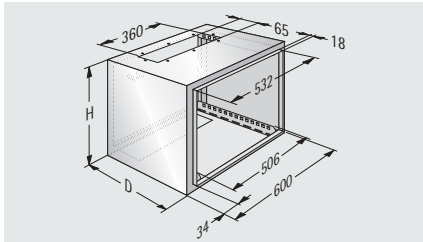
| Item | Description | Page |
|------|--------------------------------|------|
| 9a | Ventilation unit | 59 |
| 9b | Brush set | 59 |
| 9c | Cable flange plate, solid | 59 |
| 9d | Cable flange plate, ventilated | 59 |
| 9e | Cable plate with rubber inset | 59 |
| 10a | Cover pl. for the perfor. area | 60 |
| 10b | Filter set for perforated area | 60 |
| 11 | Wall bracket set | 60 |
| 12a | Base | 60 |
| 12b | Castor set | 60 |
| 12c | Adjusting feet set | 60 |
| 13 | Cable management bracket | 60 |

| Item | Description | Page |
|------|--------------------------------|------|
| 14a | Cable guard rail | 60 |
| 14b | Cable clamp | 60 |
| 15 | Vertical support | 61 |
| 16 | Slide rail for basic enclosure | 61 |
| 17a | 19" shelf, fixed | 61 |
| 17b | 19" shelf "VARIplain" | 61 |
| 17c | 19" shelf, extractable | 61 |
| 18 | 19" screw set M 5 / M 6 | 61 |
| 19 | Earthing kit | 61 |

The maximum vertical mounting clearance between two levels is D-40 mm. Please note this measurement when selecting your distribution system.



1a Basic enclosure, solid

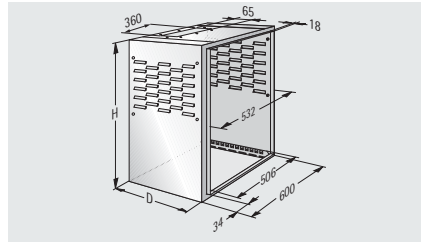


- cables can be routed from top and bottom

Finish: RAL 7035 light grey

| Depth (D) mm | Height (H) mm | Order no. |
|--------------|---------------|------------|
| 400 | 350 | 500-062-00 |
| | 500 | 500-092-00 |
| | 600 | 500-122-00 |
| 600 | 350 | 500-063-00 |
| | 500 | 500-093-00 |
| | 600 | 500-123-00 |

1b Basic enclosure, ventilated

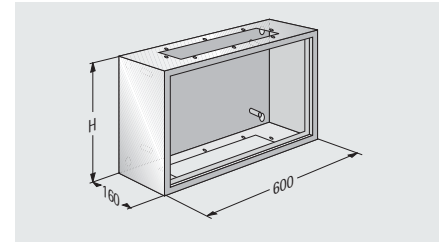


- cables can be routed from top and bottom

Finish: RAL 7035 light grey

| Depth (D) mm | Height (H) mm | Order no. |
|--------------|---------------|------------|
| 400 | 750 | 500-152-00 |
| | 900 | 500-182-00 |
| | 1150 | 500-242-00 |
| | 750 | 500-153-00 |
| 600 | 900 | 500-183-00 |
| | 1150 | 500-243-00 |

2 Wall-mounting enclosure



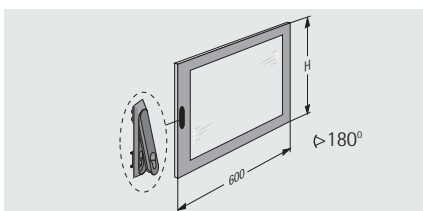
- 160 mm deep to build a 3-piece wall-mounting pivot enclosure

Finish: RAL 7035 light grey

The wall-mounted enclosure can only be combined with a 400 mm deep basic enclosure!

| Height (H) mm | Order no. |
|---------------|------------|
| 350 | 500-060-00 |
| 500 | 500-090-00 |
| 600 | 500-120-00 |
| 750 | 500-150-00 |
| 900 | 500-180-00 |
| 1150 | 500-240-00 |

3a Viewing door with toughened safety glass

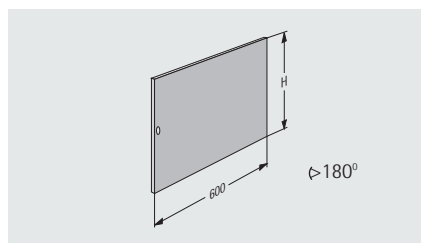


- Turning lever lock for profile half cylinder
- incl. profile half cylinder with "double-bit 5 mm" operation

Finish: RAL 7035 light grey

| Height (H) mm | Order no. |
|---------------|------------|
| 350 | 500-005-00 |
| 500 | 500-008-00 |
| 600 | 500-011-00 |
| 750 | 500-014-00 |
| 900 | 500-017-00 |
| 1150 | 500-023-00 |

3b Door, solid

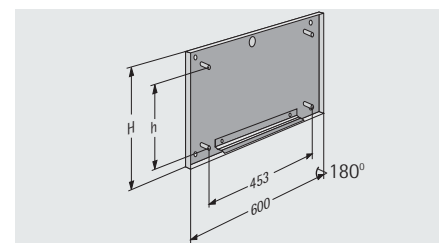


- incl. cam lock with "double-bit 5 mm" operation
- from H = 600 mm 2 locks

Finish: RAL 7035 light grey

| Height (H) mm | Order no. |
|---------------|------------|
| 350 | 500-007-00 |
| 500 | 500-010-00 |
| 600 | 500-013-00 |
| 750 | 500-016-00 |
| 900 | 500-019-00 |
| 1150 | 500-025-00 |

3c Rear wall

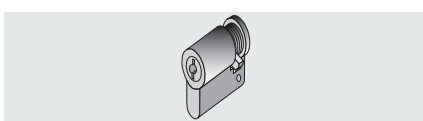


- for rear covering of the basic enclosure **1a**

Finish: RAL 7035 light grey

| Height (H) mm | (h) mm | Order no. |
|---------------|--------|------------|
| 350 | 200 | 500-226-00 |
| 500 | 350 | 500-229-00 |
| 600 | 450 | 500-232-00 |
| 750 | 600 | 500-235-00 |
| 900 | 750 | 500-238-00 |
| 1150 | 1000 | 500-244-00 |

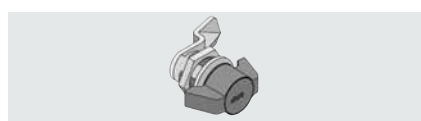
4a Profile half cylinder



- Lock EK333
- for retrofitting in the turning lever lock of the viewing door **3a**

| Order no. |
|-----------|
| 676-062 |

4b Pivoting lever lock



- Lock EK333
- suitable for door, closed **3b** and rear wall **3c**

| Order no. |
|-----------|
| 676-197 |

4c Spare key

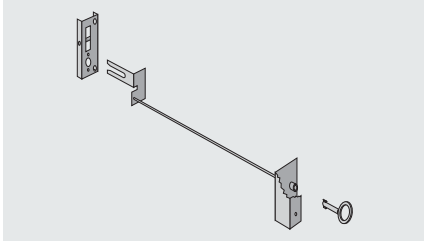


- Lock EK333
- for profile half cylinder or pivoting lever lock

| Order no. |
|-----------|
| 676-200 |



5 Locking system "Vari 500"



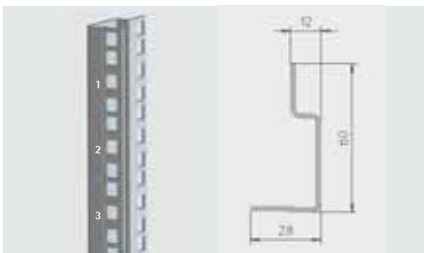
- for 3-piece wall-mounting pivot enclosure, (consisting of basic enclosure D = 400 mm and wall-mounting enclosure)

Finish: galvanised and blue passivated

From height H = 600 mm 2 locking systems required!

| Order no. |
|-----------|
| 676-362 |

8 19" vertical mounting

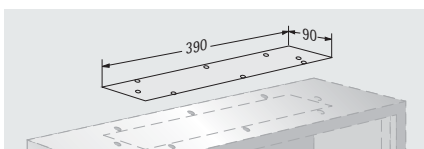


- in 25 mm grid step, adjustable backwards
- 1/2 19" punching (ASA)
- includes mounting material

Finish: galvanised

| Height (H) mm | U | Order no. |
|---------------|----|-----------|
| 350 | 6 | 500-306 |
| 500 | 9 | 500-309 |
| 600 | 12 | 500-312 |
| 750 | 15 | 500-315 |
| 900 | 18 | 500-318 |
| 1150 | 24 | 500-324 |

9c Cable flange plate, closed

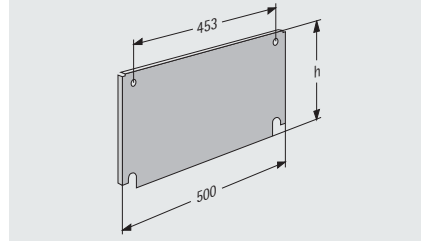


- for mounting on the cable entry opening
- individual break-throughs on request

Finish: RAL 7035 light grey

| Order no. |
|------------|
| 500-131-00 |

6 Mounting plate

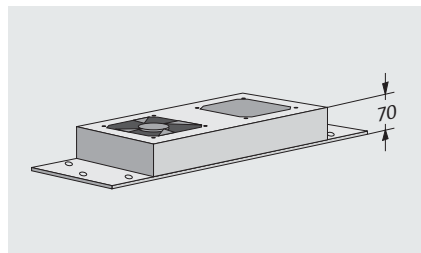


- for mounting on rear wall

Finish: galvanised

| Height (H) mm | (h) mm | Order no. |
|---------------|--------|-----------|
| 350 | 230 | 500-106 |
| 500 | 380 | 500-109 |
| 600 | 480 | 500-112 |
| 750 | 630 | 500-115 |
| 900 | 780 | 500-118 |
| 1150 | 1030 | 500-124 |

9a Ventilation unit

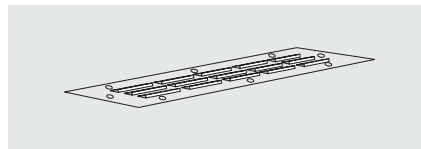


- for mounting on the cable entry opening
- ready to connect with fan on a pre-wired connecting terminal
- integrated thermostat
- protective grille on one side
- volume flow: 160 m³/h

Finish: RAL 7035 light grey

| Description | Order no. |
|---------------------------------|------------|
| Ventilation unit | 500-698-10 |
| Expansion fan for self-mounting | 230-803 |

9d Cable flange plate, ventilated

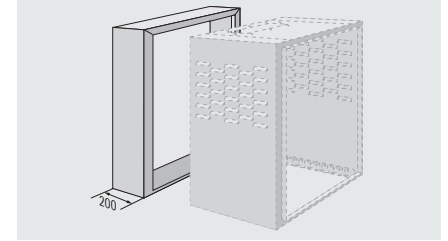


- for mounting on the cable entry opening
- with stamped ventilation slots

Finish: RAL 7035 light grey

| Order no. |
|------------|
| 500-132-00 |

7 Stacking frame

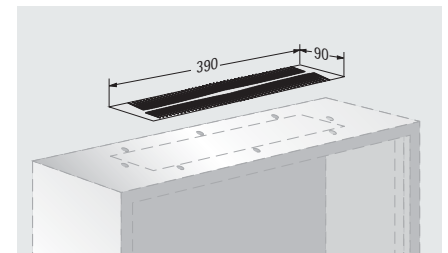


- used for deepening the basic enclosures to D=600 mm or 800 mm

Finish: RAL 7035 light grey

| Height (H) mm | Order no. |
|---------------|------------|
| 350 | 500-061-00 |
| 500 | 500-091-00 |
| 600 | 500-121-00 |
| 750 | 500-151-00 |
| 900 | 500-181-00 |
| 1150 | 500-241-00 |

9b Brush set

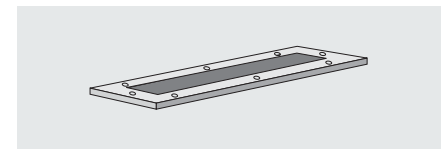


- for mounting on the cable entry opening

Material: plastic, black

| Order no. |
|------------|
| 500-133-00 |

9e Cable plate with rubber inset



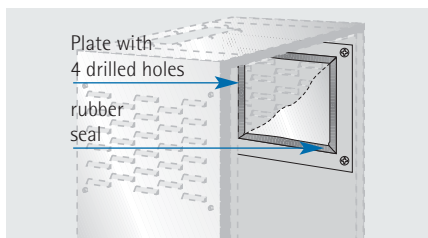
- for mounting on the cable entry opening

Finish: RAL 7035 light grey

| Order no. |
|------------|
| 500-095-00 |



10a Cover plates for the perforated area

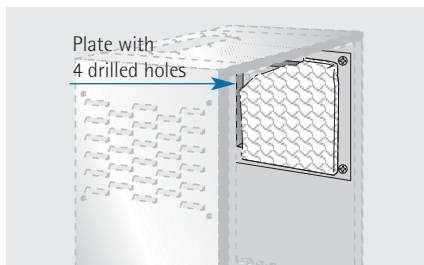


- suitable for basic enclosure, ventilated **1b**
- set consists of 2 cover plates and self-adhesive seal

Finish: galvanised

| |
|-----------------|
| Order no. (set) |
| 500-024-10 |

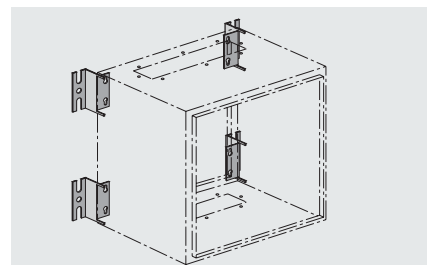
10b Filter set for perforated area



- suitable for basic enclosure, ventilated **1b**
- set consists of 2 filter covers

| |
|-----------------|
| Order no. (set) |
| 500-822-00 |

11 Wall bracket set



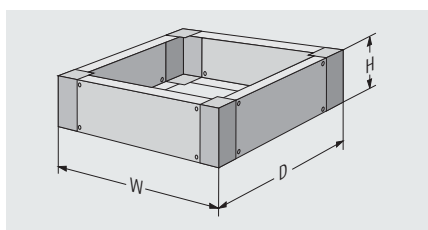
- enables wall-mounting of the basic enclosure **1** and the wall-mounted enclosure **2**
- set consists of 4 brackets and mounting hardware

Finish: galvanised

Cannot be combined with rear door!

| |
|-----------------|
| Order no. (set) |
| 500-099 |

12a Base



- stable screw construction
- panels can be individually detached, resulting in slight looping of cables
- stackable

Finish: RAL 7035 light grey

| Height (H) mm | Depth (D) mm | Order no. |
|------------------|-----------------|------------|
| 100 | 400 | 500-327-10 |
| 100 | 600 | 500-327-00 |
| 100 | 800 | 500-327-20 |

12b Castor set

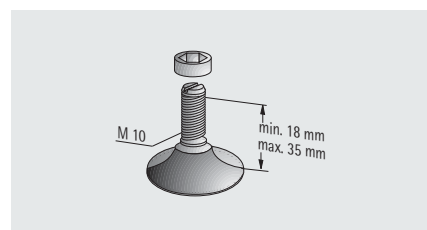


- to screw onto the basic enclosure **1**
- set consists of 4 steering rollers with bolt hole, of which 2 with parking brake
- height of rollers: 105 mm

Load capacity: 225 kg

| |
|-----------------|
| Order no. (set) |
| 500-330-10 |

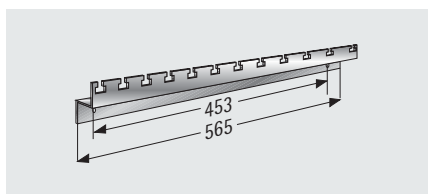
12c Adjusting feet set



- to screw onto the basic enclosure **1**
- set consists of 4 adjusting feet
- adjustment range: ca. 20 mm
- includes mounting material

| |
|-----------------|
| Order no. (set) |
| 500-550-00 |

13 Cable management bracket

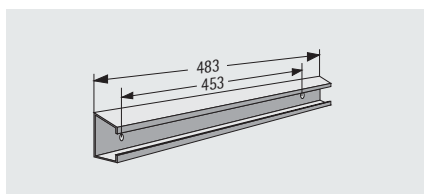


- for collating and strain relief of cables with cable clips
- for transverse mounting, rear
- includes mounting material

Finish: RAL 7035 light grey

| |
|------------|
| Order no. |
| 500-800-00 |

14a Cable guard rail



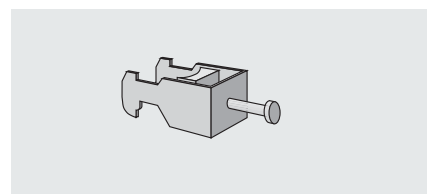
- for transverse mounting, rear
- for insertion of cable clamps

Finish: galvanised

Please order cable clamps separately

| |
|-----------|
| Order no. |
| 500-100 |

14b Cable clamp

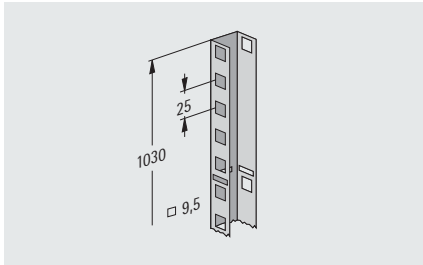


- to fit the cable guard rail **14a**

| for cable diameter mm | Order no. |
|--------------------------|-----------|
| 8-12 | 640-132 |
| 12-16 | 640-133 |
| 16-22 | 640-134 |



15 Vertical support



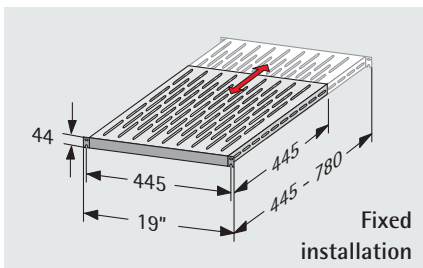
- for wall-mounted enclosure **2** or rear wall **3c**
- for height-adjustable fixing of cable guard rails

Finish: galvanised

The vertical support is to be cut to the length of the corresponding enclosure height.

| Order no. |
|------------|
| 500-100-03 |

17b 19" shelf 1 U "fixed" **VARI**plain



- variable depth due to VARIplain technology
- telescopic: 445 - 780 mm (see diagram)
- simple one-person assembly through open long hole in the 19" front (hook-in)
- **only suitable for enclosures with a depth of at least 600 mm**

Finish: RAL 7035 light grey

Material: sheet metal

Dimensions (H x W x D):

1 U (44 mm) x 19" (482.6 mm) x 445 mm

Floor space (w x d):

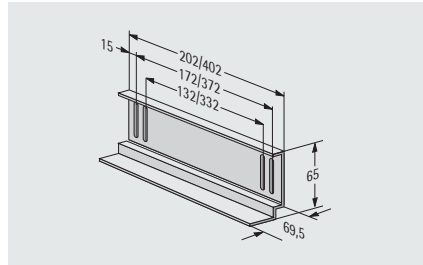
445 mm x (445 mm-780 mm)

Load capacity:

150 kg (distributed load/static)

| Order no. |
|------------|
| 316-036-99 |

16 Slide rail for basic enclosure



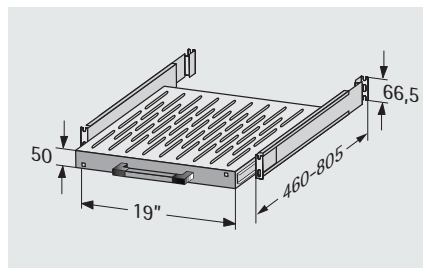
- slide rails are mounted to the 19" vertical mounts
- to support heavy plug-in units
- two 19" levels are required for mounting

Finish: galvanised

Load capacity: 50 kg/pair

| For enclosure depth (D) mm | Order no. (pair) |
|-------------------------------|---------------------|
| 400 | 312-543 |
| 600 | 312-544 |

17c 19" shelf 1.5 U "extractable"



- variable-depth installation
- extraction length 500 mm
- simple one-person assembly
- two 19" levels are required
- **only suitable for enclosures with a depth of at least 600 mm**

Finish: RAL 7035 light grey

Material: sheet metal

Dimensions (H x W x D):

1.5 U (66.5 mm) x 19" (482.6 mm) x 465 mm

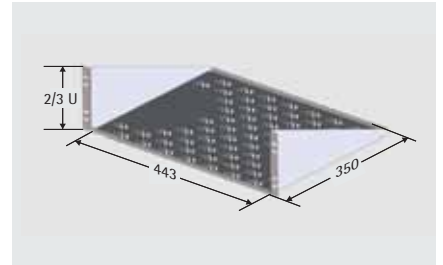
Floor space (w x d):

410 x 465 mm

Load capacity: 60 kg (distributed load)

| Order no. |
|------------|
| 318-141-00 |

17a 19" shelf, fixed



- simple assembly on a 19" grid (only one 19" level required)
- ventilated

Finish: RAL 7035 light grey

Material: sheet metal

Load capacity: 15 kg (distributed load)

| Height | Order no. |
|--------|------------|
| 2 U | 315-810-20 |
| 3 U | 315-810-00 |

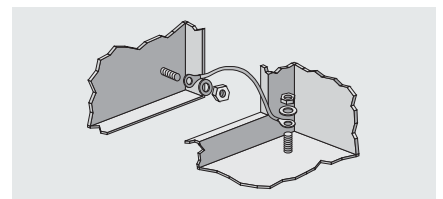
18 19" screw set M 5 / M 6 (50x)



- 50 cage nuts M 5/M 6
- 50 decorative washers M 5/M6 with collar
- 50 oval head screws M 5 x 12/M 6 x 16

| Description | Order no. |
|---------------|-----------|
| Screw set M 5 | 630-991 |
| Screw set M 6 | 630-994 |

19 Earthing kit



- the set enables VDE-compliant earthing of enclosure components
- cable cross-section Ø 2,5 mm²

| Order no. (set) |
|-----------------|
| 500-840-00 |



Visions become reality...



Standard cabinet combination

- based on the VARI 500 enclosure system



**Movable server cabinet
depth 900 mm**



**control cabinet for industry
applications**



19" TiRAX cabinet system

from page 3



19" NETcell cabinet system

from page 31



Open 19" racks

from page 43



Wall-mounting/stand-alone distribution systems

from page 53



Wall-mounting enclosure systems

from page 63



Air conditioning technology

from page 77



Power distribution system

from page 85



Cabinet monitoring

from page 101



Cable management

from page 105



Workstation systems

from page 109



General accessories/
distribution technology

from page 123



You can read more about products from the apra-group at www.apra-norm.com



Wall-mounting enclosure systems



VARI 2000

from page 65

- the space-saving wonder
- patented enclosure system
- optimum accessibility



VARI industry

from page 68

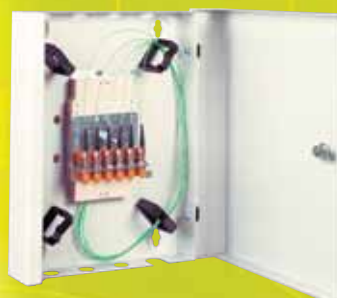
- protection class IP 54
- the space-saving wonder for industrial use
- optimum assembly and installation conditions
- also supplied with cooling device



optiRACK

from page 71

- low-cost solution
- quick installation



FO splice case

from page 74

- modular space saving small enclosure
- internal components installed easily due to detachable door



LAN small distribution cabinet

from page 75

- two-part enclosure (patch area/cable entry area)
- for FO and copper use



www.apranet.de

The revolution in wall-mounting enclosure technology

The patented wall-mounting enclosure provides you with a stylish, space-saving enclosure solution for your network cabling.

VARI 2000



vertical 19" level



space-saving with single-leaf door (4 U/ 6 U)



optimum access through split door solution (6 U/12 U)



180° opening angle with apra-norm hinges



Sample configurations

19" wall-mounting enclosures VARI 2000

- stylish enclosure solution
- space-saving
- optimum assembly and installation conditions
- combined folding away of front and side door (from 6 U)
- separate access privileges for front and side doors (from 6 U)
- simple air-conditioning options
- can also be installed in a corner or wall recess while allowing full access to the interior of the enclosure
- cable entry with integrated strain relief from above and/or below (also from the side in 12 U enclosures), covered by a sealing brush
- installation dimensions to IEC 60297-3-100

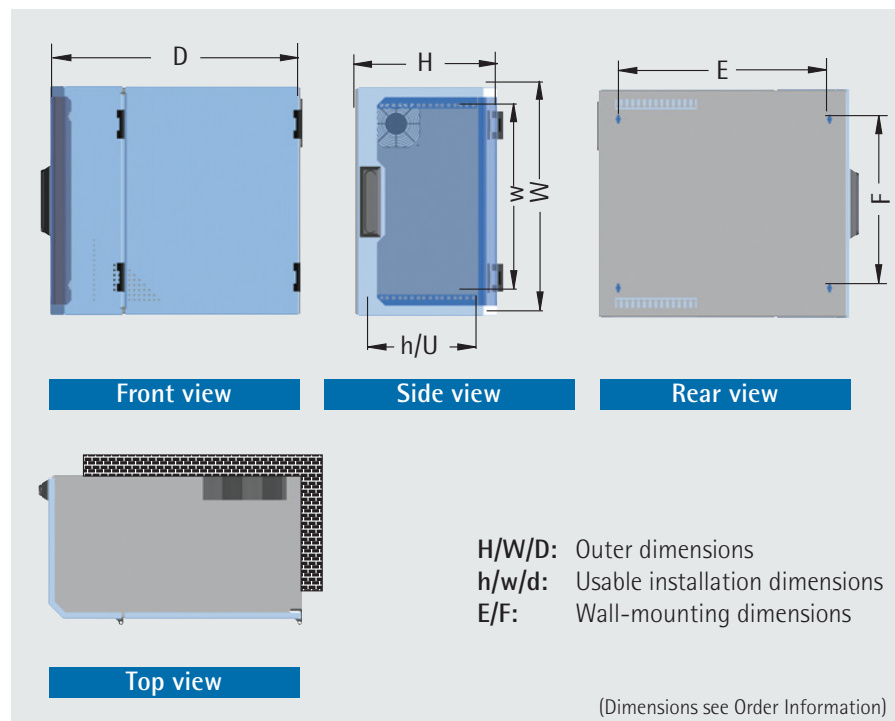
The precision of these enclosures is due to the design. The 19" levels are attached vertically to the wall so that the installation area of the equipment does not protrude into the room.

The door of the VARI 2000 enclosure series ensures full access from two open sides, without pivoting the 19" level. The door of VARI 2000 4 U wall-mounting enclosures is a single piece with a window. Sizes 6 and 12 U have double doors. You first open the glass door to access the area in front of the 19" level and then the second door to access the entire rear cabling area. The combined front and side door can be equipped with different locking systems so that defined access privileges can be assigned.

The apra-norm 180° hinge even allows VARI 2000 enclosures to be installed in corners while still providing a complete 90° opening angle.



Technical information



Application:

space-saving, wall-mounting enclosure for network cabling

Construction:

sturdy spot-welded and powder-coated sheet metal construction

Finish: RAL 7035 light grey

Material: sheet metal/plastic

Standards: Installation dimensions to IEC 60297-3-100

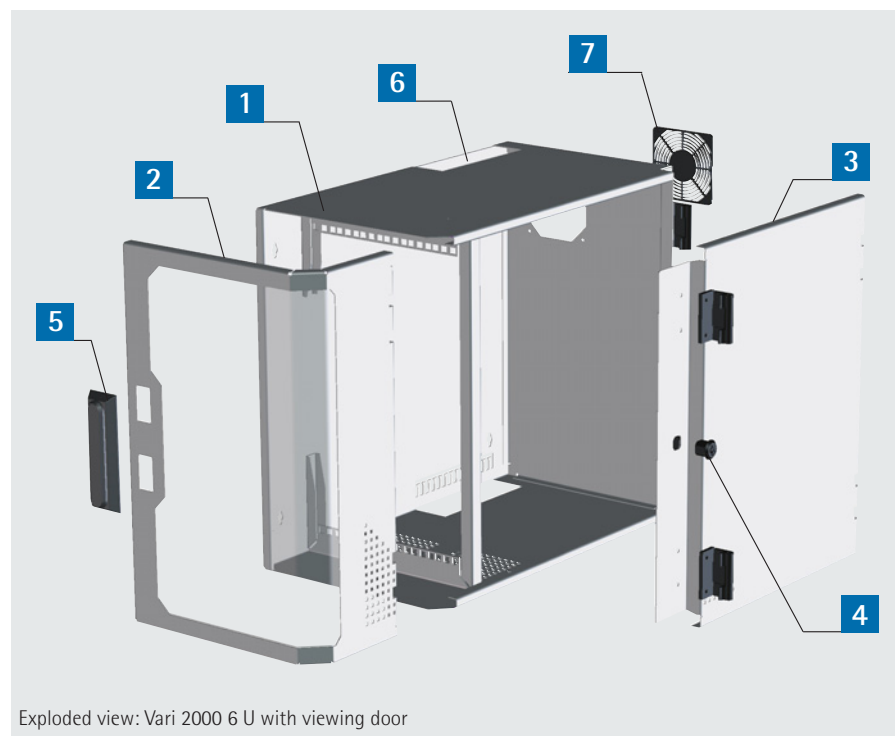
Delivery:

assembled (complete with earthing)

The 12 U wall mounting enclosure is based on two 6 U 19" fastening levels which are stacked under each other. The enclosure height H therefore remains low.

Scope of delivery

| Item | 4 U | 6 U | 12 U | Description |
|------|-----|-----|------|---|
| 1 | 1 | 1 | 1 | Enclosure chassis |
| 2 | 1 | 1 | 1 | Door with acrylic glass pane / steel metal door |
| 3 | - | 1 | 1 | Door, solid |
| 4 | 1 | 1 | 2 | Polyamide sash lock with hook tongue |
| 5 | | | | Turning lever lock |
| 6 | - | 1 | 1 | Sealing brush, W=210 mm |
| 7 | 2 | 2 | 4 | Protective grille, clippable, for 119 x 119 mm fans |
| 8 | 1 | 1 | 1 | Mounting material |



Order information

| Description | Outer dimensions (H x W x D) mm | Usable installation dimensions (h x w x d) mm | Wall mounting dimensions (E x F) mm | Order no. Enclosure with single-leaf door | Order no. Enclosure with split door |
|----------------|---------------------------------|---|-------------------------------------|---|-------------------------------------|
| VARI 2000 4 U | 230 x 506 x 536 | 177 x 450 x 383 | 410 x 360 | 213-031-00 | - |
| VARI 2000 6 U | 360 x 557 x 636 | 267 x 450 x 475 | 510.5 x 408.5 | 213-032-60 | 213-032-00 |
| VARI 2000 12 U | 360 x 1103 x 636 | 267 x 2x450 x 475 | 510.5 x 954.5 | - | 213-034-00 |



www.apranet.de

Mounting plate



- mounting plate for rear wall
- for mounting outlets/terminal boxes or other accessories

Finish: galvanised

| |
|------------------|
| Order no. |
| 213-030-20 |

Power strip (3-way)



- with overvoltage protection
- power cord (2.5m) with Earthing-pin plug
- attach to the rear wall of the enclosure
- length 335 mm

| |
|------------------|
| Order no. |
| 591-200-00 |

plug & play module



- temperature-controlled fan
- power strip, 3 sockets with overvoltage protection
- junction box
- power cord (2.5m) with Earthing-pin plug
- protective earthing kit

| |
|------------------|
| Order no. |
| 213-030-41 |

Shelf 1 U, vertical

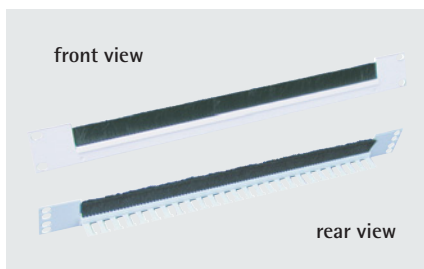


- for installation of **non-19"-compatible** components
- depth 250 mm

Finish: RAL 7035 light grey

| |
|------------------|
| Order no. |
| 213-030-22 |

19" cable feed 1 U

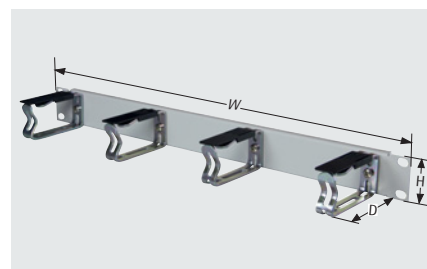


- for cable entry behind the 19" level
- with brush and strain relief rail
- brush height: 25 mm

Finish: RAL 7035 light grey

| |
|------------------|
| Order no. |
| 213-146-00 |

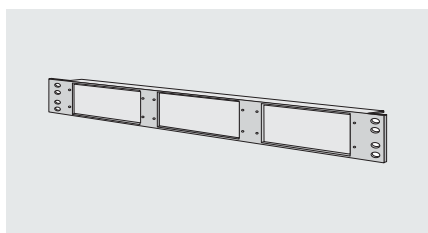
19" cable routing panel 1 U



- with 4 cable entry clamps made of metal
 - for clear, neat and horizontal cable entry at the 19" level
 - includes mounting material
- Finish: RAL 7035 light grey

| |
|------------------|
| Order no. |
| 213-145-41 |

19" front panel 1U

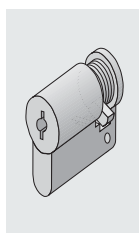


- to accommodate 3 modules or front plates 3 U, 8 UP

Finish: RAL 7035 light grey

| |
|------------------|
| Order no. |
| 213-029-00 |

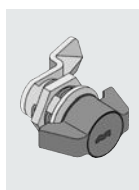
Profile half cylinder



- for 6 U and 12 U enclosures
- for retrofitting to lockable doors with keys

| |
|------------------|
| Order no. |
| 676-062 |

Pivoting lever lock



- for profile key locking for **single-leaf** door design
- 3 U / 4 U / 6 U variants

| |
|------------------|
| Order no. |
| 676-197 |

"Universal" velcro strip



- for quickly securing **non-19"-compatible** components
- L x W: 400 x 20 mm
- back-to-back mounting

| |
|----------------------------------|
| Order no. (set=10 pieces) |
| 671-122-08 |

19" screw set M 5 / M 6 (50x)



| Description | Order no. (set) |
|---------------|-----------------|
| Screw set M 5 | 630-991 |
| Screw set M 6 | 630-994 |

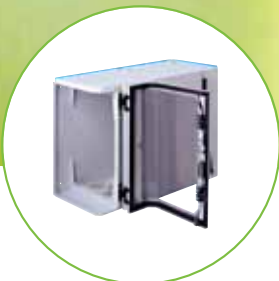


The wall-mounting enclosure solution for rough industrial use

VARiindustry



Sample configuration



three-point lock



optimum accessibility
from both sides



detachable front cover



VARi Industry

- protection class IP 54
- visually stylish enclosure
- space-saving design
- stable basic construction
- 2 doors with turning lever lock and three-point locking system
- one side with integrated glass pane
- detachable front cover
- doors with 180° hinges for optimum accessibility
- profile half-cylinder lock: double bit key 5 mm
- integrated cable flange plates
- installation dimensions to IEC 60297-3-100
- integrated outlet filter (IP 54) for fan installation

The visually striking and stylish enclosure is ideal for use as a compact switch cabinet solution or for network cabling in tougher environments. The high degree of protection (IP 54) and the stable structure of the enclosure protect your installations to optimum effect against dust, moisture and mechanical influences.

Enclosure height remains low due to vertical layout of 19" attachment level. The front and rear doors plus detachable front cover ensure optimum accessibility. Upper and lower cable flange plates enable the cable entry into the enclosure.



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Technical information

Application:

Use as wall-mounting enclosure for tight spaces and unfavourable environmental conditions such as high humidity and dust

Construction:

sturdy spot-welded and powder-coated sheet metal construction

Finish:

RAL 7035 light grey

Protection class:

IP 54

Load capacity:

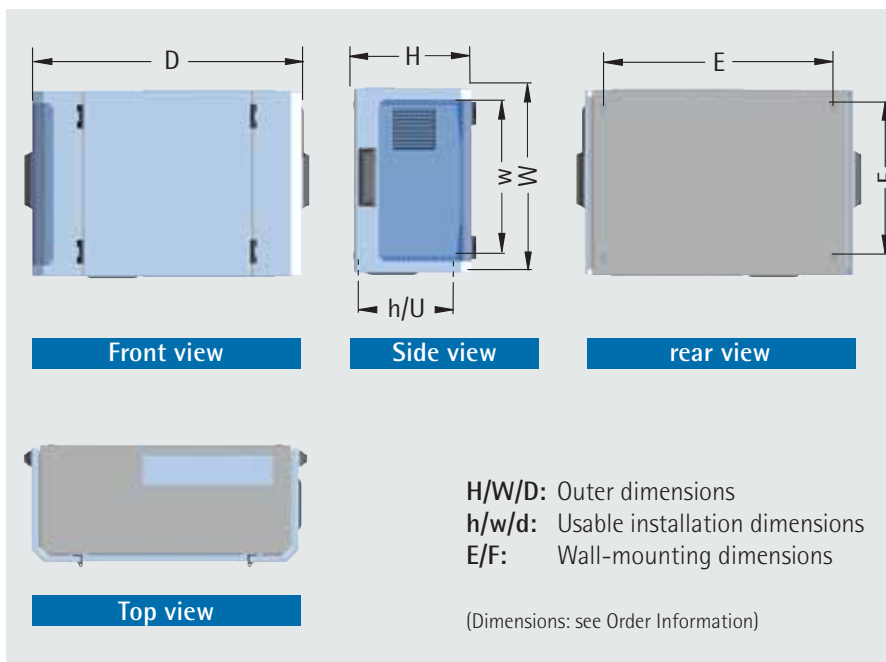
70 kg (static)

Standards:

Installation dimensions to IEC 60297-3-100

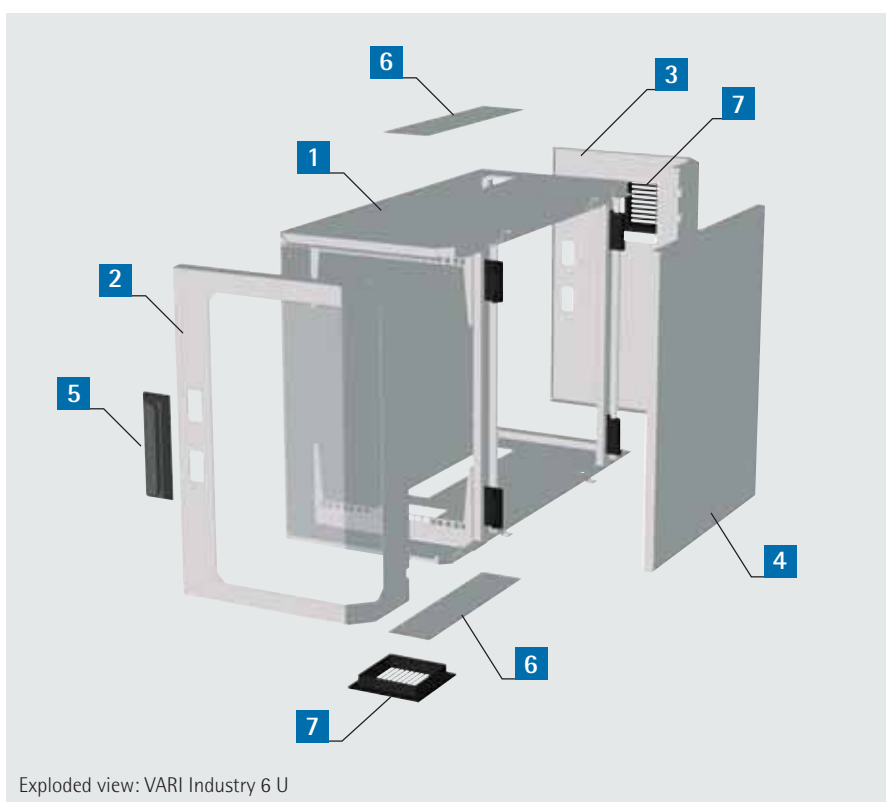
Delivery:

assembled



Scope of delivery

| Item | Pc. | Description |
|------|-----|---|
| 1 | 1 | Enclosure chassis |
| 2 | 1 | Door with plexiglass pane |
| 3 | 1 | Door with cutout for fans |
| 4 | 1 | Front cover, detachable |
| 5 | 2 | Turning lever locks with 3-point locking system and double-bit mechanism (5 mm) |
| 6 | 2 | Cable flange plates |
| 7 | 2 | Outlet filter, IP 54, for 119 × 119mm fans |
| | 1 | Mounting material |



Order information

| Description | Outer dimensions (H × W × D) mm | Usable installation dimensions (h × w × d) mm | Wall mounting dimensions (E × F) mm | Order no. |
|-------------------|---------------------------------|---|-------------------------------------|------------|
| VARI Industry 4 U | 275 × 560 × 840 | 177 × 449 × 650 | 680 × 450 | 306-040-00 |
| VARI Industry 6 U | 365 × 560 × 840 | 267 × 449 × 650 | 680 × 450 | 306-060-00 |



Sample configuration



VARI Industry "cool-box" 6 U

- air-conditioned wall-mounting enclosure for industrial environments
- 380 W cooling unit can be assembled on the detachable front cover

Dimensions (H × W × D):
522 mm × 560 mm × 840 mm

Finish:
RAL 7035 light grey

Protection class:
IP 54

Delivery:
prepared for mounting of cooling unit
(cooling unit included in delivery)

| |
|------------------|
| Order no. |
| 306-060-20 |

Accessories VARI Industry and VARI Industry "cool-box"

"Universal" velcro strip

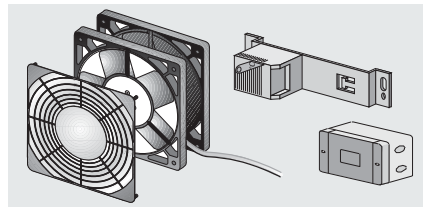


- for quickly securing **non 19"-compatible** components
- length: 300 mm, Width: 20 mm
- back to back mounting
- set = 10 pieces

Material: velcro, black

| |
|------------------------|
| Order no. (set) |
| 671-122-08 |

Fan set



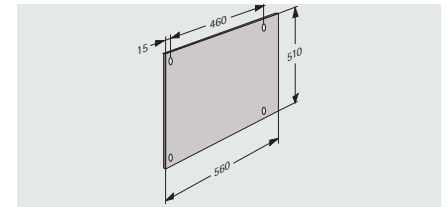
Fan set consisting of:

- fan, 230V, 160m³/h, 41dB(A)
- fan guard
- outlet
- thermostat, 0-60°C

Delivery: assembly set with mounting mat.

| |
|------------------|
| Order no. |
| 306-060-15 |

Mounting plate



- for mounting of heavy components
- includes mounting material

Finish: galvanised

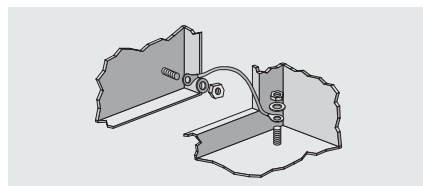
| |
|------------------|
| Order no. |
| 306-060-70 |

19" screw set M 5/M 6 (50x)



| Description | Order no. (set) |
|---------------|-----------------|
| Screw set M 5 | 630-991 |
| Screw set M 6 | 630-994 |

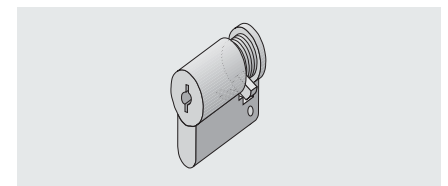
Earthing kit



- for VDE-compliant protective earthing connection

| |
|------------------------|
| Order no. (set) |
| 306-060-50 |

Profile half cylinder



- for retrofitting to lockable doors with keys
- incl. 2 keys

| |
|------------------|
| Order no. |
| 676-062 |



optiRACK



figure shows standard colours: design profile in RAL 5014 pigeon blue



design profiles are available in different RAL-colours

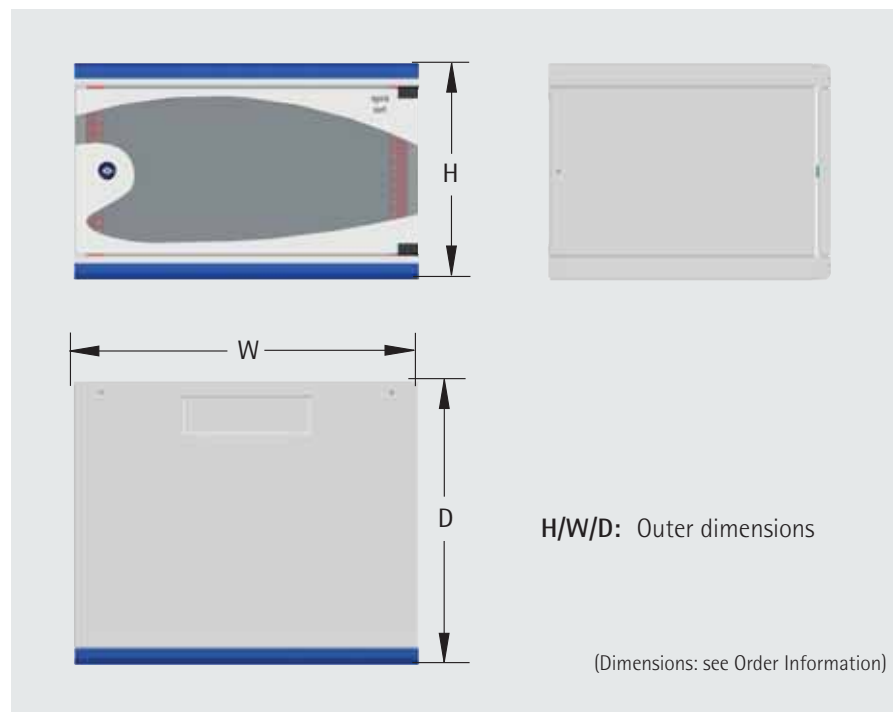
optiRACK

- protection class IP 20
- stylish enclosure solution
- optimum accessibility
- installation in just a few steps
- the coloured profile may be used as thematic coding. Through the use of coloured profiles in corporate colours, corporate identity can also be expressed in the network installation.

The new optiRACK wall mounting/stand-alone enclosure makes networking installations simple, since the detachable door and side panels enable optimum accessibility inside the enclosure. Cabling can therefore be performed in the open rack. The two-coloured design and the chamfered front upgrade its appearance significantly. The standard colour of the design profile is RAL 5014 (pigeon blue); other colours may be supplied on request.



Technical information



Application:

space-saving wall-mounting enclosure for network cabling

Finish:

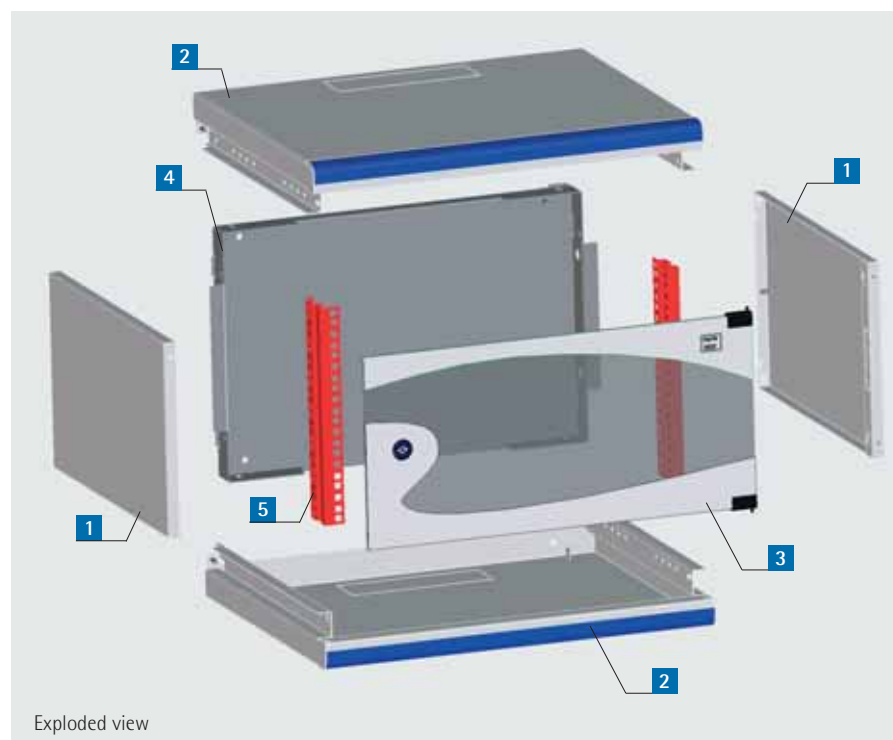
Enclosure: painted RAL 7035 light grey
Design profile: painted in RAL 5014 pigeon blue

Material:

sheet steel

Delivery:

assembled



Scope of delivery

| Item | Pc. | Description |
|------|-----|--|
| 1 | 2 | Side panels |
| 2 | 2 | Top/bottom plate with precut openings for cable entry |
| 3 | 1 | Viewing door with 180° hinge (Profil-Schließung EK333) |
| 4 | 1 | Rear wall |
| 5 | 2 | Individually depth adjustable 19" vertical mountings |
| | 1 | Earthing kit |
| | 1 | Kabeleinführungsbürste |

Order information

| Description | Outer dimensions (H x W x D) mm | Order no. |
|---------------|---------------------------------|------------|
| optiRack 6 U | 345 x 550 x 450 | 350-001-06 |
| optiRack 9 U | 480 x 550 x 450 | 350-001-09 |
| optiRack 12 U | 612 x 550 x 450 | 350-001-12 |
| optiRack 15 U | 745 x 550 x 450 | 350-001-15 |



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optiRACK "silent" underbench cabinet

- sound-insulating enclosure with viewing door
- detachable side panels
- 19" expansion 12 U variable depth

Available in two versions:

Version 1 "passive":

with ventilation grille (prepared without fan for passive ventilation of the enclosure)

Version 2 "active":

prepared with speed-controlled fan for active ventilation of the enclosure (fan: 12 V DC, 150 m³/h free-blowing, 37 DB(A))

Outer dimensions (H x W x D):

12 U (615 mm) x 550 x 600 mm

Material: sheet steel

Finish:

Enclosure: RAL 7035 light grey
Profile: RAL 5014 pigeon blue (other colours on request)

Delivery:

assembled

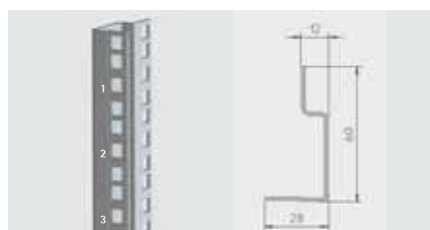


Fig: Version 2 "active"

| Description | Order no. |
|---------------------|------------|
| Version 1 "passive" | 350-001-60 |
| Version 2 "active" | 350-001-61 |



19" vertical mounting

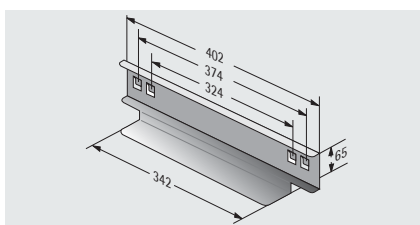


- with U-labelling
- height: 12 U

Material: sheet metal, galvanised

| |
|------------------|
| Order no. |
| 316-120-12 |

Slide rail, hook-in



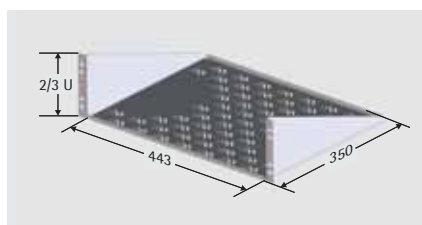
- hooked in the 19" vertical mountings
- to support heavy 19" plug-in units
- two 19" levels are required

Material: sheet metal 1.5 mm, galvanised

Load capacity: 50 kg

| |
|-------------------------|
| Order no. (pair) |
| 316-544-00 |

19" shelf, fixed



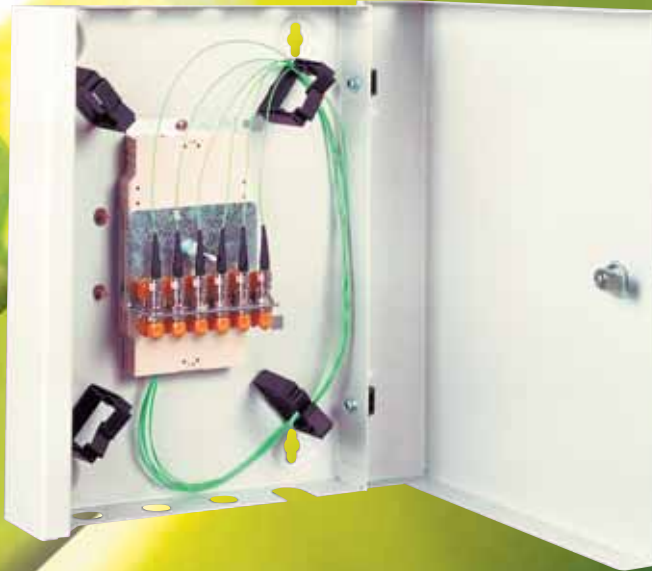
- simple assembly on a 19" grid (only one 19" level required)
- ventilated
- height: 2 U

Finish: RAL 7035 light grey

Material: sheet metal

Load capacity: 15 kg

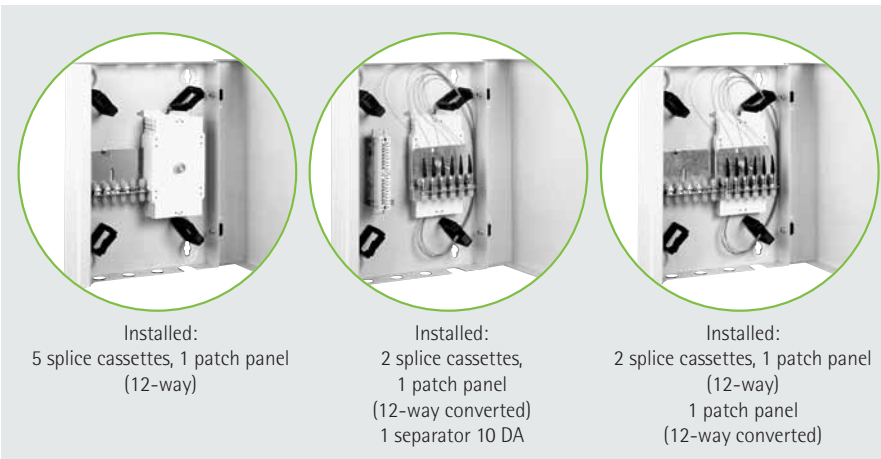
| |
|------------------|
| Order no. |
| 315-810-20 |



FO splice distribution case

- modular and space saving mini-enclosure
- up to 10 splice cassettes may be integrated
- easy interior assembly due to detachable door
- clean and controlled FO storage by using four integrated cable routing clamps
- 3 versions available
- additional components may be integrated: two 10 DA separator strips or 12-way FO patch panel or additional splice cassette holder
- also available pre-configured

Sample configurations



Installed:
5 splice cassettes, 1 patch panel
(12-way)

Installed:
2 splice cassettes,
1 patch panel
(12-way converted)
1 separator 10 DA

Installed:
2 splice cassettes, 1 patch panel
(12-way)
1 patch panel
(12-way converted)

Matching CU and FO components are available on request!

Order information

| Description | Description | Order no. |
|------------------------------|---|------------|
| FO splice distrib. version 1 | Cable entry from below via 3 PG11 and 1 open PG16, from above via 4 PG11 holes | 213-021-00 |
| FO splice distrib. version 2 | Cable entry from below via 50 mm wide, covered opening | 213-021-10 |
| FO splice distrib. IP 54 | Cable entry from below via 5 PG11 holes/protection class IP 54 (with foamed seal) | 213-021-50 |

Technical information

Application:

to accommodate a maximum of 10 splice cassettes, two 10 DA separators or 12-way FO patch panels.

Finish: RAL 7035 light grey

Dimensions (H x W x D):
335 x 265 x 70 mm

Material: sheet metal

Delivery: mounted

Scope of delivery

| Item | Pc. | Description |
|------|-----|--|
| 1 | 1 | Enclosure chassis |
| 2 | 1 | Door |
| 3 | 2 | Hinges |
| 4 | 1 | Sash fastener |
| 5 | 4 | Cable routing clamps |
| 6 | 1 | FO splice cassette holder for max. 5 FO splice cassettes |



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LAN small distribution cabinet

- small size enclosure
- patch space and cable entry area are separated by two lockable and detachable doors with different locking systems
- modular patch panel can take four part front panels 3 U / 8 HP and is suitable for mixed data connectors (FO/copper hybrid equipment)
- active components such as mini-hubs can easily be integrated
- cable entry with brush seal above and below
- cable entry in patch space through max. 4 PG16 screws (M 20)
- also available pre-configured



Sample configuration with mini-hub CAT.5 and LSA-Plus

two locking systems

integrated brush seal

Technical information

Application:

The enclosure is designed for internal wall mounting and is suitable for small copper and fibre-optic data and telecommunication networks.

Finish: RAL 7035 light grey

Material: sheet metal

Dimensions (H x W x D):

405 mm x 100 mm x 330 mm

(max. installation depth d: 250 mm)

Delivery: mounted

Scope of delivery

| Item | Pc. | Description |
|------|-----|--------------------------------------|
| 1 | 1 | Enclosure chassis |
| 2 | 2 | Doors with different locking systems |
| 3 | 2 | Brush seals |
| 4 | 1 | Distribution panel |

Customised front panels are available on request!

| Order no. |
|------------|
| 213-020-15 |

Accessories

FO front panels 3 U, 8 HP

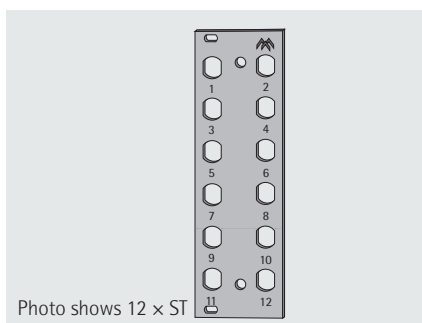


Photo shows 12 x ST

- for assembly of the non-configured FO small distribution cabinet
- front panels are numbered consecutively
- a maximum of 4 part front panels can be integrated into the LAN small distribution cabinet

Finish: anodised

Material: aluminium 2.5 mm

Front panels for other plug-in connectors on request!

| Description | Order no. |
|-------------------------------------|------------|
| Front panel 12 x ST | 213-308-01 |
| Front panel 12 x SC (6 x SC-Duplex) | 213-308-02 |
| Blind panel 3 U, 8 HP | 243-308-00 |

CAT.6A, 6-way/12-way

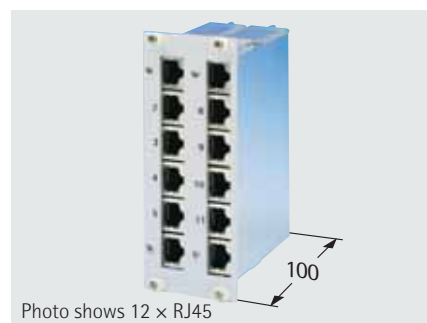


Photo shows 12 x RJ45

- shielded CAT.6A distribution panel
- 6-way RJ 45 (3 U / 8 HP) or 12-way RJ 45 (3 U / 10 HP)
- metal enclosure with large low-impedance galvanised surfaces
- LSA Plus connecting system
- labelled aluminium front panel

Finish:

Front panel: anodised

Enclosure: galvanised

| Description | Order no. |
|--------------------------|------------|
| 6-way distribution panel | 213-503-10 |
| 12-way distrib. panel | 213-503-30 |



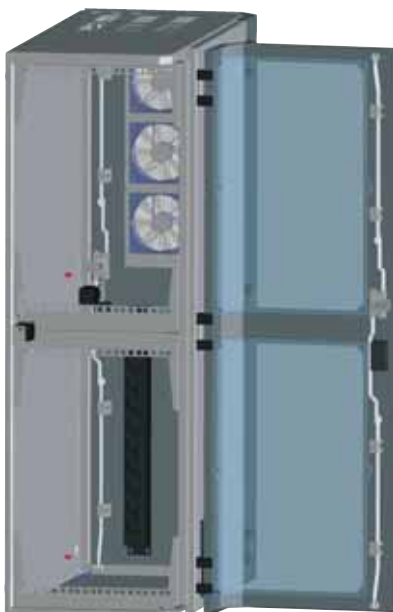
Custom wall-mounting enclosure

Enclosure for Small Office / Home Office

- can be used as wall-mounting/stand-alone and mobile enclosure
- base: VARI 2000, 4 U (see page 65)
- expandable with active ventilation - plug & play



Wall-mounting enclosure for industrial environments (IP 54)



- base: VARI Industry 12 U (2 x 6 U) (see page 68)
- modified for accommodation of active and passive network technology
- delivered as plug & play solution



19" TiRAX cabinet system

from page 3



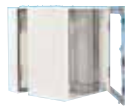
19" NETcell cabinet system

from page 31



Open 19" racks

from page 43



Wall-mounting/stand-alone
distribution systems

from page 53



Wall-mounting enclosure
systems

from page 63



Air conditioning technology

from page 77



Power distribution system

from page 85



Cabinet monitoring

from page 101



Cable management

from page 105



Workstation systems

from page 109



General accessories/
distribution technology

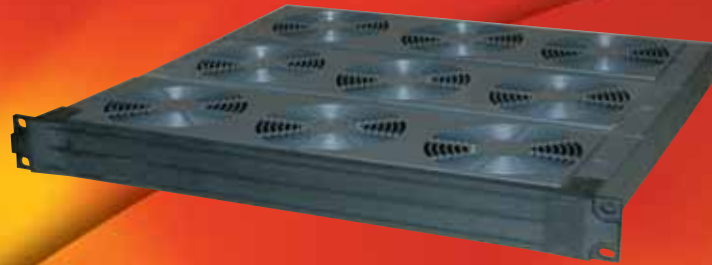
from page 123



You can read more about products from the apra-group at www.apra-norm.com



Air conditioning technology



Air conditioning units

from page 79

- standard applications and individual solutions for all our cabinets and wall-mounting enclosures with protection class IP 54
- low servicing costs thanks to filterless technology
- extremely compact unit sizes with high efficiency

Plastic fan module

from page 80

- for high-volume ventilation of enclosures or cabinets
- compact dimensions
- easy assembly
- sophisticated modularity protected by a utility patent
- also available as speed-controlled variants
- 19"-compatible



Tel.: +49 (0)
65 92 95 12-0

apra cooling system

from page 82

- air/water heat exchanger
- optimum cooling for server racks with a high packing density
- up to 56 KW
- precision air conditioning for data centres

Air conditioning units

- optimum temperature for maximum efficiency
- standard applications and individual solutions for virtually all our cabinets and wall-mounting enclosures with protection class IP 54
- subsequent installation of cooling devices: the units are supplied ready to use (drilling template and mounting material included in the scope of delivery).
- low servicing costs thanks to filterless technology
- extremely compact unit sizes with high efficiency
- heat build-up inside the cabinet is prevented by the continual circulation of cabinet air.
- all units use CFC-free refrigerant
- Cooling capacity acc. to EN814 Ta35Ti35
- integrated electronic control unit and thermostat

Finish: RAL 7035 light grey

Material:

enclosure: sheet metal
front panels: plastic

Scope of delivery:

- operating instructions
- mounting materials including drilling template
- connector plug

Cooling units with higher specifications and systems with a water recool unit are also available on request.



Cooling system order information

Cooling units for wall mounting/installation

| Cooling capacity W | Voltage / frequency V/Hz | Dimensions H x W x D mm | Noise level dB(A)* | Order no. |
|--------------------|--------------------------|-------------------------|--------------------|------------|
| 380 | 230 / 50-60 | 460 x 285 x 180 | 60 | 235-200-08 |
| 1050 | 230 / 50-60 | 950 x 400 x 233 | 65 | 235-200-07 |
| 2050 | 230 / 50-60 | 1265 x 400 x 236 | 65 | 235-200-05 |
| 2900 | 230 / 50-60 | 1270 x 500 x 336 | 70 | 235-200-18 |
| 3850 | 230 / 50-60 | 1270 x 500 x 336 | 70 | 235-200-19 |

Top mounted cooling units

| | | | | |
|------|-------------|-----------------|----|------------|
| 410 | 230 / 50-60 | 264 x 259 x 486 | 60 | 235-200-10 |
| 1550 | 230 / 50-60 | 415 x 401 x 567 | 65 | 235-200-12 |
| 2050 | 230 / 50-60 | 415 x 401 x 567 | 65 | 235-200-14 |
| 3850 | 230 / 50-60 | 496 x 492 x 797 | 75 | 235-200-22 |

The noise level of the cooling units is measured acc. to EN ISO 3744, but it does not take into account the installation conditions of the units on the rack. Therefore the noise level can be considerably higher due to the operating environment and installation conditions.

Heating system order information

Cabinet heating systems (excl. thermostat)

| Heat capacity W | Voltage/frequency V / Hz | Dimensions (H x W x D) mm | Order no. |
|-----------------|--------------------------|---------------------------|------------|
| 100 | 230 / 50 - 60 | 182 x 70 x 50 | 235-200-09 |
| 150 | 230 / 50 - 60 | 262 x 70 x 50 | 235-200-06 |

Heater fan (incl. thermostat)

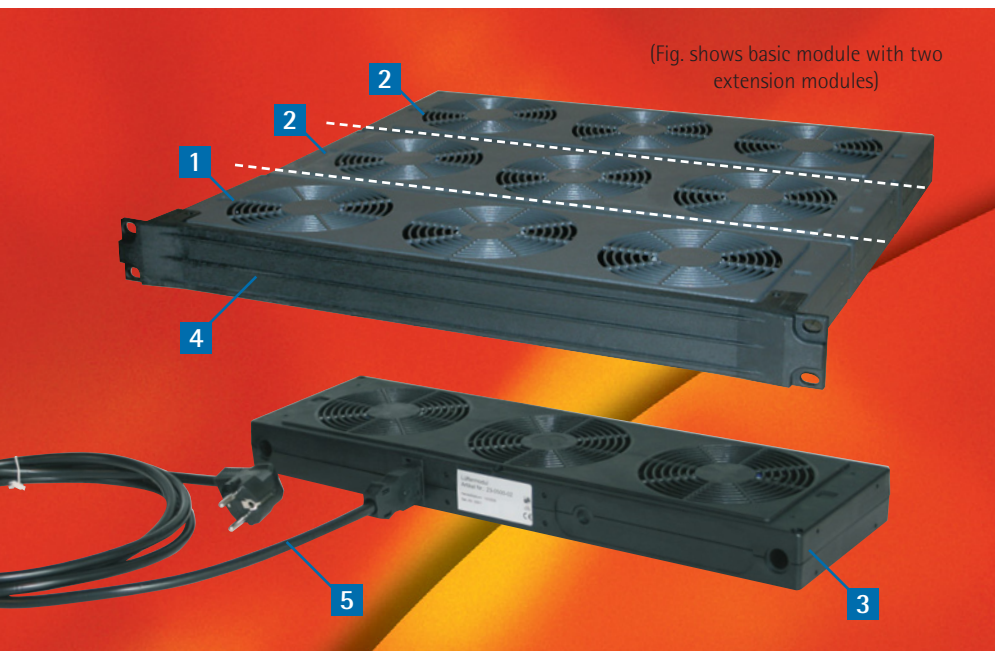
| | | | |
|-----|---------------|-----------------|------------|
| 350 | 230 / 50 - 60 | 165 x 100 x 128 | 235-200-27 |
|-----|---------------|-----------------|------------|

Thermostat for cabinet heating 0-60 °C

640-104-03



230 • Plastic fan module



(Fig. shows basic module with two extension modules)

Plastic fan module

- incomparably light
- low-cost
- easy assembly
- sophisticated modularity protected by a utility patent
- suitable for all applications relating to enclosure and cabinet technology
- can be installed in just a few steps in a 19" grid using the 19" mounting kit.
- long service life and high system reliability due to high-quality fans
- integrated fan cover
- by using state-of-the-art plastics of class UL94 V-0, the new system meets the highest fire safety requirements.

The **basic module 1** is available as a 1, 2 or 3-fan unit and has 8 fixing points, which enable installation for any application and location. Power is supplied via a plug contact at the back of the enclosure. This plug contact enables preconfigured cables and thermometers to be used (see accessories) and of course also provides you with an interface to your own cable configuration.

The **extension module 2** is also available as a 1, 2 or 3-way unit and is a pluggable multi-way extension for the basic fan module. The mechanical connection of the modules is realised via aluminium guide pins (included in the scope of delivery). The extension module has a plug connector on the front and a socket on the back. Series linking in this way enables the electrical connection between the modules to be established automatically.

Finish: black (similar to RAL 9005 jet black)

Material: plastic, fire class to UL 94 V-0

Fan module "standard"

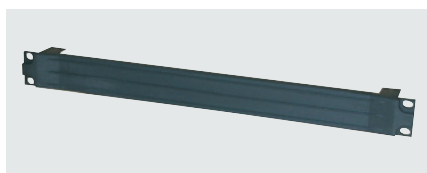
| Description | Dimensions (H x W x D) mm | Air flow rate, unimpeded | Order no. | |
|-------------|---------------------------|--------------------------|----------------|--------------------|
| | | | Basic module 1 | Extension module 2 |
| 1-way | 44 x 450 x 140 | 115m ³ /h | 230-500-01 | 230-500-11 |
| 2-way | 44 x 450 x 140 | 230m ³ /h | 230-500-02 | 230-500-12 |
| 3-way | 44 x 450 x 140 | 345m ³ /h | 230-500-03 | 230-500-13 |

Fan module „silent“ (cannot be combined with extension module!)

| Description | Dimensions (H x W x D) mm | Air flow rate, unimpeded | Noise Level | Order no. 2 |
|-------------|---------------------------|--------------------------|------------------|-------------|
| 3-way | 44 x 450 x 140 | 340 m ³ /h | 45,5 dB(A)/20μPa | 230-500-43 |

Accessories

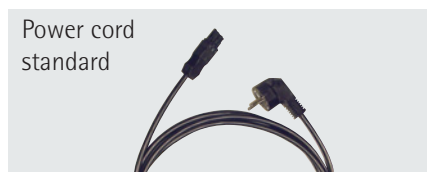
19" installation kit, 1 U 4



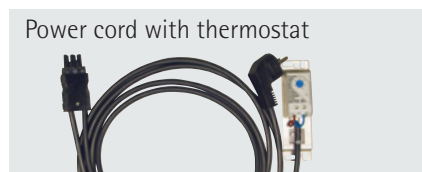
Material: plastic
Finish: RAL 9005 jet black
Dimens. (H x W x D): 44 x 450 x 146 mm

| Order no. |
|------------|
| 230-500-70 |

Power cord cables 5



Power cord standard

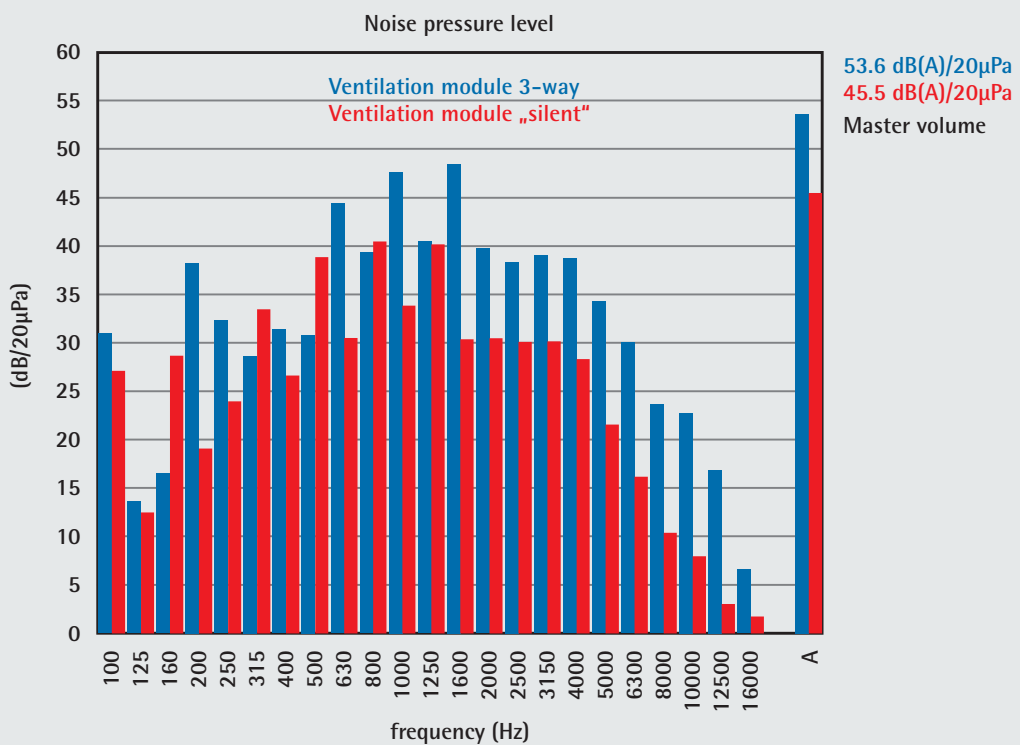
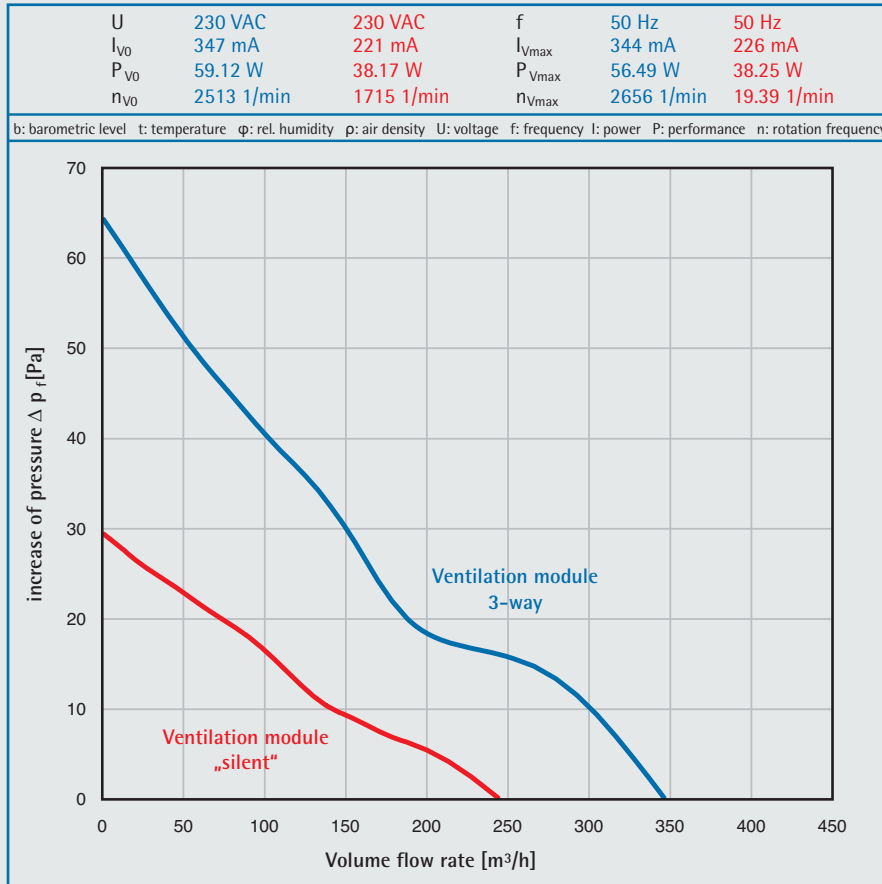


Power cord with thermostat

| Type of connection | Length | Power cord, standard | Power cord with thermostat 0-60 °C |
|-----------------------------------|--------|----------------------|------------------------------------|
| Earthing-pin plug | 3 m | 640-044-05 | 230-500-04 |
| IEC connector | 3 m | 230-500-15 | 230-500-05 |
| Without plug for fixed connection | 3 m | 230-500-16 | 230-500-06 |



Fan characteristics





apra cooling system "Cyber Row"

Optimum air conditioning of the server racks in conjunction with a cooling/heating corridor system

- horizontal air routing in front of the racks: cold air reaches the rack by the shortest route
- electronic control: controls and monitors all components inside and outside of the air conditioning device which are required for cooling generation
- three EC-fans independent from each other and with infinite numbers of settings ensure maximum possible efficiency
- targeted cooling of high-density racks
- optimum air conditioning of a cooling/heating corridor system
- for data centres with and without raised floors
- complete system separation between IT rack and air conditioning technology
- cooling capacities up to 56 kW
- cold water cooling: The device requires separate cold water generation. The indoor air transported by the fans flows through the direct cooler which emits the heat to the cool water. The heat is then removed from the cooling water by a cold water unit. The air conditioning device and the cold water unit are connected by a closed cooling water circuit.

Also available as compressor cooling!



Order information

| Model | CRS210CW | CRS320CW | CRS560CW |
|-------------------------------------|------------|------------|------------|
| Height mm | 1950 | 1950 | 1950 |
| Depth mm | 1200 | 1175 | 1175 |
| Width mm | 300 | 400 | 600 |
| Cooling capacity k/W | 20,9 | 32,2 | 56,0 |
| Air flow rate m ³ /h | 4500 | 6000 | 10.800 |
| Water volume flow m ³ /h | 3,6 | 5,5 | 9,6 |
| Order no. | 235-200-73 | 235-200-60 | 235-200-65 |



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apra cooling system "Sidecooler"

- the „Sidecooler“ was especially developed for cooling server racks with high packing densities and through the targeted air routing inside the cabinet ensures the reliable cooling of all servers
- high cooling capacity, even at high flow temperatures
- horizontal air routing throughout the entire height of the cabinet works to optimum effect and is extremely effective in conjunction with servers in a 19" design
- very space-saving due to compact design
- all water-carrying components are located outside the server cabinet.
- the system works with a closed air circuit in the rack and is therefore independent of its environment
- the air routing can be either via one or both sides, if there is mounting between two racks



Order information

| Model | Sidecooler 1000 | Sidecooler 1200 |
|-------------------------------------|-----------------|-----------------|
| Height mm | 2000 | 2000 |
| Depth mm | 800 (1000) | 800 (1200) |
| Width mm | 300 | 300 |
| Cooling capacity k/W | 19.3 | 19.3 |
| Air flow rate m ³ /h | 3600 | 3600 |
| Water volume flow m ³ /h | 3.3 | 3.3 |
| Order no. | 235-200-70 | 235-200-75 |



230 • Mounted fan



1 Mounted fan

- for high-volume ventilation of enclosures or cabinets
- compact dimensions
- setup height just 73 mm
- easy assembly
- connection via terminal strip
- protection class IP 44

Finish: RAL 7032 pebble grey
Material: plastic, fire class to UL 94 V-0

| |
|------------------|
| Order no. |
| 230-855-00 |

2 Filter unit

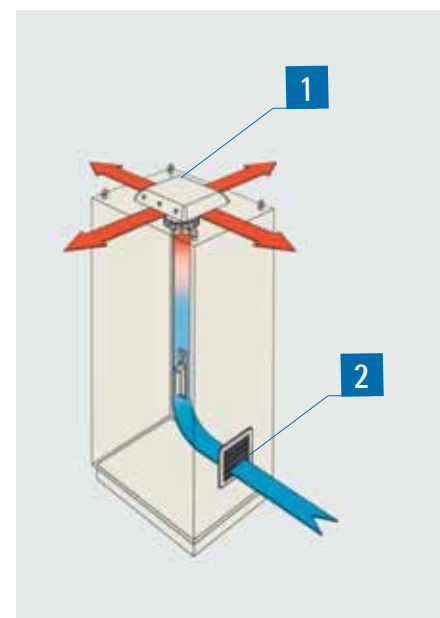
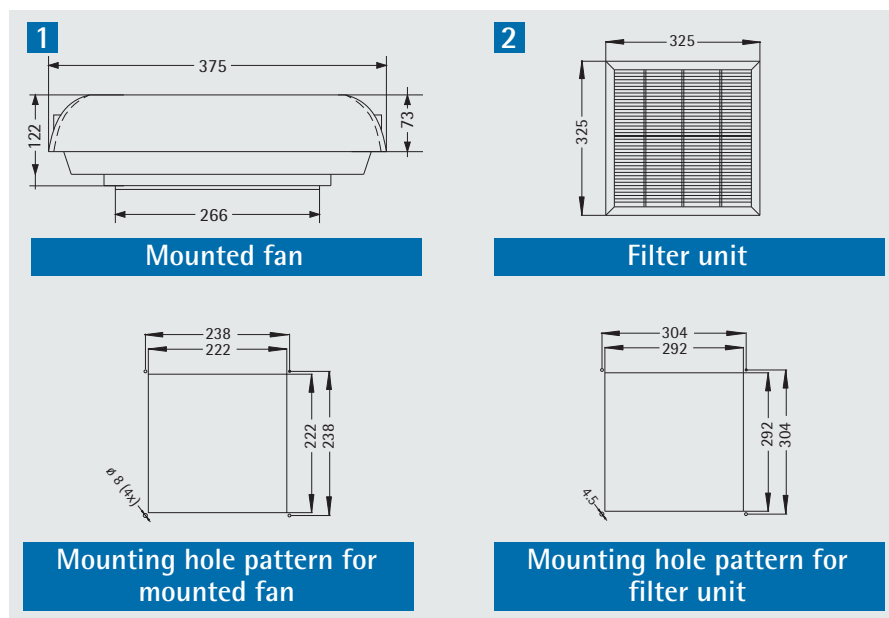
- as an add-on to the mounted fan
- used to clean the supply air

Finish: RAL 7032 pebble grey
Material: plastic, fire class to UL 94 V-0

| |
|------------------|
| Order no. |
| 230-855-10 |

Technical information

| Parameters | Mounted fan |
|--------------------------------------|---|
| Air flow rate | 1050 m ³ /h (at 50 Hz) / 1085 m ³ /h (at 60 Hz) |
| Operating voltage/frequency | 230 V / 50 - 60 Hz |
| Dimensions (H × W × D) | 106 × 375 × 375 mm |
| Rated output | 120 W (at 50 Hz) / 155 W (at 60 Hz) |
| Rated consumption | 0.52 A (at 50 Hz) / 0.65 A (at 60 Hz) |
| Winding protection | Inside the motor |
| Electrical connection | Terminal strip |
| On time | 100 % |
| Area of application | -20 to +60 °C |
| Protection class to EN 60529 | IP 44 |
| Noise level | 72 dB(A) |
| Air flow rate with below filter unit | 700 m ³ /h (at 50 Hz) / 730 m ³ /h (at 60 Hz) |
| Direction of flow | From inside to outside |





| | | | | |
|---|---|-----------|-----------|---|
|  | 19" TiRAX cabinet system | from page | 3 |  |
|  | 19" NETcell cabinet system | from page | 31 |  |
|  | Open 19" racks | from page | 43 |  |
|  | Wall-mounting/stand-alone distribution systems | from page | 53 |  |
|  | Wall-mounting enclosure systems | from page | 63 |  |
| | Air conditioning technology | from page | 77 |  |
| | Power distribution system | from page | 85 |  |
| | Cabinet monitoring | from page | 101 |  |
| | Cable management | from page | 105 |  |
|  | Workstation systems | from page | 109 |  |
|  | General accessories/ distribution technology | from page | 123 |  |



You can read more about products from the apra-group at www.apra-norm.com



Power distribution system



Multiple socket strips

Page 88

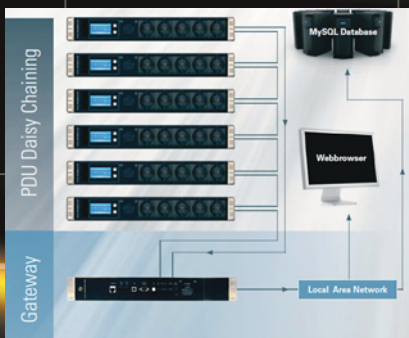
- Earthing-pin
- UTE (France)
- IEC connectors IEC-C13



19" power distribution units

from page 89

- modular 19" power distribution systems



Intelligent power distribution systems for computer centres

from page 92

- networked systems
- stand-alone systems



UPS systems, 19" devices

from page 96

- 19" line interactive VI-SS-211
- 19" online continuous transducer FI-SS-111

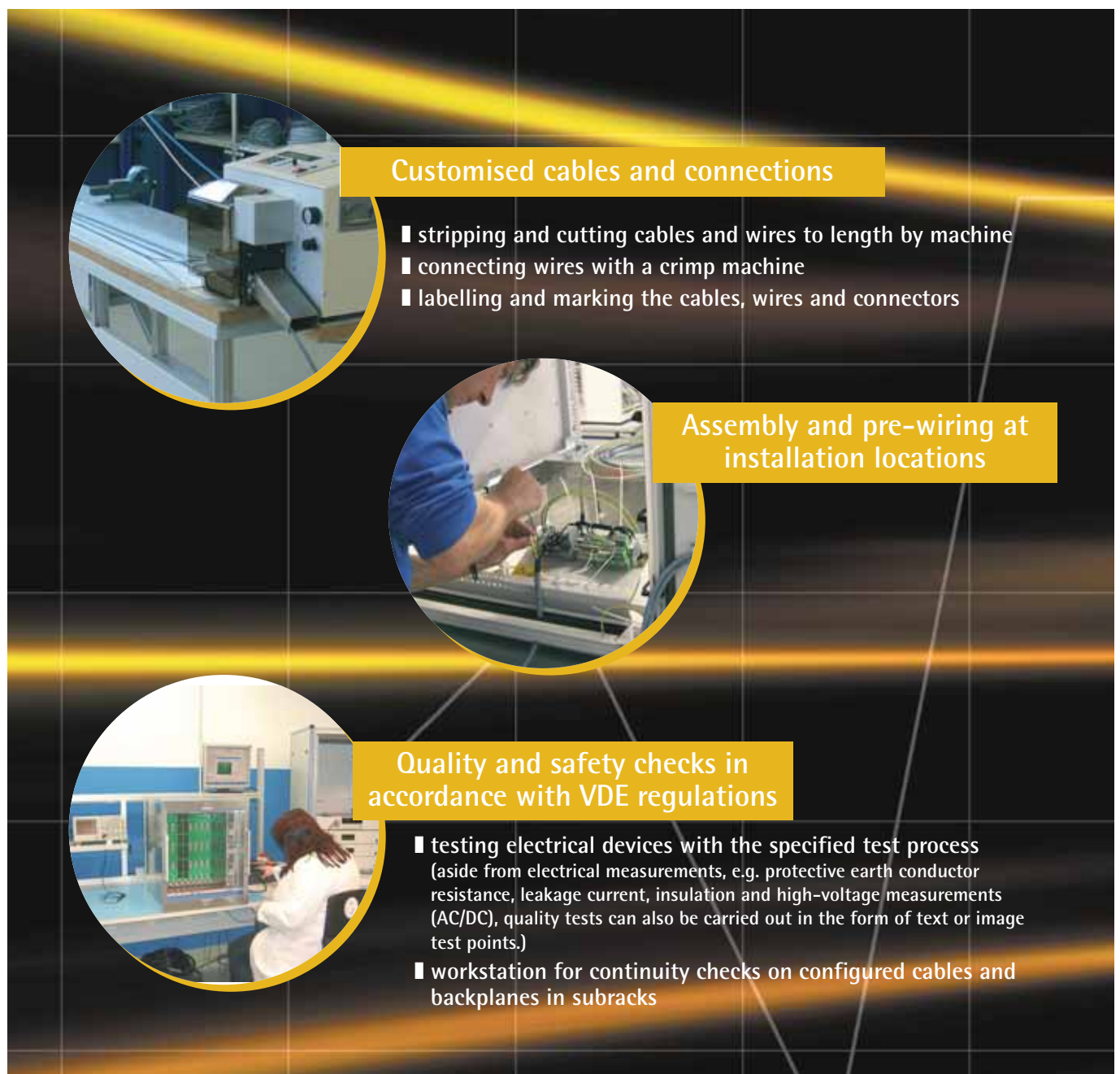


Our service for you: Pre-wiring, power supplies, plug-and-play versions in enclosures and cabinet systems

✔ take advantage of our expertise ✔ save time and money

The apra Group places particular emphasis on individual and flexible system solutions. Our enclosures and 19" cabinet systems are equipped with components such as a power supply and power distribution system in line with customer requirements and are supplied with full pre-wiring. This enables us to fulfil a wide range of customer requirements.

From development right through to the finished product, you can benefit from our expertise and flexibility!



Customised cables and connections

- stripping and cutting cables and wires to length by machine
- connecting wires with a crimp machine
- labelling and marking the cables, wires and connectors

Assembly and pre-wiring at installation locations

Quality and safety checks in accordance with VDE regulations

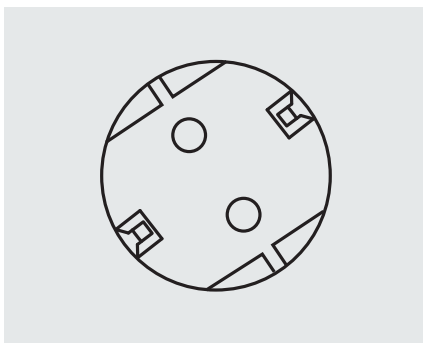
- testing electrical devices with the specified test process (aside from electrical measurements, e.g. protective earth conductor resistance, leakage current, insulation and high-voltage measurements (AC/DC), quality tests can also be carried out in the form of text or image test points.)
- workstation for continuity checks on configured cables and backplanes in subracks



Multiple socket strips

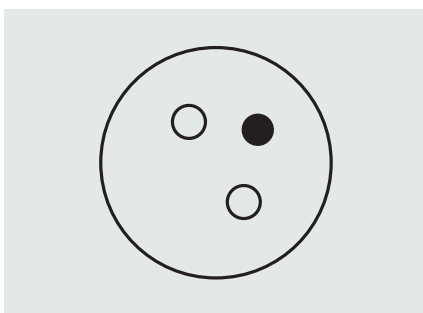
- space-saving design
- stable aluminium enclosure
- suitable for 19" mounting in 1 U division (L = 440 mm) and/or cabinet rack mounting
- connection: 3 × 1.5 mm²
- standard cable length: 2.0 m
- Earthing-pin and UTE standard sockets: twisted 35°
- incl. mounting bracket

Earthing-pin 230 V AC, 16 A



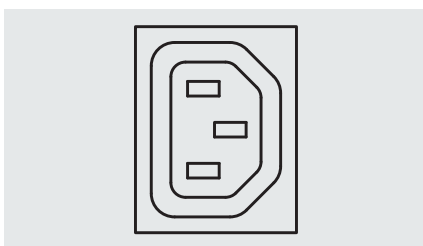
| No. of sockets | Switch | Surge protection | Mains filter | Amp. meter | 19" install.-compatible 1 U | Length L mm | Colour | Order no. |
|----------------|--------|------------------|--------------|------------|-----------------------------|-------------|------------|------------|
| 9 | - | - | - | - | x | 440 | light grey | 591-400-00 |
| 12 | - | - | - | - | - | 610 | black | 591-412-00 |
| 8 | x | - | - | - | x | 440 | light grey | 591-401-00 |
| 8 | - | x | - | - | x | 440 | light grey | 591-402-00 |
| 6 | - | x | x | - | x | 440 | light grey | 591-403-00 |
| 7 | x | x | - | - | x | 440 | light grey | 591-404-00 |
| 7 | - | - | - | x | x | 440 | light grey | 591-400-15 |

UTE (France), 230 V AC, 16 A



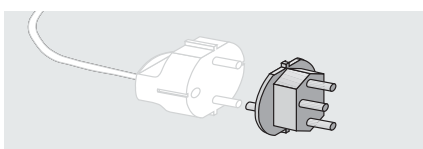
| No. of sockets | Switch | Surge protection | Mains filter | Amp. meter | 19" install.-compatible 1 U | Length L mm | Colour | Order no. |
|----------------|--------|------------------|--------------|------------|-----------------------------|-------------|------------|------------|
| 9 | - | - | - | - | x | 440 | light grey | 591-405-60 |
| 12 | - | - | - | - | - | 610 | black | 591-412-60 |
| 8 | x | - | - | - | x | 440 | light grey | 591-406-60 |
| 8 | - | x | - | - | x | 440 | light grey | 591-402-60 |
| 6 | - | x | x | - | x | 440 | light grey | 591-403-60 |
| 7 | x | x | - | - | x | 440 | light grey | 591-404-60 |

IEC connectors IEC-C13, 230 V AC, 10 A



| No. of sockets | Switch | Surge protection | Mains filter | Amp. meter | 19" install.-compatible 1 U | Length L mm | Colour | Order no. |
|----------------|--------|------------------|--------------|------------|-----------------------------|-------------|------------|------------|
| 9 | - | - | - | - | x | 440 | light grey | 591-414-00 |
| 12 | - | - | - | - | x | 440 | black | 591-414-10 |
| 8 | - | - | - | x | x | 440 | light grey | 591-400-17 |

"Swiss Earthing-pin" adapter



- connector pin side: Swiss
- jack side: Earthing-pin connector

Material: plastic, black

| Order no. |
|------------|
| 640-230-00 |

Additional multiple socket strips such as C-19, monitorable or switchable socket strips available on request!



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19" power distribution units 1 U

This power distribution system is specially designed to supply power to servers easily and safely in a 19" cabinet. In the PDU, the supply line can be connected simply to a terminal in the device (cross-section up to 10 mm²)

High level of safety thanks to surge protection and distribution of the mains supply over 5 fuse-protected circuits (10 A) each with 3 IEC sockets at the output.

Considerable time and cost savings, as there is no need for costly installations for power supplies.

- input: 1 × 32 A / 230 V / 50 Hz
- output: 15 × IEC socket with surge protection, 3 pieces in each case with 10 A fuse protection (see figure below right)
- remote signalling contact (in each case 1 × zero-volt NOC and 1 × NCC)
- individual mounting in the cabinet using the mounting bracket included in the scope of delivery
- mounting on the 19" level using additional adapter brackets
- high-quality surge protection (class II to IEC 61643-1) with remote signalling output (see figure below left)

Finish:

RAL 7035 light grey

Material:

enclosure: sheet metal

Dimensions (H × W × D):

1 U (44 mm) × 482.6 mm × 300 mm

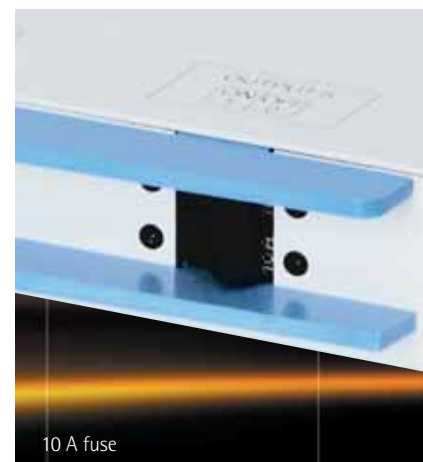
| |
|------------------|
| Order no. |
| 591-910-00 |

Mounting set for 19" installation (1 U)

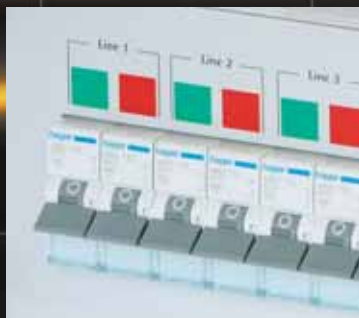
| |
|------------------------|
| Order no. (set) |
| 591-910-01 |



Surge protection with remote signalling output



10 A fuse



19" power distribution units 3 U, redundant

This power distribution system is ideal for the safe supply of power to servers with redundant power supply units.

It enables two separate power supplies (each 400 V / 3 × 25 A) to be fed in. The supplies are distributed over 6 outputs (each 2 × 230 V / 10 A) and each output is protected with a B10 A automatic circuit breaker. Clear colour identification of the outputs and automatic circuit breakers divides the device into six lines and enables a redundant supply to six servers from a single point.

The mains supply lines are connected easily with a connector included in the scope of delivery without any additional tools or material costs via clamp spring contacts and are inserted and locked at one of the two inputs.

Various conductor types with various cross-sections (0.5 to 4 mm²) can be connected here.

At the outputs, power can also be picked up by lockable C14 IEC connectors or by connectors included in the scope of delivery (design similar to power input connector).

Advantages:

- redundant power supply to 6 servers with just one device
- only 3 U space required thanks to compact design
- simple power feed via cables to up to 5 × 4 mm² max. 3 × 25 A
- simple connection of servers either via either IEC sockets or with the connector system included in the scope of delivery
- fuse protection of the outputs each with a B10 A automatic circuit breaker

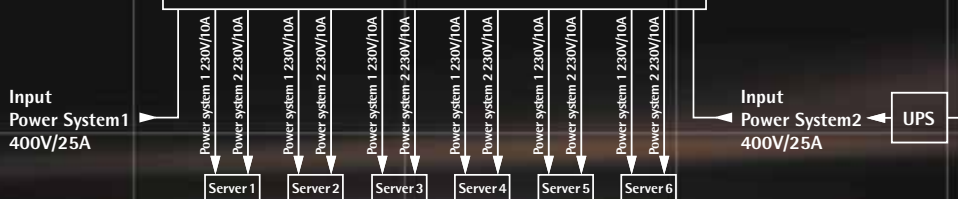
Finish: anodised

Material: enclosure: aluminium
inserts: plastic

Dimensions (H × W × D):

3 U (132.5 mm) × 482.6 mm × 170 mm

apra power system redundant power distribution



Order no.

591-910-10



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19" power distribution unit 3 U for automatic circuit breakers

- for the installation of automatic circuit breakers
- fast access to the wiring space
- stable accommodation of components to DIN 43 880 in build sizes 1-3
- strain relief of the rear-side cable via cable guard rail

Material:

side panels: aluminium 2.5 mm
 module rail: aluminium profile
 front bracket: aluminium profile

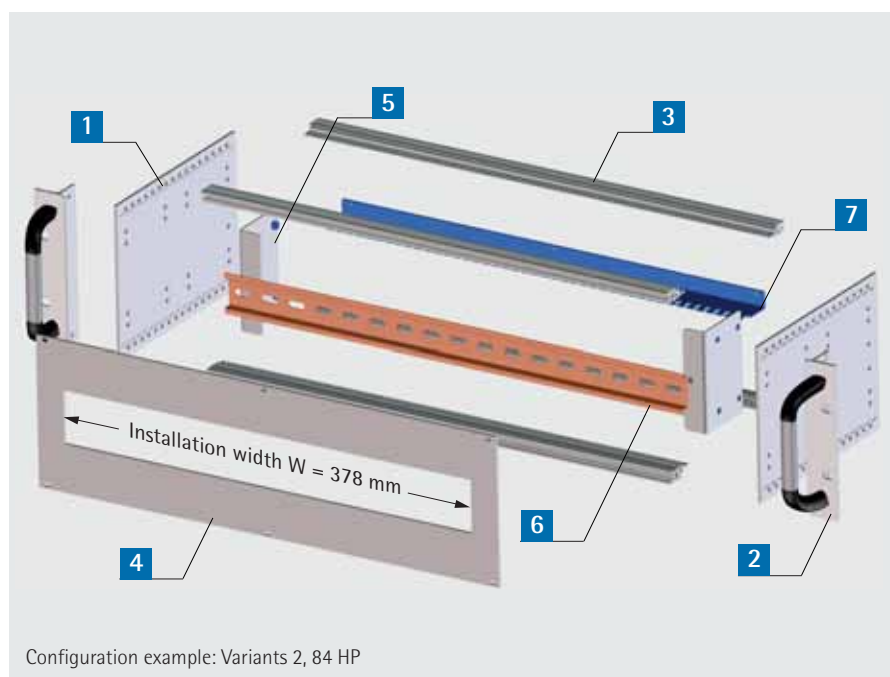
Finish: transparent, chromated

Delivery: assembly set



Sample configuration with cover sheets (special build)

Technical information



Configuration example: Variants 2, 84 HP

Scope of delivery

| Item | Pc. | Description |
|------|-----|----------------------------|
| 1 | 2 | Side panels |
| 2 | 2 | Front bracket with handles |
| 3 | 4 | Module rails |
| 4 | 1 | Front panel |
| 5 | 2 | Angle bracket |
| 6 | 1 | Top hat rail TS 35 |
| 7 | 1 | Cable guard rail |
| 8 | 1 | Mounting hardware |

Order information

| Description | Order no. |
|-------------------------|------------|
| 19" subrack 3 U / 84 HP | 245-311-80 |

Accessories

Cover sheet closed

- for floor and cover mounting

Material: aluminium

| Order no. |
|------------|
| 240-662-85 |

Cover strip S 35 G

- to conceal the front panel openings

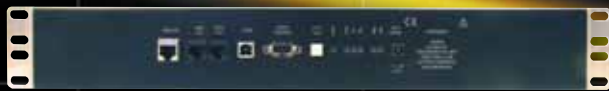
Material: plastic

| Length mm | Order no. |
|-----------|------------|
| 219 | 640-222-00 |



Intelligent PDUs for computer centres

- The electrical energy supply is the most expensive item of all variable costs in the data centre. For this reason alone, one should obtain an overview of consumption using an intelligent PDU. A detailed measurement of energy flows optimises the administration of your data centre and prevents outages due to overload.
- Power Distribution Units (PDUs) are connector strips for installation in server racks. The main task of a PDU is the power distribution within a cabinet. In order to meet the high requirements of data centres, we ensure our products provide maximum quality and high system reliability.



19" Gateway



19" PDU



Product features

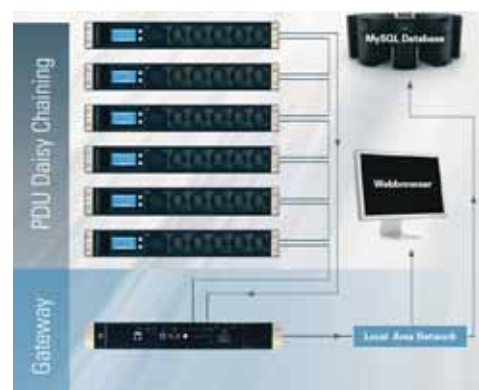
- inputs: one-phase or three-phase, 16A or 32A via CEE-plug
- thermal fuses against overload
- measurement of outbound electric circuits if required
- switching of individual outputs if required
- measurement of power, voltage, output and consumption as well as the internal temperature of the strip and as an option the external temperature in the rack
- illuminated LCD-display on the PDU with the display of all measurement values
- all strips are fitted with a socket for the connection of an external temperature sensor.
- high quality and the use of oversized cabling, adjusted electronics and bistable relays use extremely low amounts of energy. This leads to considerable savings during the life cycle.
- the use of a data bus ensures easy and fast installation. The simple IP connection saves maintenance costs and makes operation much easier and safer.

PDU - vertical installation

Monitoring

- all strips are connected to a data bus for management purposes and "remote monitoring".
- the gateway is the interface between the data bus and a TCP/IP network. This means that you have access to all your PDUs via one single IP-address.

This reduces costs for infrastructure and for security measures.





| Design | Input | Phases Input | Current per phase | Outputs | Measurement input | Measurement per port | Switched outputs | Oder no. |
|--------------------|----------|--------------|-------------------|-------------------------------------|-------------------|----------------------|------------------|------------|
| Gateway | | | | | | | | 591-920-00 |
| Horizontal (19") | 400V 16A | 3 | 16 | 3 x Earthing-pin | X | | | 591-920-01 |
| Vertical | 230V 16A | 1 | 16 | 18 x C13 | X | | | 591-920-02 |
| Vertical | 230V 16A | 1 | 16 | 18 x C13 | X | X | | 591-920-03 |
| Vertical | 230V 16A | 1 | 16 | 18 x C13 | X | | X | 591-920-04 |
| Vertical | 230V 16A | 1 | 16 | 18 x C13 | X | X | X | 591-920-05 |
| Horizontal (19") | 230V 16A | 1 | 16 | 4 x C13, 5 x C19 | X | | | 591-920-06 |
| Horizontal (19") | 230V 16A | 1 | 16 | 4 x C13, 5 x C19 | X | X | | 591-920-07 |
| Horizontal (19") | 230V 16A | 1 | 16 | 4 x C13, 5 x C19 | X | | X | 591-920-08 |
| Horizontal (19") | 230V 16A | 1 | 16 | 4 x C13, 5 x C19 | X | X | X | 591-920-09 |
| Vertical | 230V 32A | 1 | 32 | 4 x Earthing-pin, 12 x C13, 2 x C19 | X | | | 591-920-10 |
| Vertical | 230V 32A | 1 | 32 | 4 x Earthing-pin, 12 x C13, 2 x C19 | X | X | | 591-920-11 |
| Vertical | 230V 32A | 1 | 32 | 4 x Earthing-pin, 12 x C13, 2 x C19 | X | | X | 591-920-12 |
| Vertical | 230V 32A | 1 | 32 | 4 x Earthing-pin, 12 x C13, 2 x C19 | X | X | X | 591-920-13 |
| Vertical | 400V 16A | 3 | 16 | 3 x Earthing-pin, 18 x C13 | X | | | 591-920-14 |
| Vertical | 400V 16A | 3 | 16 | 3 x Earthing-pin, 15 x C13 | X | X | | 591-920-15 |
| Vertical | 400V 16A | 3 | 16 | 3 x Earthing-pin, 15 x C13 | X | | X | 591-920-16 |
| Vertical | 400V 16A | 3 | 16 | 3 x Earthing-pin, 15 x C13 | X | X | X | 591-920-17 |
| Vertical | 400V 16A | 3 | 16 | 1 x Earthing-pin, 8 x C19 | X | | | 591-920-18 |
| Vertical | 400V 16A | 3 | 16 | 1 x Earthing-pin, 8 x C19 | X | X | | 591-920-19 |
| Vertical | 400V 16A | 3 | 16 | 1 x Earthing-pin, 8 x C19 | X | | X | 591-920-20 |
| Vertical | 400V 16A | 3 | 16 | 1 x Earthing-pin, 8 x C19 | X | X | X | 591-920-21 |
| Vertical | 400V 16A | 3 | 16 | 3 x Earthing-pin, 3 x C19, 21 x C13 | X | | | 591-920-22 |
| Vertical | 400V 16A | 3 | 16 | 3 x Earthing-pin, 3 x C19, 21 x C13 | X | X | | 591-920-23 |
| Vertical | 400V 16A | 3 | 16 | 3 x Earthing-pin, 3 x C19, 21 x C13 | X | | X | 591-920-24 |
| Vertical | 400V 16A | 3 | 16 | 3 x Earthing-pin, 3 x C19, 21 x C13 | X | X | X | 591-920-25 |
| Vertical | 400V 32A | 3 | 32 | 3 x Earthing-pin, 24 x C13 | X | | | 591-920-26 |
| Vertical | 400V 32A | 3 | 32 | 3 x Earthing-pin, 24 x C13 | X | X | | 591-920-27 |
| Vertical | 400V 32A | 3 | 32 | 3 x Earthing-pin, 24 x C13 | X | | X | 591-920-28 |
| Vertical | 400V 32A | 3 | 32 | 3 x Earthing-pin, 24 x C13 | X | X | X | 591-920-29 |
| Vertical | 400V 32A | 3 | 32 | 1 x Earthing-pin, 2 x C13, 15 x C19 | X | | | 591-920-30 |
| Vertical | 400V 32A | 3 | 32 | 1 x Earthing-pin, 2 x C13, 15 x C19 | X | X | | 591-920-31 |
| Vertical | 400V 32A | 3 | 32 | 1 x Earthing-pin, 2 x C13, 15 x C19 | X | | X | 591-920-32 |
| Vertical | 400V 32A | 3 | 32 | 1 x Earthing-pin, 2 x C13, 15 x C19 | X | X | X | 591-920-33 |
| Temperature sensor | | | | | | | | 591-920-34 |

Further configurations available on request!





apra power system network-enabled PDUs

Professional high-quality multiple socket strips

The strips measure electrical parameters and the on/off switching of the individual outputs via an integrated ethernet connection.

Material: aluminium

Dimensions (H x W x D):
44.4 (1U) x 438 x 130 mm

Scope of delivery:
PDU, 19" mounting bracket,
supply line: 3 metre H05VV-F
3G2,5 mm² with Earthing-pin plug 16A

Switchable metered PDU

Individually switchable sockets with switching in the zero passage and additional switching status control. The PDU has an integrated ethernet connection and can therefore be easily operated via a web browser.

The following protocols are supported, amongst others: HTTP, HTTPS, SNMP, SMTP, NTP, SSH, SNMP V2 und V3, Modbus TCP, IPv4 und IPv6



Example with 19" mounting bracket

| Description | Order no. |
|-------------------|------------|
| 8-way IEC 320 C13 | 591-920-41 |



Monitored PDU

Integrated measurement of: power, active power, voltage, frequency, $\cos \phi$ and energy.

All values can be read on the integrated, illuminated OLED display.

The PDU has an integrated ethernet connection and can therefore be easily operated via a web browser.

The following protocols are supported, amongst others: HTTP, HTTPS, SNMP, SMTP, NTP, SSH, SNMP V2 und V3, Modbus TCP, IPv4 und IPv6

| Description | Order no. |
|--------------------|------------|
| 8-way Earthing-pin | 591-920-42 |
| 8-way IEC 320 C13 | 591-920-43 |



Retrofit module for existing systems

In order to also exploit all the benefits of a monitored power distribution on existing racks, the retrofit module offers the option of integrating an intelligent component into an existing system. The installation work and costs are greatly minimised by the pluggable system.

Integrated measurement of: power, active power, voltage, frequency, $\cos \phi$ and energy.

All values can be read on the integrated, illuminated OLED display.

The PDU has an integrated ethernet connection and can therefore be easily operated via a web browser.

The following protocols are supported, amongst others: HTTP, HTTPS, SNMP, SMTP, NTP, SSH, SNMP V2 und V3, Modbus TCP, IPv4 und IPv6



| Description | Connection mm | Order no. |
|-------------|-----------------|------------|
| 400V / 16A | CEE plug-socket | 591-920-47 |
| 400V / 32A | CEE plug-socket | 591-920-48 |

Further models available on request!



19"-Line Interactive VFI-SS-3111 1000, 1500, 2000, 3000 VA

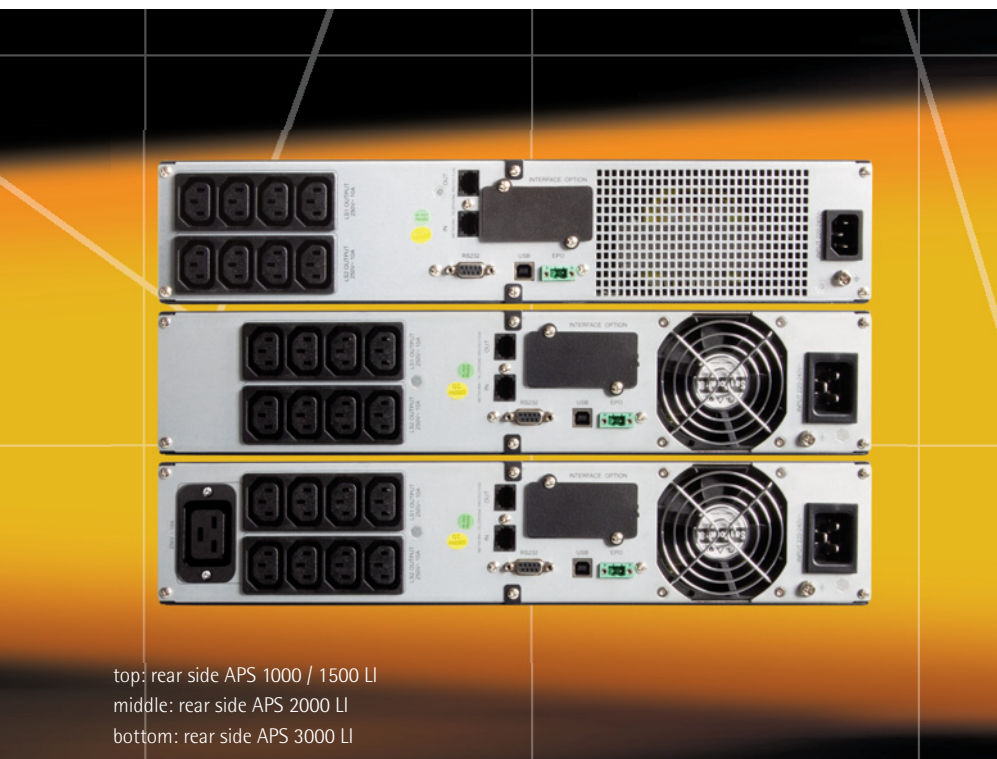
Its RackTower housing and the rotating LCD display allow both the use as a tower unit as well as installation in 19" cabinets.

The series is equipped with RS-232, USB and emergency contacts as standard. The card slot can be equipped with additional communications cards like a SNMP adapter or a relay card.

All models offer at least 8 IEC C13 (10A) Consumer outputs.

The 3000 VA model additionally provides a 16 ampere IEC C19 output.

- UPS-classification VI-SS-311 (IEC 62040-3)
- Line-interactive-technology
- Excellent power factor of 0.9
- High efficiency (> 97%)
- Expandable external battery packs
- "RackTower" can be used both as a standalone unit, as well in a 19" rack mount cabinet
- Huge input voltage range
- User-friendly LCD display with back-light depending on the operating condition
- Sine wave output
- Automatic frequency detection
- Equipped with RS-232 and USB port as standard
- Slot for optional adapters: relay-card or SNMP
- Software-Suite for UPS Management in almost all current operating systems
- 36 months' warranty



top: rear side APS 1000 / 1500 LI
middle: rear side APS 2000 LI
bottom: rear side APS 3000 LI



| | APS 1000 LI | APS 1500 LI | APS 2000 LI | APS 3000 LI |
|--|---|-----------------------------|-------------------|--|
| Power VA / Watt | 1000 / 900 | 1500 / 1350 | 2000 / 1800 | 3000 / 2700 |
| Power failure bridging time Load 100% / 50% | 4,5 min / 10 min | 3 min / 7 min | 4,5 min / 10 min | 3 min / 7 min |
| Input | | | | |
| - Nominal voltage / voltage range | 230 VAC / 161 ~ 276 VAC | | | |
| - Input frequency range | 50/60 Hz normal operation / 40-70 Hz generator operation | | | |
| - Boost threshold | 207 VAC ± 4% / 215 VAC ± 4% (setup 230 VAC Wide Range) | | | |
| - Undervoltage threshold | 161 VAC ± 4% / 171 VAC ± 4% (setup 230 VAC Wide Range) | | | |
| - Voltage return threshold | 243 VAC ± 4% / 236 VAC ± 4% (setup 230 VAC Wide Range) | | | |
| - Overvoltage threshold | 276 VAC ± 4% / 266 VAC ± 4% (setup 230 VAC Wide Range) | | | |
| Output | | | | |
| - Output voltage | 220, 230, 240 VAC | | | |
| - Voltage tolerance (Battery Mode) | ± 5% RMS | | | |
| - THD(i) typical linear/non-linear load | < 3% THD / < 6% THD | | | |
| - Frequency tolerance synchronization range | 45-55 Hz / 55-65 Hz | | | |
| - Frequency tolerance Battery Mode | 50 / 60 ± 0,1 Hz | | | |
| - Power factor | 0,9 | | | |
| - Voltage waveform | sinusoidal | | | |
| - Efficiency | > 97 % (normal operation, loaded batteries) | | | |
| DC Start | black start | | | |
| Switch time | typical, 2 ~ 6 ms | | | |
| Batteries | | | | |
| - Nominal voltage | 36 VDC | 72 VDC | | |
| - Type | closed, maintenance-free lead-mat battery | | | |
| - Charging time | approx. 3 h to 90% | | | |
| Display | | | | |
| - LCD | rotary LCD display | | | |
| - LCD backlight | Normal (blue) / Fault (red) | | | |
| Interface | RS232, USB, EPO, Card slot for optional SNMP / relay card | | | |
| Audible alarm | | | | |
| - Battery mode / Battery Low | Beeping every 4 seconds / Beeping every second | | | |
| - USV fault / overload | Beep continuously / Beeping every second | | | |
| Environment | | | | |
| - Temperature | 0°C - 40°C | | | |
| - Humidity | 0-95% non-condensing | | | |
| - Acoustic noise | < 50 dB(A) @ 1 Meter | | | |
| Mechanic | | | | |
| - Dimensions (H x W x D in mm) | 86,5 (2U) x 438 (19") x 430 | 86,5 (2U) x 438 (19") x 600 | | |
| - Weight | 16 kg | 29,5 kg | | |
| - Degree of protection | IP 20 | | | |
| Terminals | | | | |
| - Input | 1 x IEC (10A) | 1 x IEC (16A) | | |
| - Output | 8 x IEC C13 (10A) | | | 8 x IEC C13 (10A) + 1 x IEC C19 (16A) |
| Regulations / standards | CE / EN 62040-1 / EMC: EN 62040-2 class C1 | | | |
| Order no. | 235-300-02 | 235-300-03 | 235-300-04 | 235-300-05 |



19" online continuous transducer VFI-SS-111

700, 1000, 1500, 2000, 3000 VA

High-end USV model in the field of high-quality microprocessor-based on-line double conversion UPS's for your IT environment or metrology and industrial plants. The Racktower USV is already equipped with extensive and specific features, which are usually provided in the UPS market by most expensive special UPSs. The programmable switch contacts, or the adjustable restart function are just two of countless examples. .

The series can be used as 19" rack mount 2U device in any standard 19" rack after attaching the included 19" mounting angles. To make this possible, the clear LCD display can be rotated by 90°.

With existing standard RS232 and USB interface as well as standard emergency contact (EPO) and individually programmable dry contacts (DRY IN / OUT DRY) the series provides extraordinarily extensive communication and control. And yet even this can be extended by additional optional adapter slot (SNMP, relay card).



- UPS Classification VFI-SS-111 (IEC 62040-3)
- Online double conversion with sinusoidal output switchable to ECO mode (line interactive)
- Excellent power factor of 0.9
- Can be used as tower as well as 19"-unit
- User-friendly swivel LCD display
- XL models available with expandable batteries
- Wide input voltage range (120-276VAC)
- Microprocessor controlled
- Automatic frequency detection
- Output frequency preset (frequency converter function)
- RS-232 as standard
- USB as standard
- Programmable switch contacts as standard
- Emergency power-off as standard
- Slot for another optional adapter: Relay board or SNMP
- Management software for all popular OS
- 36 months' warranty

top: rear side APS 1000 - 2000 OD
bottom: rear side APS 3000 OD



| | APS 1000 OD | APS 1500 OD | APS 2000 OD | APS 3000 OD |
|---|---|-------------------|---|-------------------------------------|
| Power VA / Watt | 1000 / 900 | 1500 / 1350 | 2000 / 1800 | 3000 / 2700 |
| Power failure bridging time 100% / 50 % load (pf0,7) | 7 min / 15 min | 5 min / 15 min | 5 min / 15 min | 7 min / 20 min |
| Input | | | | |
| - Cold start | yes, preset frequency = 50 Hz | | | |
| - Acceptable voltage range | 120 VAC - 276 VAC | | | |
| - THDi | < 5 % full load | | | |
| - Input Power Factor | ≥ 0,99 (Full RCD LOAD) | | | |
| - Input frequency range | 45 - 55 Hz / 54 - 66 Hz | | | |
| Output | | | | |
| - Output voltage | | | | |
| - Voltage waveform | Sinus | | | |
| - Nominal voltage | 208 VAC / 220 VAC / 230 VAC / 240 VAC / ± 1 % | | | |
| - Transient recovery | 100 ms (IEC 62040-3 non-linear load) | | | |
| - Distortion factor | < 2% THD, linear load / < 5 % THD, non-linear load | | | |
| - Output frequency | | | | |
| - Synchronization range | 45 - 55 Hz / 54 - 66 Hz (adjustable) | | | |
| - Battery operation | 50 / 60 ± 0,2 Hz | | | |
| Power Factor | 0,9 | | | |
| Efficiency at full load | | | | |
| - Line mode | > 89 % with loaded batteries | | | |
| - Battery mode | > 84 % @ 12 VDC / Battery | | | |
| - ECO mode | > 95 % | | | |
| Overload (Normal/Battery) | 102 % ~ 130 % : 12s / 130 % ~ 150 % : 1,5s / > 150 % :100 ms | | | |
| Battery | | | | |
| - Battery type | 12 VDC / 7 Ah (closed, maintenance-free lead-mat battery) | | 12 VDC / 9 Ah (closed, maintenance-free lead-mat battery) | |
| - Number of blocks | 3 | 4 | 4 | 6 |
| - DC voltage | 36 VDC | 48 VDC | 48 VDC | 72 VDC |
| - Charging time | < 3 h for 90% | | | |
| - Maximum charge current | 1,5 A | | | |
| Communication integrated / Optional cards | RS 232, USB, switch contacts, EPO / Intelligent Slot for AS 400, SNMP | | | |
| Indicator / Alarm | rotary LCD display / acoustic alarm | | | |
| Ambient conditions | | | | |
| - Temperature (operating) | 0°C - 40°C | | | |
| - Humidity | 0-95% non-condensing | | | |
| - Noise level | ca. 52 dB(A) @ 1 Meter | | | |
| Mechanical | | | | |
| - Dimensions (H x W x D in mm) | (2U) x (19") x 435 | | | (2U) x (19") x 604 |
| - Weight | 13,2 kg | 19,7 kg | 19,7 kg | 27,8 kg |
| - Degree of protection | IP 20 | | | |
| Connection input | 1 x IEC (10A) | | | 1 x IEC (16A) |
| Connection output | 8 x IEC 13 (10A) | | | 8 x IEC 13 (10A) + 1 x IEC 19 (16A) |
| Standards | CE / EN 62040-1 / EMV: EN 62040-2 class C1 | | | |
| Order no. | 235-300-07 | 235-300-08 | 235-300-09 | 235-300-10 |



Service

Guarantee success with a unique combination of our individual products!

Contact us and we will be happy to advise you.



Cooling technology



Cabinet technology



Power distribution system



| | | | | |
|---|---|-----------|-----|---|
|  | 19" TiRAX cabinet system | from page | 3 |  |
|  | 19" NETcell cabinet system | from page | 31 |  |
|  | Open 19" racks | from page | 43 |  |
|  | Wall-mounting/stand-alone distribution systems | from page | 53 |  |
|  | Wall-mounting enclosure systems | from page | 63 |  |
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You can read more about products from the apra-group at www.apra-norm.com



www.apranet.de

**“Box” design
Cabinet monitoring and shutdown
via network**

- modular system assembly via CAN-BUS
- connecting cables between the modules (BUS) up to 1000 metres
- all activities can be tracked and controlled online using ethernet or SNMP
- up to 100 extension modules can be managed with one communication module.
- software is free and is included in the scope of delivery.

Material:
enclosure: sheet metal

Finish:
RAL 7035 light grey

Dimensions (H x W x D):
32 mm x 135 mm x 229 mm

Communication module

| |
|------------------|
| Order no. |
| 235-100-41 |

Modules for extension

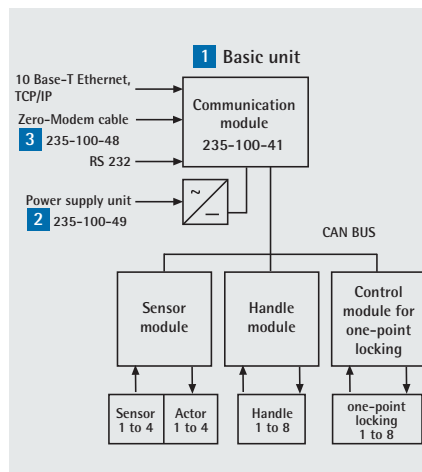
Sensor module (box)

This module is designed to record and evaluate various environmental conditions such as temperature, humidity, ground motion, etc. Up to four sensors can be connected to the analogue inputs.

The four relay outputs can be switched depending on the sensor input values.

Different limit values can be programmed for each sensor and the required countermeasures or alarm functions can be activated with the relay outputs.

| |
|------------------|
| Order no. |
| 235-100-42 |



2 Connected power supply unit



- 12V/DC 500 mA

| |
|------------------|
| Order no. |
| 235-100-49 |

Handle module for 8 handles (box)

This module can drive up to 8 handle systems with a triggering magnet component and read in the 8 handle contacts. This module has a special voltage conditioning unit to provide the energy required to spring open the locking mechanisms.

| |
|------------------|
| Order no. |
| 235-100-52 |

Control module for 8 one-point lockings (box)

This module can drive up to 8 one-point lockings and read in the 8 status contacts.

| |
|------------------|
| Order no. |
| 235-100-53 |

Handle module for 2 handles (box)

This module can drive up to 2 handle systems with a triggering magnet component and read in the 2 handle contacts. This module has a special voltage conditioning unit to provide the energy required to spring open the locking mechanisms.

| |
|------------------|
| Order no. |
| 235-100-43 |

Control module for 2 one-point lockings (box)

This module can drive up to 2 one-point lockings and read in the 2 status contacts.

| |
|------------------|
| Order no. |
| 235-100-54 |



Sensors and operating modules for 19" and box system

Keypad operating unit with RJ11 connector



- used to address a door in the system and to open it with an access code

| |
|------------------|
| Order no. |
| 235-100-76 |

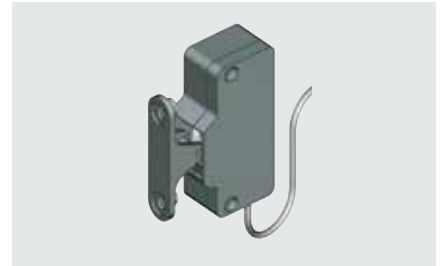
Locking mechanism with reed contact for integration of turning lever lock



- magnet component for integration in handle systems
 - the handle is opened and its status (open or closed) is passed on
- Standard wire length:** 3 m

| |
|------------------|
| Order no. |
| 235-100-78 |

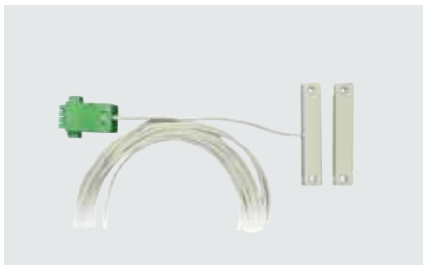
One-point locking with reed contact



- for individual use in virtually all enclosures
- the door is opened and its status (open or closed) is passed on

| |
|------------------|
| Order no. |
| 235-100-80 |

Door switch as flat reed contact



- status of doors can be monitored

Standard wire length: 3 m

| |
|------------------|
| Order no. |
| 235-100-82 |

Air conditioning sensor



- measures both the humidity and the temperature of the environment
- **humidity measurement range:** 0-100 % relative humidity
- **temperature measurement range:** -20 °C to +80 °C

Standard wire length: 2 m

| |
|------------------|
| Order no. |
| 235-100-86 |

Temperature sensor



- **temperature measurement range:** -50 °C to +150 °C

| |
|------------------|
| Order no. |
| 235-100-87 |

Optical smoke detector



- VdS recognition G29219

Standard wire length: 3 m

| |
|------------------|
| Order no. |
| 235-100-84 |

3 Zero-modem cable



- dataline for configuring the system

| |
|------------------|
| Order no. |
| 235-100-48 |



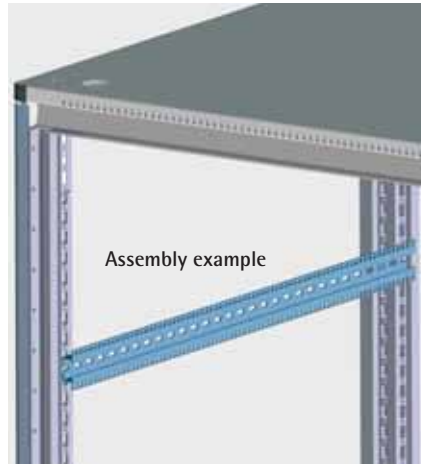
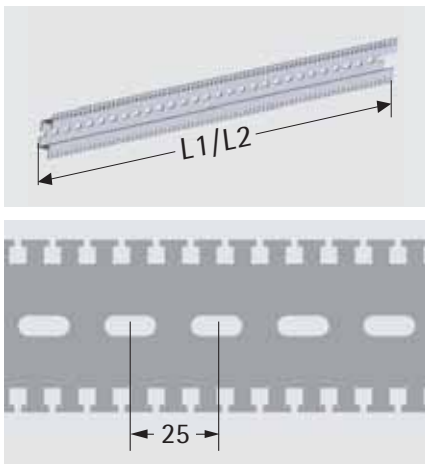
| | | | | |
|---|---|-----------|------------|---|
|  | 19" TiRAX cabinet system | from page | 3 |  |
|  | 19" NETcell cabinet system | from page | 31 |  |
|  | Open 19" racks | from page | 43 |  |
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| | General accessories/ distribution technology | from page | 123 |  |



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"Universal" cable guard rail

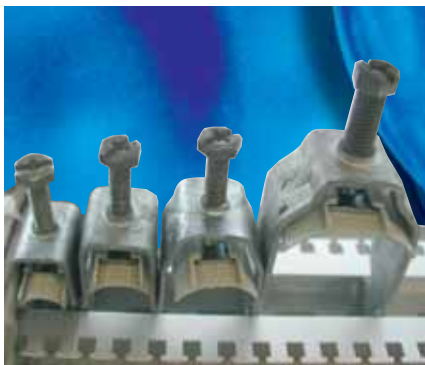


- with integrated cable management bracket
- holds cable ties and cable clips in place

Material: aluminium, anodised
Scope of delivery: includes mounting material

| Version | Order no. |
|-------------|------------|
| L1 (520 mm) | 318-121-10 |
| L2 (720 mm) | 318-121-11 |

Cable clamps



- to mount cables on the "Universal" cable guard rail

| Size for cable Ø mm | Order no. |
|---------------------|------------|
| 8-12 | 640-132 |
| 12-16 | 640-133 |
| 16-22 | 640-134 |
| 28-34 | 640-134-10 |

"Universal" velcro strip



- for quickly securing **non 19"-compatible** components
- Length: 400 mm, width: 20 mm
- back to back mounting
- set = 10 pieces

Material: velcro, black

| Order no. (set) |
|-----------------|
| 671-122-04 |

"Universal" velcro mount

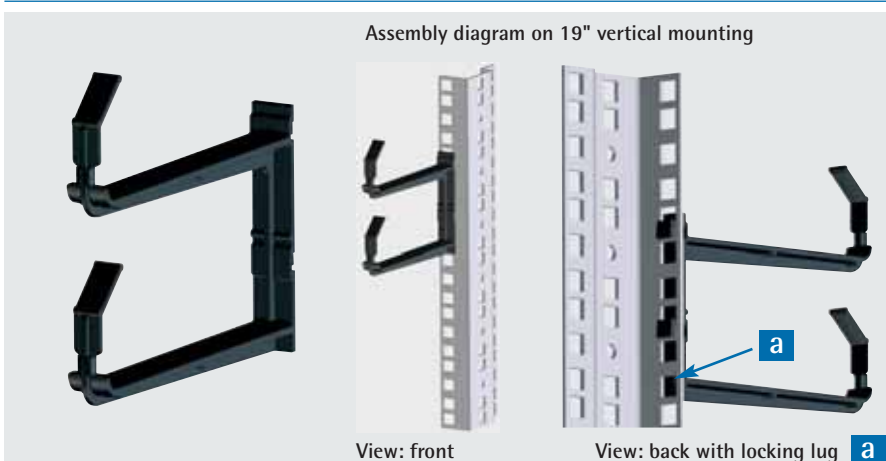


- velcro mount used to accommodate velcro up to w=20 mm
- set = 10 pieces

Material: plastic

| Order no. (set) |
|-----------------|
| 583-001-08 |

"Universal" cable clip set



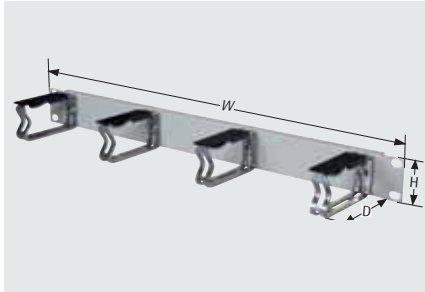
- to clip into 19" standard vertical mounting
- set = 10 pieces

Material: plastic

| Order no. (set) |
|-----------------|
| 640-030-35 |



19" cable routing panel with metal clamps 1 U/2 U



- for clear and neat horizontal cable routing in the 19" level
- including 4 cable hoops and lockings

Finish: painted/chrome-plated
RAL 7035 light grey
RAL 9005 jet black

Material: sheet metal/metal

Dimensions (H x W x D):

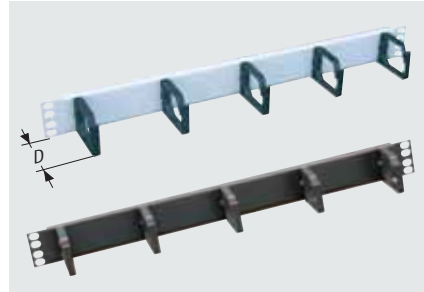
44/88 x 482,6 x 90/130 mm

Scope of delivery:

complete with mounting material

| U | RAL 7035 | RAL 9005 |
|---|------------|------------|
| 1 | 213-145-41 | 213-145-42 |
| 2 | 213-145-43 | 213-145-44 |

19" cable routing panel with plastic clamps 1 U



- for clear and neat horizontal cable routing in the 19" level
- clips: Version, narrow

Finish:

RAL 7035 light grey

RAL 9005 jet black

Material: sheet metal/plastic

Dimensions (H x W x D):

44 x 482.6 x 60 mm

Scope of delivery:

complete with mounting material

| U | RAL 7035 | RAL 9005 |
|---|------------|------------|
| 1 | 213-145-00 | 213-145-30 |

19" switch panel, plastic 1 U



- for clear and neat horizontal cable routing in the 19" level
- weight-saving in comparison to traditional metal panels
- fire protection classification to UL94 V-0

Finish: black (similar to RAL 9005)

Material: plastic (polyamide)

Dimensions (H x W x D):

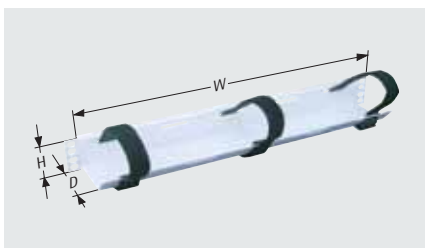
44 x 482.6 x 60 mm

Scope of delivery:

complete with mounting material

| Order no. |
|------------|
| 213-145-80 |

19" cable routing panel 1 U with Velcro fasteners



- for clear and neat horizontal cable routing in the 19" level with Velcro fastener

Finish:

RAL 7035 light grey

RAL 9005 jet black

Material: sheet metal/plastic

Dimensions (H x W x D):

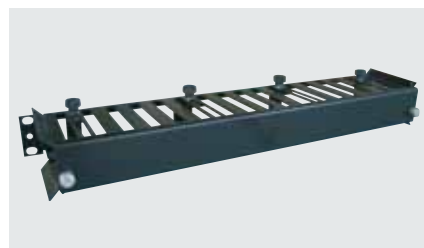
44 x 482.6 x 90 mm

Scope of delivery:

complete with 3 x Velcro strip and mounting material

| U | RAL 7035 | RAL 9005 |
|---|------------|------------|
| 1 | 213-161-00 | 213-161-10 |

19" cable routing panel with cover panels 1 U / 2 U



- for clear and neat covered cable routing in the 19" level
- with adjustment options
- removable front panel

Finish:

RAL 7035 light grey

RAL 9005 jet black

Material: sheet steel

Dimensions (H x W x D):

44/88 x 482.6 x 100 mm

Scope of delivery:

complete with mounting material

| U | RAL 7035 | RAL 9005 |
|---|------------|------------|
| 1 | 213-145-65 | 213-145-95 |
| 2 | 213-145-68 | 213-145-98 |

19" cable duct 1 U with brush and strain-relief comb



- for cable entry with brush

Finish:

RAL 7035 light grey

RAL 9005 jet black

Material: sheet metal/plastic

Dimensions (H x W x D):

44 x 482.6 x 12 mm

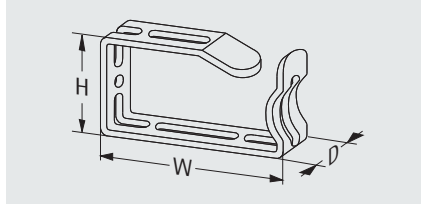
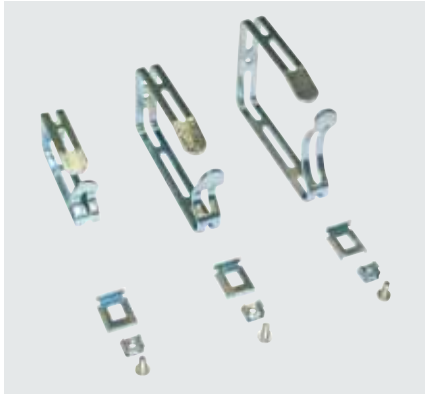
Scope of delivery:

complete with brush and mounting material

| U | RAL 7035 | RAL 9005 |
|---|------------|------------|
| 1 | 213-146-00 | 213-146-10 |



Cable clips, metal

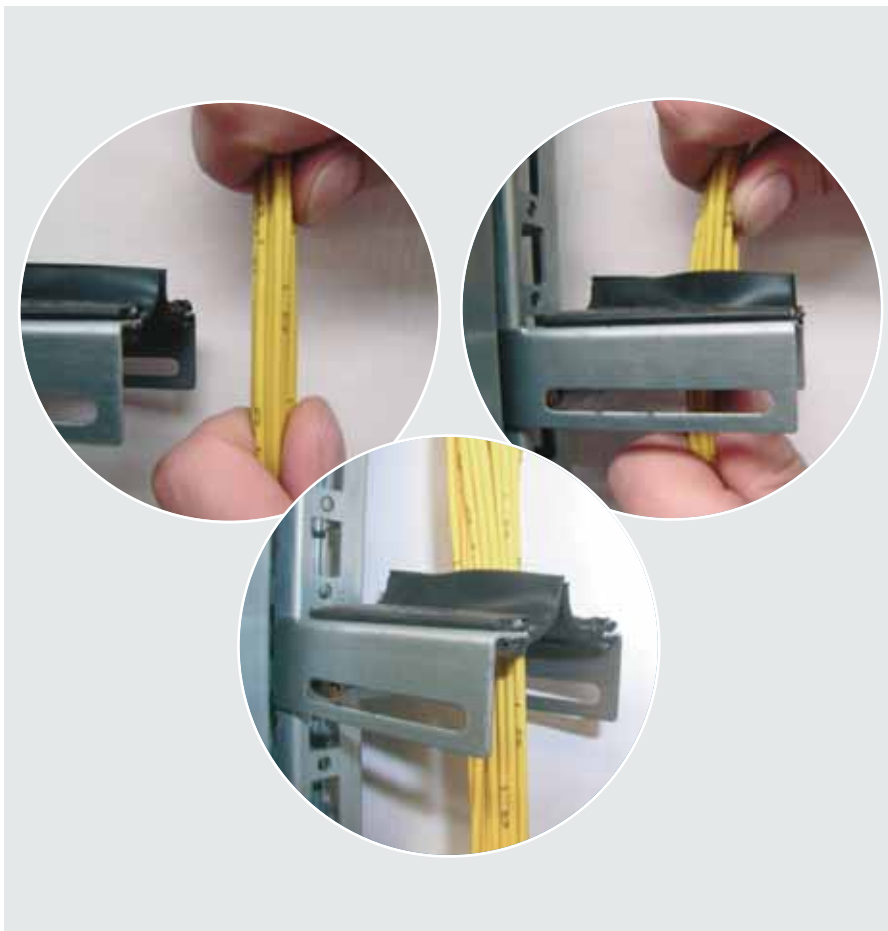


- for securing cables vertically to a 19" rack (for 800 mm wide cabinets)
- set = 10 pieces

Scope of delivery: includes mounting material

| Design | Dimensions (H x W x D) mm | Order no. (set) |
|--------|---------------------------|-----------------|
| Size 1 | 44 x 85 x 23 | 640-036-11 |
| Size 2 | 66 x 125 x 23 | 640-036-12 |
| Size 3 | 88 x 125 x 23 | 640-036-13 |

"Easyfix" cable holder



- quick, clear and protective holders for vertical cabling in the rack
- preferred application for fibre optic cables

| |
|------------------|
| Order no. |
| 640-036-15 |

Cable tray









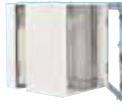













- for vertical cable routing in racks
- fixing option for cable clamps, sizes 1, 2 and 3
- three cable bundles can be routed separately, e.g. power cords, patch cables and fibre optic cables

Finish: RAL 9005 jet black

Dimensions (H x W): 2 m x 250 mm

| |
|------------------|
| Order no. |
| 318-101-26 |



| | | | | |
|---|---|-----------|-----|---|
|  | 19" TiRAX cabinet system | from page | 3 |  |
|  | 19" NETcell cabinet system | from page | 31 |  |
|  | Open 19" racks | from page | 43 |  |
|  | Wall-mounting/stand-alone distribution systems | from page | 53 |  |
|  | Wall-mounting enclosure systems | from page | 63 |  |
|  | Air conditioning technology | from page | 77 |  |
|  | Power distribution system | from page | 85 |  |
|  | Cabinet monitoring | from page | 101 |  |
| | Cable management | from page | 105 |  |
|  | Workstation systems | from page | 109 |  |
| | General accessories/ distribution technology | from page | 123 |  |

You can read more about products from the
apra-group at www.apra-norm.com



Workstation systems



LAN-Office

from page 111

- ergonomics at the workstation
- optimised cable management
- optional 19" modules
- individually configurable
- extendable as required

Standing workstation

Page 117

- elegant design
- work surface 712 × 800 mm
- rear cable entry point
- also supplied as 19" stand-alone distribution system

Computer cabinet TiRAX

Page 118

- practical features
- flexible internal structure (e.g. 19" extension)
- protection class IP 54



"Silent" underbench cabinet

Page 120

- sound-insulating enclosure with viewing door
- detachable side panels
- 19" extension 12 U variable depth



Customer-specific workstation systems and enclosures

Page 122

- we develop optimum workstation system solutions to suit your requirements
- or we manufacture in accordance with your existing drawings





Ergonomics at the workstation



Sample configuration example in standard colour

Versatile shelves

The shelves of the LAN Office workstation system are versatile in their use:

- for horizontal storage



- as a tilted storage shelf



- as a footprint for devices such as Tower PCs etc.



Features

LAN-Office - the convincing programme for ergonomics at the workstation offers you individual solutions for your specific requirements.



Optimised cable management

not visible from the front
direct rear access



Sophisticated additional components

retractable keyboard plug-in unit
and much more



19" modules

ensure the accommodation of the
19" technology elements

LAN Office Workstation System

- integrated cable entry
- optional 19" modules
- versatile accessories
- unlimited extension

Material:

Rack: sheet metal
Desktop: chipboard "E1" with
HPL plastic coating

Finish:

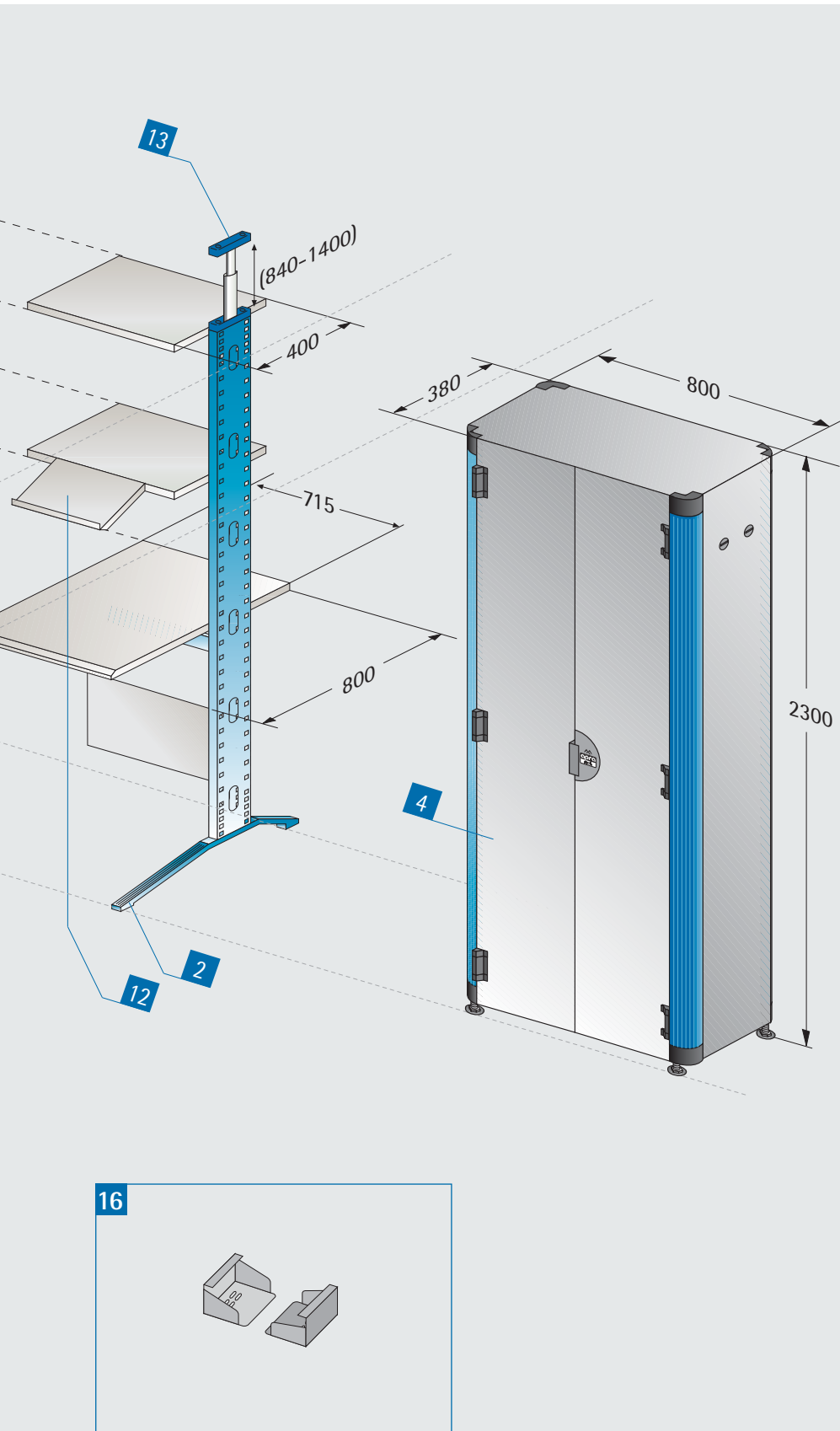
desktop and shelves
RAL 7035 light grey
vertical mountings:
RAL 7037 dusty grey

Delivery:

unassembled, includes mounting
instructions



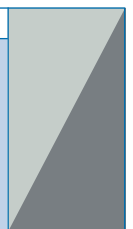
Select the LAN Office components you want step by step:



| Item | Description | Page |
|------|---|------|
| 1 | Basic rack | 114 |
| 2 | Connector rack | 114 |
| 3 | Corner rack | 115 |
| 4 | Office/filing cabinet | 115 |
| 5 | Shelves | 116 |
| 6 | Shelves for corner rack | 116 |
| 7 | Shelf set | 116 |
| 8 | Footrest | 116 |
| 9 | Shelf bracket | 116 |
| 10 | Cable duct under the desktop (in the scope of delivery) | |
| 11 | Cable duct, hook-in (in the scope of delivery) | |
| 12 | Keyboard storage, hook-in | 116 |
| 13 | Telescopic cover bracket | 116 |
| 14 | Keyboard plug-in unit | 116 |
| 15 | 19" module for 4 U | 116 |
| 16 | Slide rails for 19" module | 116 |

Finish:

desktop and shelves,
sash doors, cover panels
and floor panels:
RAL 7035 light grey
vertical struts:
RAL 7037 dusty grey



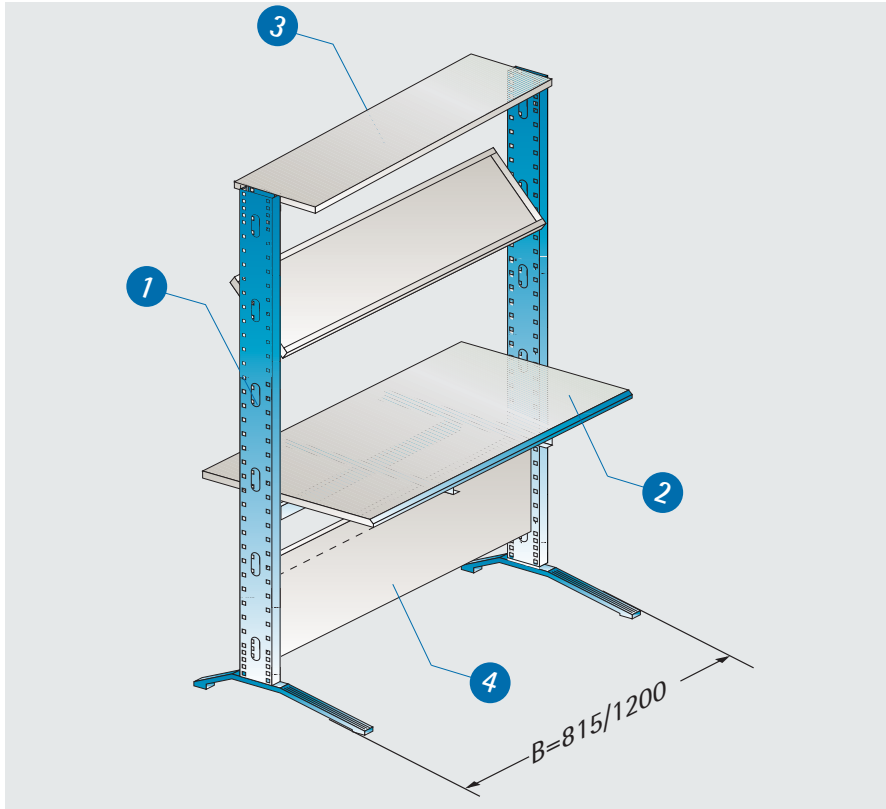
Delivery:

unassembled, includes assembly instructions



• 585 LAN Office Workstation System

1 LAN-Office Basic Rack



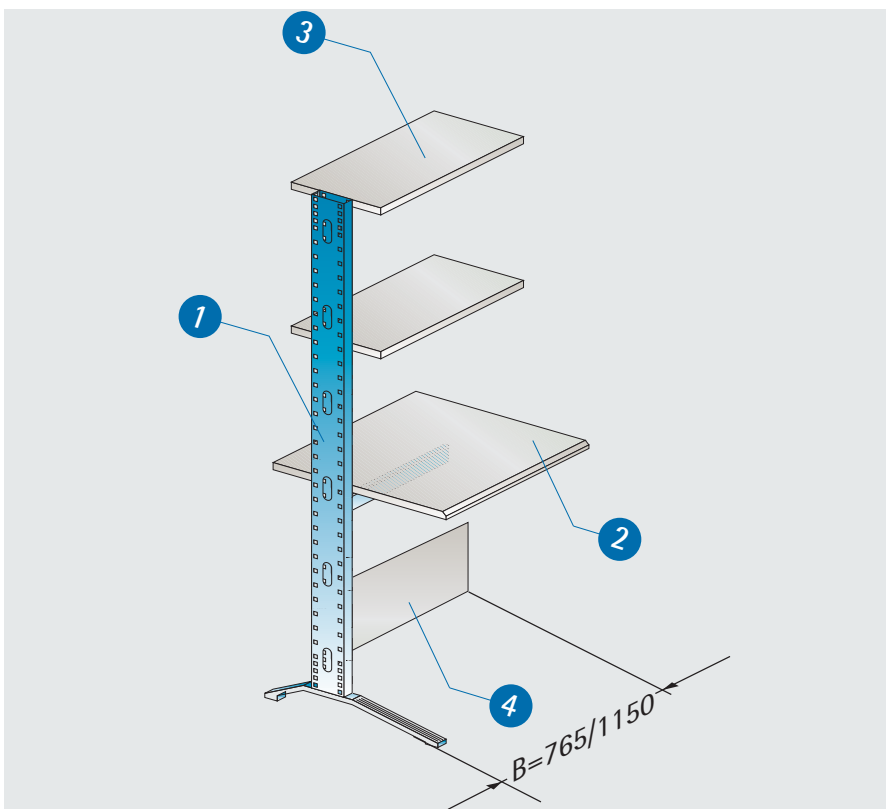
Scope of delivery

| Item | Pc. | Description |
|------|-----|---|
| 1 | 2 | Vert. mounting with feet |
| 2 | 1 | Desktop 800 mm deep |
| 3 | 2 | Shelves 400 mm deep |
| 4 | 1 | Shelf underneath mounted vertically |
| 5 | 1 | Cable duct under the desktop (without fig.) |
| 6 | 1 | Cable duct, hook-in (without fig.) |
| 7 | 1 | Mounting material |

Order information

| Dimensions (H x W x D) mm | Order no. |
|---------------------------|------------|
| 1800 x 1200 x 800 | 585-001-50 |
| 1800 x 815 x 800 | 585-002-50 |

2 LAN-Office Connector Rack



Scope of delivery

| Item | Pc. | Description |
|------|-----|---|
| 1 | 1 | Vert. mounting with feet |
| 2 | 1 | Desktop 800 mm deep |
| 3 | 2 | Shelves 400 mm deep |
| 4 | 1 | Shelf underneath mounted vertically |
| 5 | 1 | Cable duct under the desktop (without fig.) |
| 6 | 1 | Cable duct, hook-in (without fig.) |
| 7 | 1 | Mounting material |

Order information

| Dimensions (H x W x D) mm | Order no. |
|---------------------------|------------|
| 1800 x 1150 x 800 | 585-003-50 |
| 1800 x 765 x 800 | 585-004-50 |

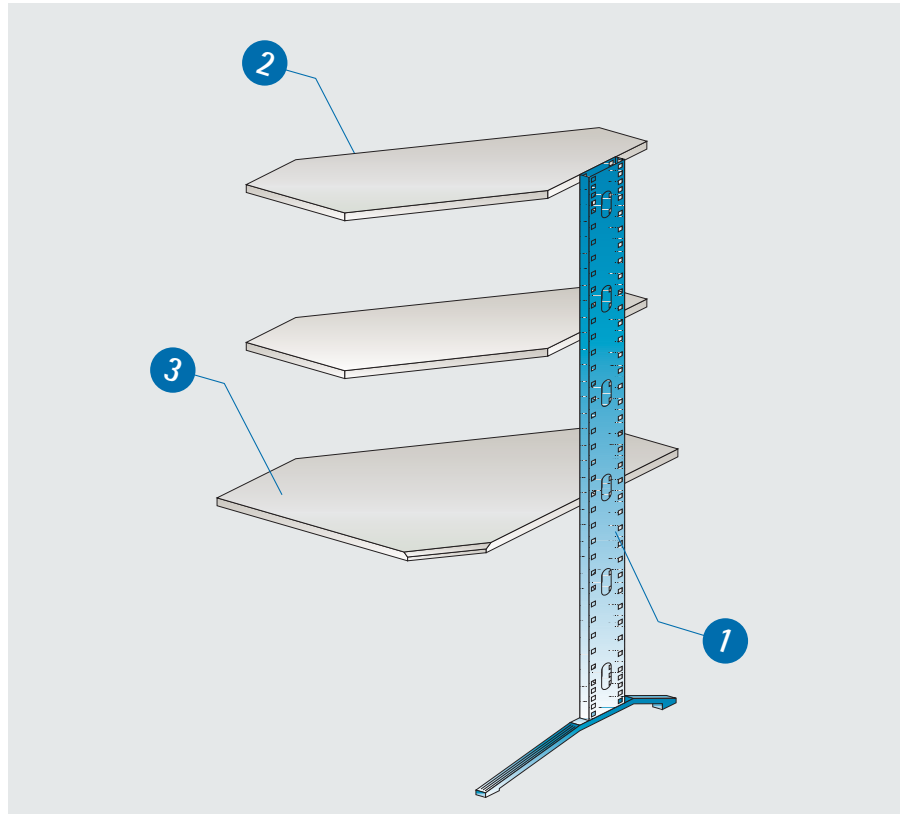


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3 LAN-Office Corner Rack

Scope of delivery

| Item | Pc. | Description |
|------|-----|--|
| 1 | 1 | Vert. mounting with feet |
| 2 | 2 | Shelves for corner rack |
| 3 | 1 | Corner desktop |
| 4 | 1 | Cable duct under the corner desktop (without fig.) |
| 5 | 1 | Mounting material |



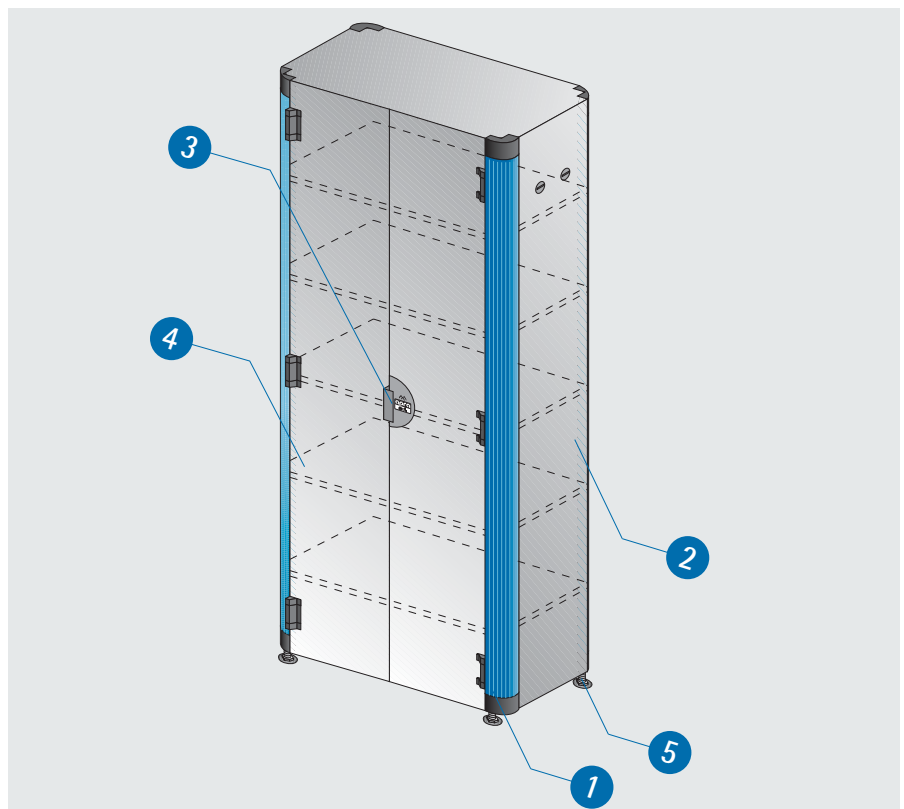
Order information

| Dimensions | Order no. |
|------------|------------|
| H mm | |
| 1800 | 585-005-50 |

4 Office/filing cabinet

Scope of delivery

| Item | Pc. | Description |
|------|-----|---|
| 1 | 1 | Cabinet rack with cover and floor panels |
| 2 | 3 | Sash doors |
| 3 | 1 | Front door, split in two, with magnetic catch |
| 4 | 5 | Shelves, height-adjustable |
| 5 | 4 | Adjusting feet |
| 6 | 1 | Mounting material |



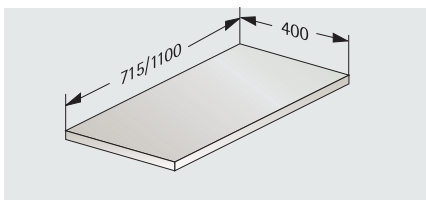
Order information

| Dimensions (H x W x D) mm | Order no. |
|---------------------------|------------|
| 2300 x 800 x 380 | 316-585-50 |



Accessories

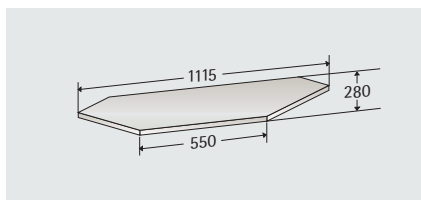
5 Shelf



- assembly with different tilt angles
 - vertical cover of the foot area possible
- Finish:** RAL 7035 light grey
Load capacity: 80 kg

| Description mm | Order no. |
|-------------------|------------|
| for W=1200/1150 | 585-001-10 |
| for W=815/765 | 585-002-10 |

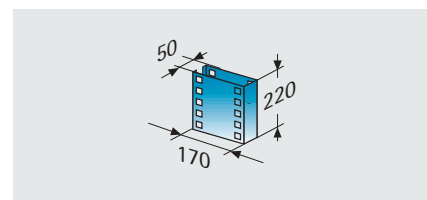
6 Shelf for corner rack



- Finish:**
RAL 7035 light grey
- Load capacity:** 80 kg

| Order no. |
|------------|
| 585-005-10 |

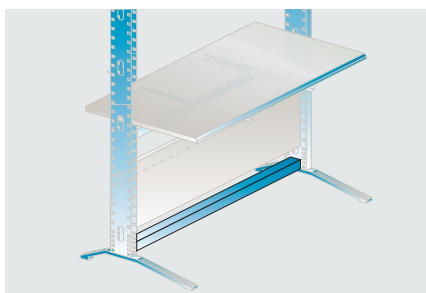
7 Shelf set



- for individual extension of the vertical mountings
- Finish:** RAL 7037 dusty grey

| Order no. |
|------------|
| 585-001-57 |

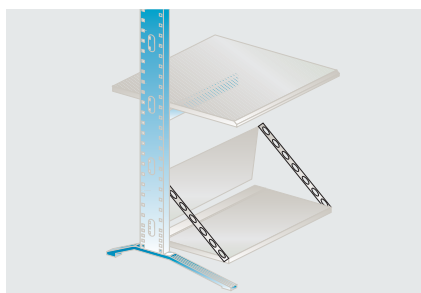
8 Footrest for W=1200 mm



Finish: RAL 7035 light grey

| Order no. |
|------------|
| 585-001-16 |

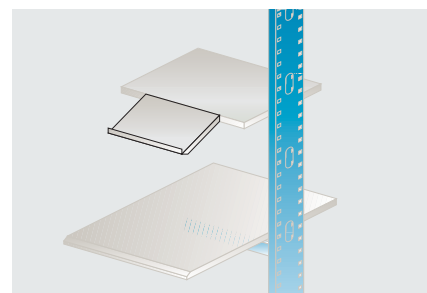
9 Shelf floor bracket



- per shelf 2 pieces required
- Finish:** RAL 7035 light grey

| Order no. (1 piece) |
|---------------------|
| 585-001-14 |

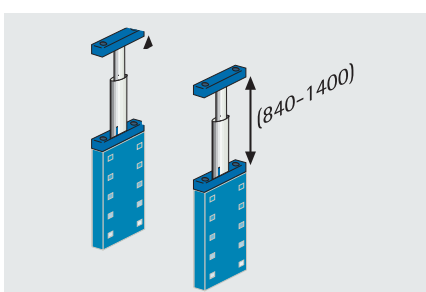
12 Keyboard storage, hook-in



Finish: RAL 7035 light grey

| Order no. |
|------------|
| 585-001-12 |

13 Telescopic cover bracket



- for additional stabilisation of the LAN-Office Rack on the room ceiling
- the ceiling bracket is telescopic and can bridge spaces between 840 mm up to 1400 mm (max. room clearance 3200 mm)

| Order no. (1 piece) |
|---------------------|
| 585-001-35 |

14 Keyboard plug-in unit

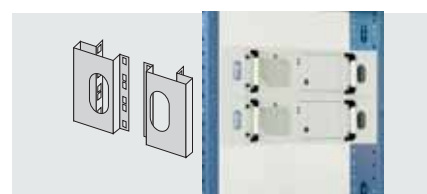


- for underbench assembly
- integrated mouse rest

Finish: RAL 7035 light grey

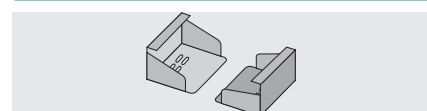
| Description | Order no. |
|------------------|------------|
| without keyboard | 202-870-70 |
| with keyboard | 202-870-80 |

15 19" module for 4 U



| Order no. (pair) |
|------------------|
| 585-002-12 |

16 Slide rails for 19" modules



- two 19" modules **15** required

| Order no. (pair) |
|------------------|
| 585-002-14 |



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19" standing workstation/ 19" stand-alone distribution system

A 19" standing workstation with wooden desktop

work surface of the desktop
(W × D = 712 mm × 800 mm)

B 19" stand-alone distribution system with a single-piece top panel of sheet metal

- dismantlable aluminium cabinet rack
- front-side tinted viewing door with turning lever lock (profile half cylinder accommodation possible)
- 19" level 19 U, front and back
- 4 crossbars for depth adjustment of 19" levels
- rear cable entry point with brush, top-mounted for feeding through screen and keyboard cables (see fig. 2), for the 19" stand-alone distribution system bottom-mounted for cable entry.
- levelling feet to align the workstation

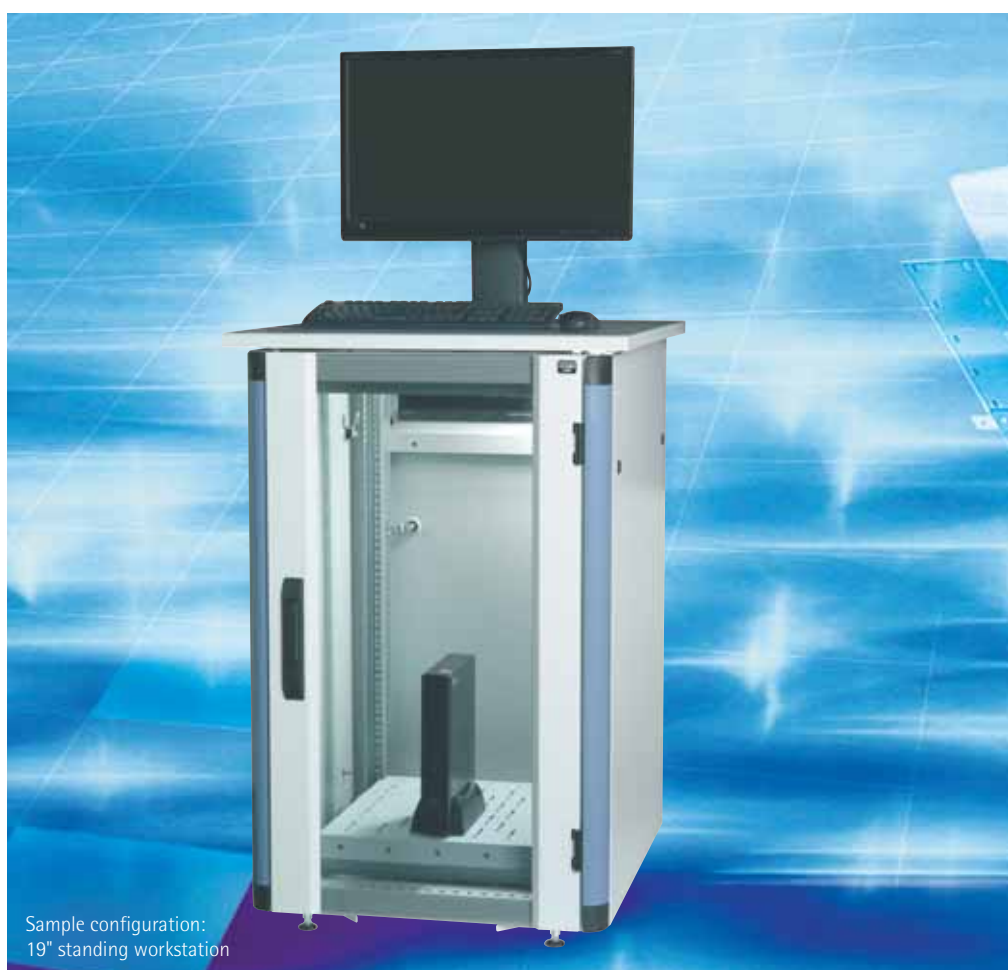
Finish:

Trim parts desktop:

RAL 7035 light grey

Design profile: RAL 5014 pigeon blue






Delivery: fully assembled



Scope of delivery

| Item | Pc. | Description |
|------|-----|--|
| 1 | 1 | Alu-cabinet rack, dismount. |
| 2 | 1 | Tinted viewing door with turning lever lock |
| 3 | 3 | Sash doors (back/side) |
| 4 | 4 | Vertical mountings 19 U |
| 5 | 4 | Depth crossbars |
| 6 | 1 | Two piece bottom panel |
| 7 | 1 | Desktop (only for 19" standing workstation) Top panel (only for 19" stand-alone distribution system) |
| 8 | 1 | Rear cable entry point with brush seal top-mounted (for 19" standing workstation) bottom-mounted (for 19" stand-alone distrib. system) |
| 9 | 4 | Levelling feet |
| 10 | 1 | Earthing kit (only for 19" stand-alone distrib. system) |
| 11 | 1 | 19" screw set M 5 (50 x) |

Other preferred colours:

-  RAL 1032 (broom yellow)
-  RAL 5010 (gentian blue)
-  RAL 3002 (carmine red)
-  RAL 6029 (mint green)
-  RAL 7037 (dusty grey)

Colour display similar!



Order information

| | Description | Dimensions (H × W × D) mm | Order no. |
|---|-------------------------------------|------------------------------|------------|
| A | 19" standing workstation | 1100 × 712 × 800 | 318-202-75 |
| B | 19" stand-alone distribution system | 1100 × 600 × 800 | 318-202-30 |



Design examples



TiRAX Computer Cabinet

- enables the installation of a reliable, user-friendly and also visually stylish computer workstation in adverse environmental conditions in industrial fields
- protection class IP 54
- own cooling system can be integrated
- can be fitted with 19" components or be built as complete tower solution
- cables entry from underneath as standard, but top or lateral cable entry also possible
- three-part bottom panel with cable entry through foam rubber pad
- a profile half cylinder locks the keyboard cover
- doors with turning lever lock (concealed) for profile half cylinder

Scope of delivery

| Item | Pc. | Description |
|------|-----|--|
| 1 | 1 | Cabinet rack |
| 2 | 1 | Three-part front, consisting of viewing door, operating unit, solid door |
| 3 | 1 | Rear door with turning lever lock |
| 4 | 2 | Side panels |
| 5 | (1) | Two part bottom panel with cable entry (with D=600 mm) |
| | (1) | Three part bottom panel with cable entry (with D=800 mm) |
| 6 | 1 | Top panel, detachable |
| 7 | 1 | Earthing kit, installed |
| 8 | 1 | Base, H=100 mm |

Order information

| Dimens. (H x W x D) mm | Order No. |
|--------------------------|------------|
| (1800 + 100) x 600 x 600 | 318-202-65 |
| (1800 + 100) x 600 x 800 | 318-202-85 |

Practical features for more comfort at the workstation



- writing utensils, calculator and much more find their place in the folding compartment of the TiRAX computer cabinet.
- integrated stackers **1** and the pivotable mouse pad **2** help to keep the workstation tidy
- the built-in foam hand rest **3** ensures ergonomic keyboard use.



- a multipurpose shelf **4** for paperwork, files, telephone etc can be mounted to the cabinet at any height and the tilt can be adjusted.
- a practical mug holder is also included in the standard scope of delivery.



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Technical information

Finish:

RAL 7035 light grey
RAL 5014 pigeon blue

Material:

sheet metal, galvanised

protection class:

IP 54

Delivery:

fully assembled



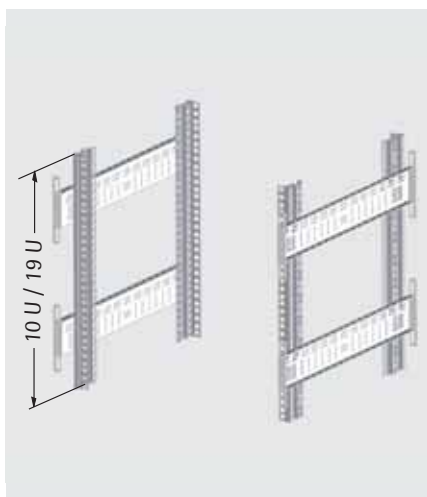
Dimensions design example

A wide range of ventilation and air conditioning components can be found in the section "Air conditioning technology" from page 77. We will be pleased to put your system together!



Accessories

19" extension set



- 19" vertical mountings with crossbars for individual installation (each 4 pieces)

Installation behind the top viewing door (10 U-area)

| Description | Cabinet depth D mm | Order no. (Set) |
|--------------------|--------------------|-----------------|
| Extension set 10 U | 600 | 318-201-81 |
| | 800 | 318-201-82 |

Installation behind the lower solid door (19 U-area)

| Description | Cabinet depth D mm | Order no. (Set) |
|--------------------|--------------------|-----------------|
| Extension set 19 U | 600 | 318-201-83 |
| | 800 | 318-201-84 |

Multipurpose storage



- infinite number of tilt angle adjustments
- Finish: RAL 7035 light grey

| |
|------------------|
| Order no. |
| 318-201-74 |

Additional accessories for your workstation system can be found in the section "TiRAX" cabinet system from page 3 and in the section "Accessories" from page 123.





350 • optiRACK "silent" stand-alone enclosure



Fig: Version 2 "active"

optiRACK "silent" underbench cabinet

- sound-insulating enclosure with viewing door
- detachable side panels
- 19" expansion 12 U variable depth

Available in two versions:

Version 1 "passive": with ventilation grille (prepared without fan for passive ventilation of the enclosure)

Version 2 "active": prepared with speed-controlled fan for active ventilation of the enclosure (fan: 12 V DC, 180 m³/h, 42 DB)

Outer dimensions (H × W × D):
12 U (615 mm) × 550 × 600 mm

Material: sheet metal

Finish:
enclosure: RAL 7035 light grey
design profiles: RAL 5014 pigeon blue
(other colours on request)

Delivery:
assembled



| Description | Order no. |
|---------------------|------------|
| Version 1 "passive" | 350-001-60 |
| Version 2 "active" | 350-001-61 |

19" vertical mounting

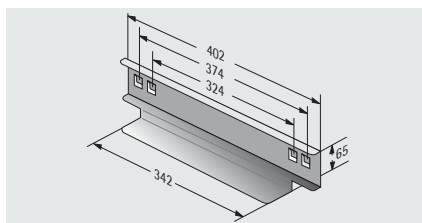


- with U-labelling
- Height: 12 U

Material: sheet metal, galvanised

| |
|--------------------------------|
| Order no. 316-120-12 |
|--------------------------------|

Slide rail, hook-in

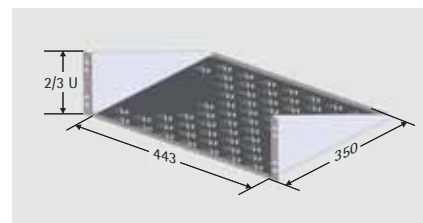


- hooked in 19" vertical mountings
- to support heavy 19" plug-in units
- two 19" levels are required

Material: sheet metal 1.5 mm, galvanised
Load capacity: 50 kg

| |
|---------------------------------------|
| Order no. (pair) 316-544-00 |
|---------------------------------------|

19" shelf, fixed



- simple assembly on a 19" grid (only one 19" level required)
- ventilated
- Height: 2 U

Finish: RAL 7035 light grey
Material: sheet metal
Load capacity: 15 kg

| |
|--------------------------------|
| Order no. 315-810-20 |
|--------------------------------|



Our service all comes from a single source:

- ✓ take advantage of our expertise
- ✓ save time and money

Air conditioning, power supply, cable entry solutions, plug-and-play versions and pre-wiring for enclosures and cabinet systems


At the apra Group, we place particular emphasis on individual and flexible system solutions. Our enclosures and 19" cabinet systems are equipped with components such as a power supply/distribution system and air conditioning technology in line with customer requirements and are supplied with full pre-wiring on request. This enables us to fulfil the most challenging of customer requirements.

From development right through to the finished product, you can benefit from our expertise and flexibility!

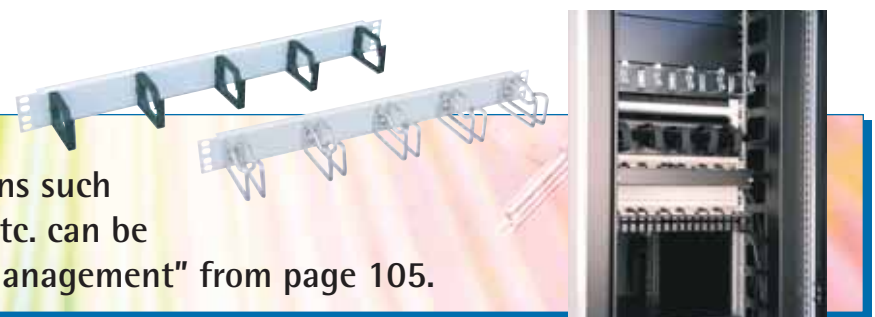
Additional accessories for your cabinet and enclosure system can be found here:



Multiple socket strips and other power supply components can be found in the section "Power distribution" from page 85.



A wide range of ventilation and air conditioning components can be found in the section "Air conditioning technology" from page 77.



Suitable cable routing solutions such as cable clamps, patch bays, etc. can be found in the section "Cable management" from page 105.



Test workstations




















- created in cooperation with an external designer
- rollable

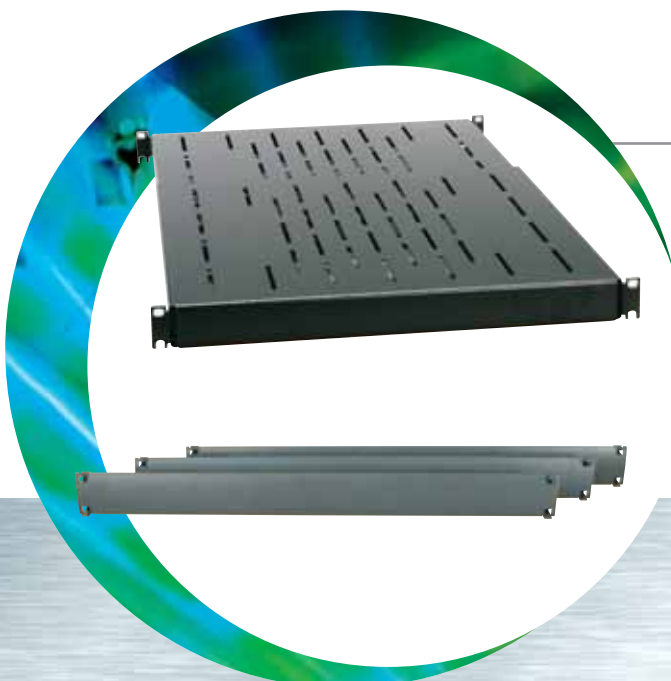


...from planning right through to the finished product:
everything from a single source!





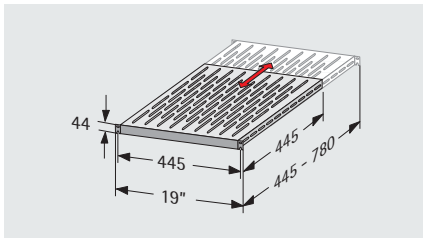
| | | | |
|---|---|---------------|---|
|  | 19" TiRAX cabinet system | from page 3 |  |
|  | 19" NETcell cabinet system | from page 31 |  |
|  | Open 19" racks | from page 43 |  |
|  | Wall-mounting/stand-alone distribution systems | from page 53 |  |
|  | Wall-mounting enclosure systems | from page 63 |  |
|  | Air conditioning technology | from page 77 |  |
|  | Power distribution system | from page 85 |  |
|  | Cabinet monitoring | from page 101 |  |
| | Cable management | from page 105 |  |
| | Workstation systems | from page 109 |  |
| | General accessories/ distribution technology | from page 123 |  |



You can read more about products from the
apra-group at www.apra-norm.com



19" shelf 1 U
"fixed installation" **VARIplain**



- fixed installation
 - variable depth thanks to VARIplain technology
 - telescopic: 445 - 780 mm (see graphic)
 - simple one-person assembly: open long hole in the 19" front (hook-in)
- Finish:** RAL 7035 light grey or RAL 9005 jet black

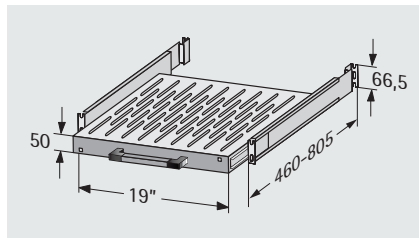
Material: sheet metal
Dimensions (H x W x D): 1 U (44 mm) x 19" (482.6 mm) x 445 - 780 mm

Floor space (w x d):
445 mm x (445 mm-780 mm)

Load capacity:
150 kg (distributed load/static)

| U | RAL 7035 | RAL 9005 |
|---|------------|------------|
| 1 | 316-036-99 | 316-036-69 |

19" shelf 1.5 U
"extractable"



- variable-depth installation
- extraction length 500 mm
- simple one-person assembly

Finish: RAL 7035 light grey or RAL 9005 jet black

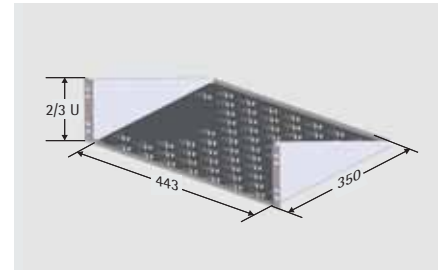
Material: sheet metal
Dimensions (H x W x D):
1.5 U (66.5 mm) x 19" (482.6 mm) x 465/665 mm

Floor space (w x d): 410 x 465 / 665

Load capacity: 60 kg (distributed load)

| Depth | RAL 7035 | RAL 9005 |
|--------|------------|------------|
| 465 mm | 318-141-00 | 318-141-50 |
| 665 mm | 318-141-01 | 318-141-51 |

19" shelf 2/3 U



- simple assembly on the 19" grid (only one 19" level required)
 - ventilated
 - includes mounting materials
- Finish:** RAL 7035 light grey or RAL 9005 jet black

Material: sheet metal
Dimensions (H x W x D):
88/132 mm x 482.6 x 350 mm
Floor space (w x d): 443 mm x 350 mm
Scope of delivery: with mounting material
Load capacity: 15 kg (distributed load)

| U | RAL 7035 | RAL 9005 |
|---|------------|------------|
| 2 | 315-810-20 | 315-810-25 |
| 3 | 315-810-00 | 315-810-35 |

19" blind panel, plastic, 1 U



- air separation function: cost-saving and very effective option for reducing energy costs in data centres
- visual upgrade of the rack by concealing free 19" surfaces
- stylish design due to rounded front surface of the panel
- short assembly time: the blind panel is easily and without tools clipped into the 19" grid.
- can be removed and reinserted at any time without wear and tear and without tools

- protection against dust entry
- fire protection classification to UL94 V-0
- weight-saving in comparison to traditional metal panels

Finish:
RAL 7016 anthracite grey
RAL 7035 light grey
Material: Lexan 920, fire class to UL94 V-0, ROHS-compliant

Delivery:
Set = 10 pieces
Set = 136 pieces

| RAL 7016 anthracite grey | | RAL 7035 light grey | |
|--------------------------|------------------|---------------------|------------------|
| Set = 10 pieces | Set = 136 pieces | Set = 10 pieces | Set = 136 pieces |
| 213-156-25 | 213-156-40 | 213-156-30 | 213-156-45 |

19" blind panels, sheet metal



Finish:
RAL 7035 light grey
RAL 9005 jet black
Material: sheet metal, 1.5 mm
Dimensions (H x W x D):
1-4 U x 482.6 x 10 mm
Scope of delivery: with mounting mat.

| U | RAL 7035 | RAL 9005 |
|---|------------|------------|
| 1 | 213-156-00 | 213-156-10 |
| 2 | 213-158-00 | 213-158-10 |
| 3 | 213-159-00 | 213-159-10 |
| 4 | 213-160-00 | 213-160-10 |

Shelves for installation in cabinets without 19" installation frame can be found in the cabinet section "TIRAX" (from page 24).



19" drawers

- extractable
- optionally available with lock
- 19" installation dimensions to IEC 60297-3-100



Technical information

Application:

for secure storage of documents in 19" cabinets or enclosures

Finish:

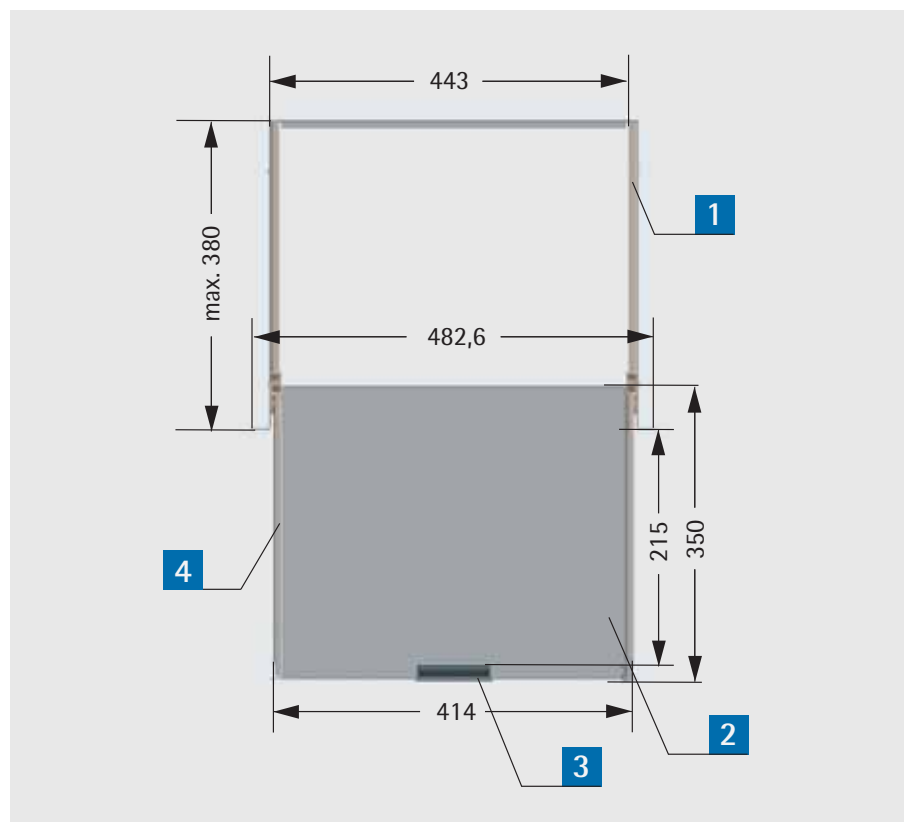
RAL 7035 light grey

Material:

sheet metal

Delivery:

assembled, includes mounting material



Scope of delivery

| Item | Pc. | Description |
|------|--------|---------------------------|
| 1 | 1 | Installation frame |
| 2 | 1 | Drawer with front panel |
| 3 | 1 | Recess handle, black |
| 4 | 1 pair | Single sliding mechanisms |
| 5 | 1 | Mounting material |

Order information

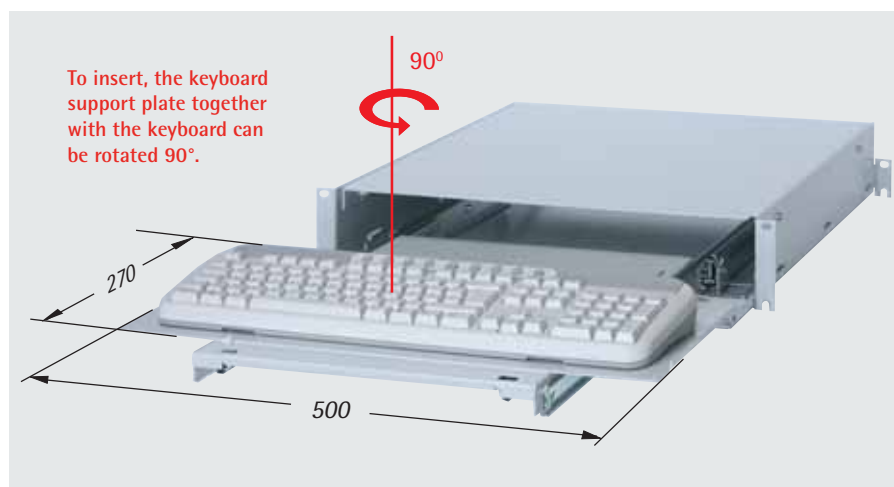
| Installation height | | Usable install. dimen. h x w x d mm | Order no. | |
|---------------------|-------|--|--------------|------------|
| U | H mm | | without lock | with lock |
| 1 | 44 | 42 x 410 x 380 | 202-219-50 | 202-219-60 |
| 2 | 88 | 84 x 410 x 370 | 202-219-53 | 202-219-63 |
| 3 | 132.5 | 128 x 410 x 370 | 202-219-56 | 202-219-66 |



19" keyboard plug-in unit 2 U for standard keyboards

- keyboard plug-in unit with fold-down front panel
- accommodates all standard keyboards
- existing keyboards can be integrated in to the 19" rack, even if they are not 19"-compatible
- front-mounted, large, extractable mouse rest
- mounting on front and rear 19" level, whereby the clearance to the front/rear level can be individually adjusted from 445 mm up to 845 mm.
- 19" installation dimensions to IEC 60297-3-100
- from a cabinet depth of 800 mm

Technical information



Application:

for use as an input console in 19" cabinets or user desks

Finish: RAL 7035 light grey

Material: sheet metal

Dimensions (H x W x D):

2 U (88 mm) x 19" (482.6 mm) x 550 mm

Delivery: assembled

- Keyboard is not included in the scope of delivery.
- The maximum height of the keyboard/mouse is 36 mm.
- Please refer to page 116 for a keyboard plug-in unit for mounting on the underside of the table.

Scope of delivery

| Item | Pc. | Description |
|------|-----|--------------------------------|
| 1 | 1 | Chassis top cover |
| 2 | 1 | Drawer |
| 3 | 1 | Keyboard support plate, rotat. |
| 4 | 1 | Mouse rest |
| 5 | 2 | Telescopic rails |
| 6 | 1 | Front panel |
| 7 | 1 | Mounting material |

Order information

| Description | Order no. |
|-------------------------------|------------|
| 19" keyboard plug-in unit 2 U | 202-868-00 |

| Description | Dimensions (H x W x D) | Order no. |
|------------------------------------|------------------------|------------|
| Keyboard German, type QWERTZ, USB | 433 x 170 x 30 mm | 202-870-09 |
| Keyboard English, Type QWERTY, USB | 433 x 170 x 30 mm | 202-870-14 |



19" keyboard plug-in unit 1 U

- low total height
- extractable
- with integrated, fold-down mousepad
- mousepad can be added on the left or right
- keyboards up to a width of 433 mm and a height of 36 mm can be used
- 19" installation dimensions to IEC 60297-3-100



Technical information

Application:

for use as an input console in 19" cabinets or user desks

Finish:

RAL 7035 light grey/
RAL 9005 jet black

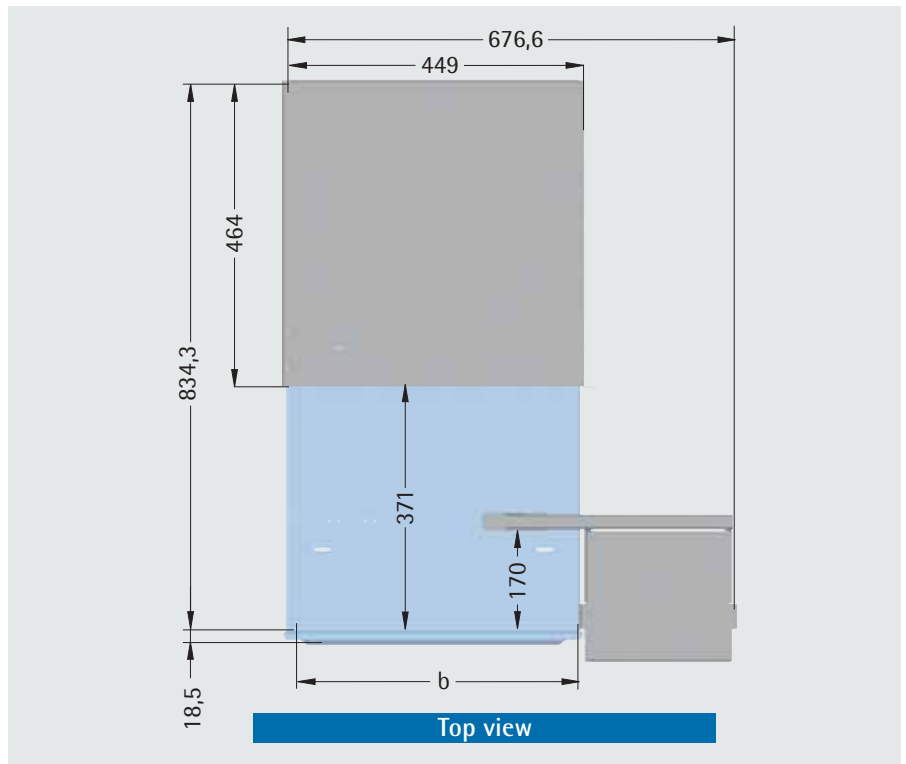
Material: sheet metal

Dimensions (H x W x D):

44 x 482.6 x 470 mm

Delivery: assembled

- Mouse and keyboard is not included in the scope of delivery.
- The maximum height of the keyboard/mouse is 36 mm.
- Integration on slide rails is recommended.
- Please refer to page 116 for a keyboard plug-in unit for mounting on the underside of the table.



Scope of delivery

| Item | Pc. | Description |
|------|-----|-------------------|
| 1 | 1 | Chassis |
| 2 | 1 | Drawer |
| 3 | 1 | Mouse rest |
| 4 | 1 | Mouse pad |
| 5 | 1 | Keyboard |
| 6 | 1 | Mounting material |

Order information

| Description | Order no. RAL 7035 | Order-no. RAL 9005 |
|---|-----------------------|-----------------------|
| Plug-in unit without keyboard | 202-870-50 | 202-870-55 |
| Plug-in unit keyboard German, type QWERTZ | 202-870-00 | - |
| Plug-in unit keyboard French, type AZERTY | 202-870-20 | - |

| Description | Order no. |
|------------------------------------|------------|
| Keyboard German, type QWERTZ, USB | 202-870-09 |
| Keyboard English, Type QWERTY, USB | 202-870-14 |



19" TFT keyboard plug-in unit 1 U with 17" display

The TFT keyboard plug-in unit includes all operating functions such as 17" LCD monitor, keyboard and touchpad in only one height unit. The server, PC and KVM-switch are connected via an adapter cable with a PS/2 interface or USB

- designed as a 19" component: extraction via high-quality telescopic rails
- with 17" display DDC 2 with max. resolution 1280 × 1024
- keyboard with separate number block and touch pad (PS/2)
- power supply 230 V / 50 Hz, can be switched to 120 V / 60 Hz

Finish: black

Scope of delivery:

includes operating instructions and power supply unit

| |
|------------------|
| Order no. |
| 202-869-17 |

Similar representation



19" TFT keyboard plug-in unit 1 U with 17" display and KVM switch

- as above, but with a KVM switch to control 8 or 16 servers
- resolution: 1280 × 1024

Finish: black

Scope of delivery:

includes operating instructions and power supply unit

| Description | Order no. |
|-------------|------------|
| 8-way | 202-869-19 |
| 16-way | 202-869-18 |

Rear view: TFT plug-in unit with KVM switch

Accessories: cables for TFT keyboard plug-in units

| KVM switch 8-fold | KVM switch 16-fold | Description | Length m | Order no. |
|-------------------|--------------------|--|----------|------------|
| X | | USB adapter cable from the KVM-switch to the server | 1,8 | 202-869-35 |
| X | | | 3,0 | 202-869-36 |
| X | | | 5,0 | 202-869-37 |
| | X | USB adapter cable from the KVM-switch to the server | 1,8 | 202-869-29 |
| - | X | | 3,3 | 202-869-30 |
| | X | | 5,0 | 202-869-31 |
| X | X | PS/2 adapter cable from the KVM-switch to the server | 1,8 | 202-869-26 |
| X | X | | 3,0 | 202-869-27 |
| X | X | | 6,0 | 202-869-28 |



Noise absorption foam

- absorbs up to 10 dB/A of sound in enclosures (e.g. fan noise)
- self-adhesive on one side
- thermal conductivity: 0.033 W/mk (to DIN 52612)
- temperature range: -40 °C to +100 °C

Material: PUR ester foam (10 mm): colour grey, with pattern of indentations, partially compressed (air permeable)
Delivery: unmounted

| |
|------------------------------------|
| Order no. (1 m²) |
| 671-211 |



If required, we will be happy to affix the noise absorption foam for you before delivering your cabinets or enclosures!

19" top hat rail support 3 U

- for a recessed mounting of top hat rail enclosures in the 19" area
- as standard fitted with top hat rail TS 35 (width 425 mm)
- perfect to mount our top hat rail enclosures **apraRail**
- integrated cable guarding and strain relief by cable clip bracket

Material: sheet metal

Finish:
galvanised or painted in RAL 7035 light grey

Delivery:
unmounted, includes mounting material



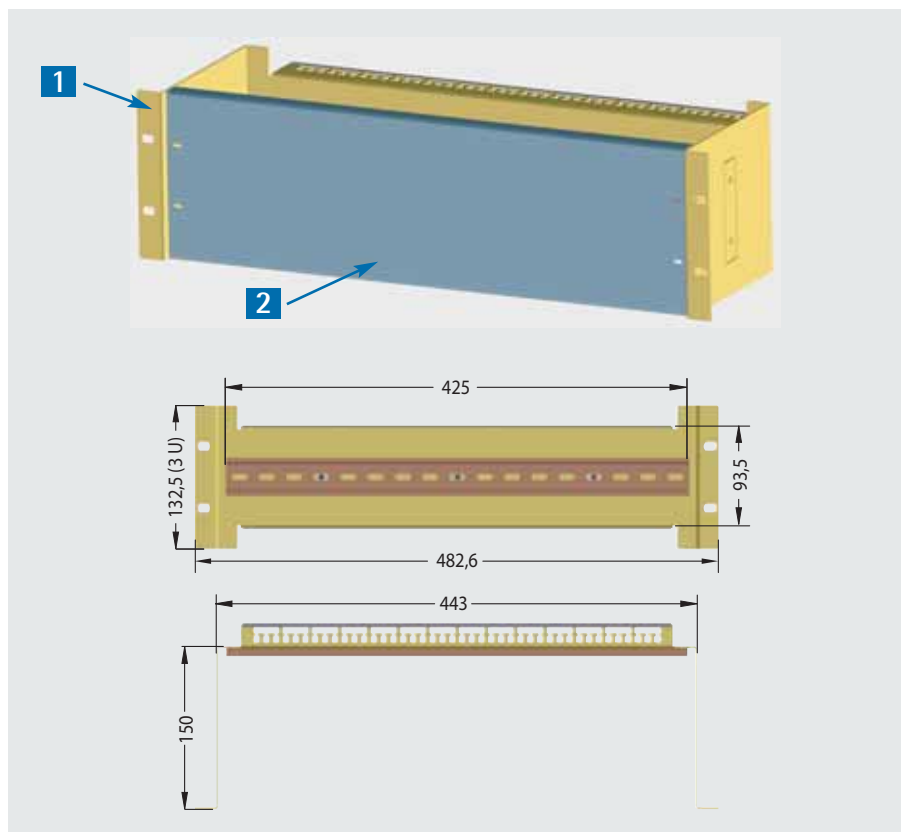
Order information

1 Top hat rail support

| | |
|------------|------------|
| galvanised | RAL 7035 |
| 205-420-00 | 205-420-10 |

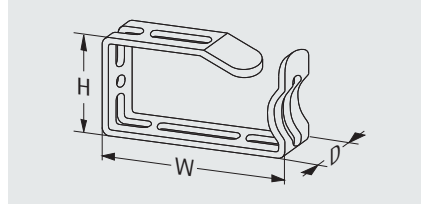
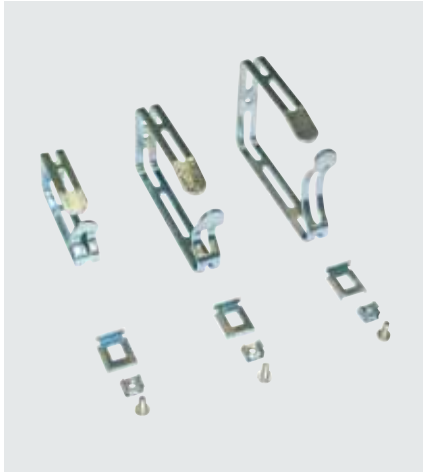
2 Cover (contact protection)

| | |
|------------|------------|
| galvanised | RAL 7035 |
| 205-420-20 | 205-420-25 |





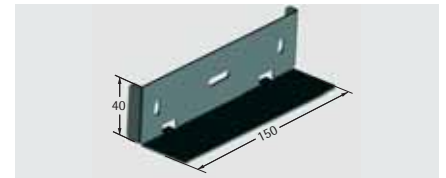
Cable clamps, metal (set)



- for securing cables vertically to a 19" frame (for 800 mm wide cabinets)
 - set = 10 pieces
- Scope of delivery:** incl. mounting material

| H x W x D mm | Order no. |
|---------------|------------|
| 44 x 85 x 23 | 640-036-11 |
| 66 x 125 x 23 | 640-036-12 |
| 88 x 125 x 23 | 640-036-13 |

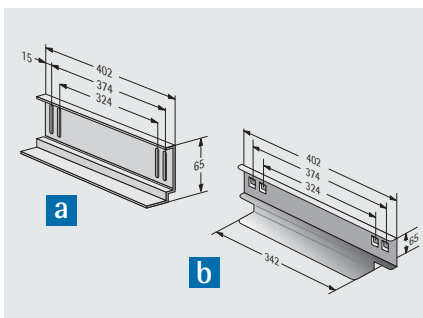
Slide rail, short – for 19" vertical mountings and pivot frames



- with only **one** 19" level or pivot frame
 - delivered in pairs
- Material:** sheet metal, 2 mm galvanised
Load capacity: 15 kg
Delivery: includes mounting material

| Order no. (pair) |
|------------------|
| 318-129 |

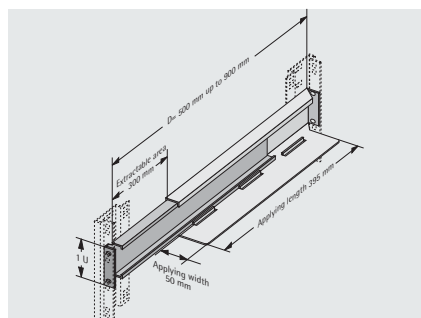
Slide rail, screwable/hook-in



- is screwed/hooked in onto **19" vertical mountings**
 - to support heavy 19" plug-in units
 - two 19" levels are required for mounting
- Material:** sheet metal, galvanised
Load capacity: 50 kg

| screwable a | hook-in b |
|--------------------|------------------|
| 312-544 | 316-544-00 |

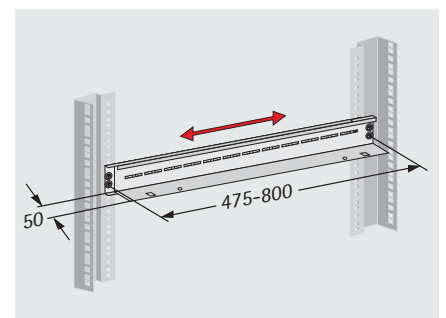
19" slide rail, variable depth



- for cabinet depths of 600 - 900 mm
 - telescopic design: can be extracted/adjusted by 300 mm
- Material:** sheet metal 1.5 mm, galvanised
Load capacity: 50 kg
Delivery: includes mounting material

| Order no. (pair) |
|------------------|
| 315-258-00 |

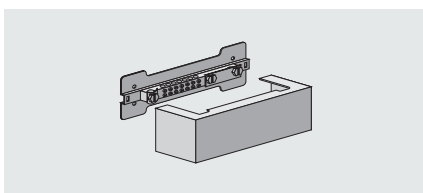
Slide rail, variable depth



- for 19" plug-in units irrespective of the clearance to the 19" levels
 - depth-adjustable
 - for use as of a cabinet depth of 800 mm
- Material:** sheet metal 1.5 mm, galvanised
Load capacity: 50 kg
Delivery: includes mounting material

| Order no. (pair) |
|------------------|
| 316-544-20 |

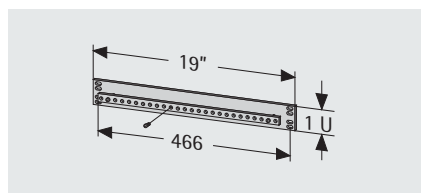
Potential equalisation rail



- covered
- Scope of delivery:**
 1 potential equalisation set
 2 oval head screws M 5 x 2
 2 cage nuts M 5

| Order no. |
|------------|
| 640-200-01 |

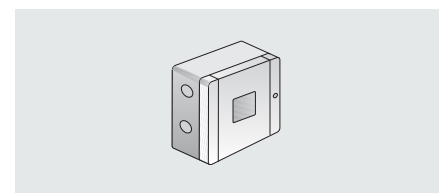
19" Potential equalisation rail



- for 19" or cabinet rack installation
 - connection options: 27 x M 5
 - rail cross-section: 50 mm²
- Material:** sheet metal/copper

| Order no. |
|------------|
| 640-028-00 |

Terminal box



- for use as a cable distribution box
- simple and quick installation

| Order no. |
|-----------|
| 640-059 |



Document pocket



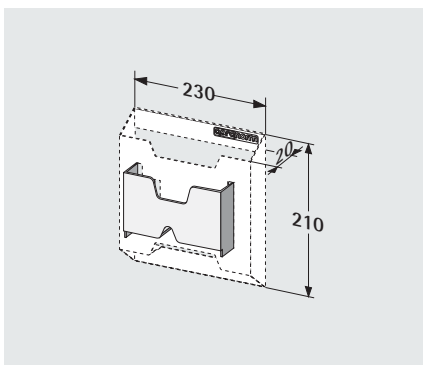
- self-adhesive
- heat-resistant up to 60 °C
- load capacity of up to 3 kg

Dimensions (W × D × H):
235 × 260 × 27 mm

Material: plastic, black

| |
|------------------|
| Order no. |
| 640-100 |

CD holder for document pocket



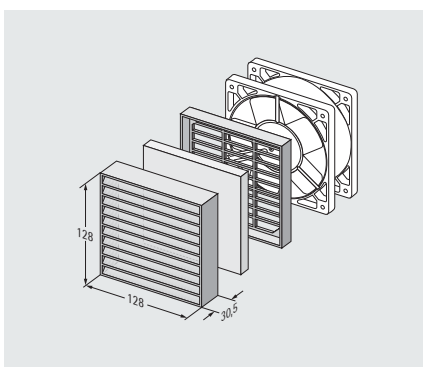
- can be hooked on to the document pocket

Material: aluminium

Colour: RAL 7035 light grey

| |
|------------------|
| Order no. |
| 640-100-10 |

Outlet filter



- for individual self-assembly on standard cabinet or enclosure
- outlet filters are preferably installed in conjunction with fans in the upper part of the cabinet

Scope of delivery: 1 outlet filter complete with filter mat, excl. mounting mat.

| |
|------------------|
| Order no. |
| 230-800 |

Outlet filter IP 54



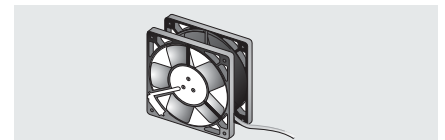
- suitable for fans W × H = 119 × 119 mm
- IP rating is achieved with vertical installation and overhead installation
- with filter mat and seal
- quick mounting: snap fastener
- can as an option be screwed on

Dimensions (W × H × D):
148 × 148 mm × (5.5 mm + 23 mm)

Material: plastic, black

| |
|------------------|
| Order no. |
| 230-780 |

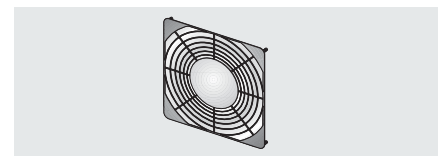
Fan 230 V



- air flow rate: 160 m³/h
- connecting cable L = approx. 310 mm
- dimensions: 119 × 119 × 38 mm
- noise level: 40 dB(A)
- complete with mounting material

| |
|------------------|
| Order no. |
| 230-803 |

Protective grille, plastic

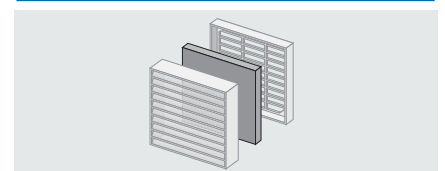


- suitable for all fans with dimensions W × H = 119 × 119 mm

Material: plastic, black

| Description | Order no. |
|-------------|-----------|
| screw-on | 230-818 |
| clip-in | 230-819 |

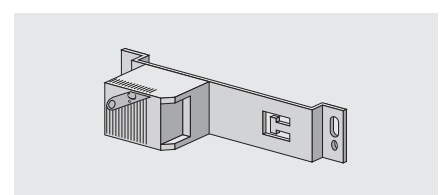
Spare filter mat



- suitable for outlet filters type 230-800 and 230-780
- Dimensions: 120 × 120 mm

| |
|------------------|
| Order no. |
| 230-800-01 |

Thermostat 230 V

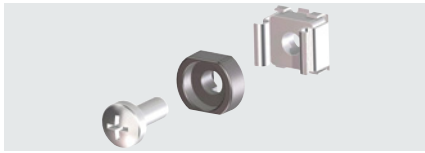


- with mounting bracket and integrated strain relief
- control range 0 - 60 °C
- includes mounting material

| |
|------------------|
| Order no. |
| 315-804 |



Screw set M5 / M6 (set)

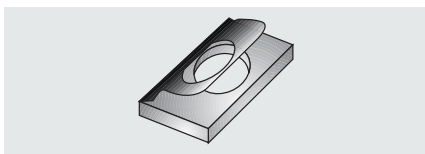


Scope of delivery:

- 50 oval head screws M5 × 12 / M6 × 16
- 50 cage nuts M5-8 / M6-8
- 50 decorative washers M5 / M6 with collar

| Screw set M5 | Screw set M6 |
|--------------|--------------|
| 630-991 | 630-994 |

Spring nuts M5 (set)



- for insertion in profile grooves in the VARIRack 316 cabinet system

Scope of delivery: 50 pieces

| Order no. |
|------------|
| 630-015-50 |

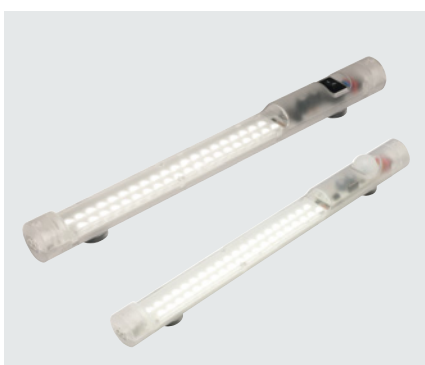
Door contact switch



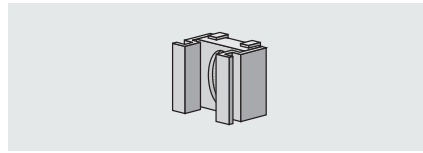
- for switching control cabinet lamps, etc. on and off
- includes mounting material

| Order no. |
|------------|
| 640-071-00 |

LED cabinet light



Cage nuts M5 / M6 (set)



Scope of delivery:

- 100 cage nuts
- sheet thickness 1.8 - 2.6 mm

| Cage nuts M5 | Cage nuts M6 |
|--------------|--------------|
| 630-362 | 630-363 |

TiRAX screw set



- for rotating mounting in in the TiRAX cabinet racks

Scope of delivery:

- each with 20 × special cage nuts M6, lens head screw M6 × 16 and washers

| Order no. |
|-----------|
| 630-998 |

"Universal" velcro strip (set)

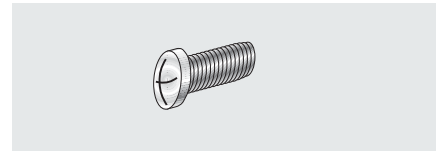


- for quickly securing **non 19"-compatible** components
- length: 300 mm, width: 20 mm
- back to back mounting
- set = 10 pieces

Material: velcro, black

| Order no. (set) |
|-----------------|
| 671-122-08 |

Oval head screws M 5 / M 6 (set)



Scope of delivery:

- 100 oval head screws

| Description | Order no. |
|-------------|-----------|
| M 5 × 8 | 630-056 |
| M 5 × 12 | 630-097 |
| M 6 × 16 | 630-099 |

Edge protection rubber band, flexible



- flexible to adapt to a wide variety of holes
- for sheet thickness 1-2 mm
- piece goods sold by the metre

Material: rubber, black

| Order no. (per metre) |
|-----------------------|
| 671-024 |

Velcro mount "Universal" (set)



- Velcro mount used to accommodate velcro up to w=20 mm
- set = 10 pieces

Material: plastic

| Order no. |
|------------|
| 583-001-08 |

- cost-optimised LED technology with a power consumption of 5W (light intensity equivalent to a 75W light bulb)
- internal power supply unit with wide range voltage 100-230V / AC
- long-life and no maintenance (service life at 20 °C = 60,000 h)

- available with on/off switch or with motion detector
- magnetic attachment for individual mounting in the cabinet

Connections must be ordered separately!

| Description | Order no. |
|--|------------|
| LED cabinet light with switch | 640-143-05 |
| LED cabinet light with motion detector | 640-143-06 |
| Connection with Euro plug, L=2.5 m | 640-143-08 |



Our service all comes from a single source:

- ✓ take advantage of our expertise
- ✓ save time and money

Air conditioning, power supply, cable entry solutions, plug-and-play versions and pre-wiring for enclosures and cabinet systems

At the apra Group, we place particular emphasis on individual and flexible system solutions. Our enclosures and 19" cabinet systems are equipped with components such as a power supply/distribution system and air conditioning technology in line with customer requirements and are supplied with full pre-wiring on request. This enables us to fulfil the most challenging of customer requirements.

From development right through to the finished product, you can benefit from our expertise and flexibility!


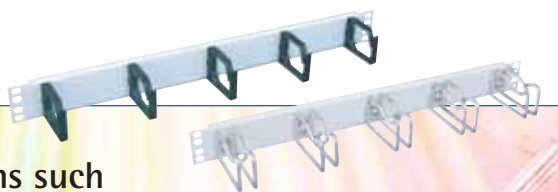
Additional accessories for your cabinet and enclosure system can be found here:



Multiple socket strips and other power supply components can be found in the section "Power distribution" from page 85.



A wide range of ventilation and air conditioning components can be found in the section "Air conditioning technology" from page 77.



Suitable cable routing solutions such as cable clamps, patch bays, etc. can be found in the section "Cable management" from page 105.



19" copper distribution unit CAT.6

19" copper distribution unit CAT.6

19" copper distribution unit CAT.3

The components meet the requirements in accordance with ISO/IEC 11801 (Draft 2001) in class Channel E.

Order information

| Description | Order no. |
|-------------------------|------------|
| 25-way CAT.3 unshielded | 213-504-10 |
| 24-way CAT.6A shielded | 213-506-25 |

Other FO products available on request!

19" copper distribution panels 1 U CAT.3/CAT.6A

- suitable for data transfers in high-speed LANs with transfer rates of to 500 Mhz
- supports industrial use in accordance with EN 50081-2 and 50082-2 (only shielded models)
- connection of the wires via coloured LSA Plus IDC termination (in accordance with EIA/TIA 568A)
- large shield contact area on the shielded models directly on the circuit board using cable clips included, without the need for any additional twisting of the screen netting (with CAT.6 panel)
- distance between connecting terminals and shield contact on the circuit board eliminates any danger of short circuiting between screen netting and connecting wires
- cable strain relief with supplied cable ties without screws or any special tools
- consecutive front panel imprint

Finish:

front in RAL 7035 light grey

Material:

enclosure: sheet metal

shielding cap for shielded models: stainless steel

CAT.6A patch panel 6-way/12-way

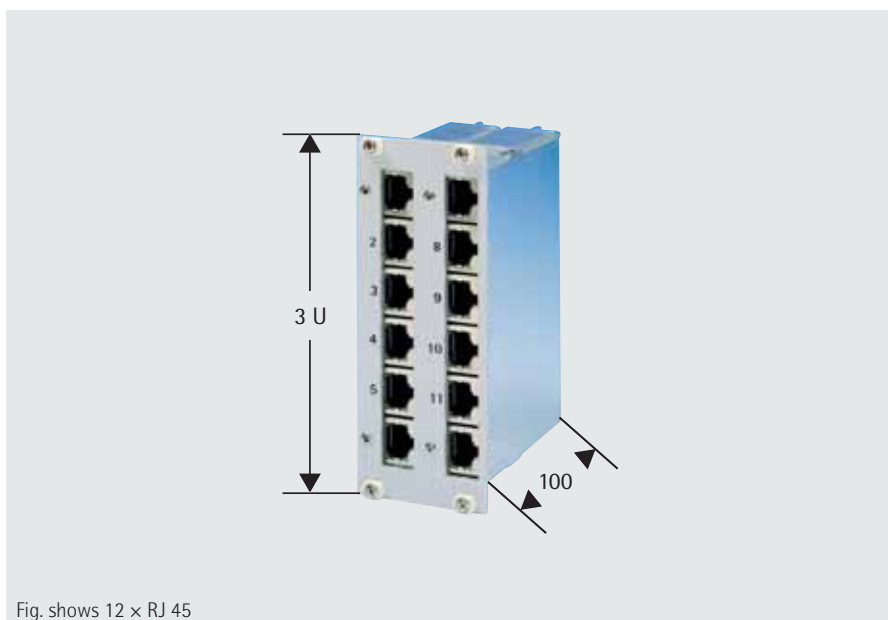


Fig. shows 12 x RJ 45

- suitable for accommodation in a 19" subrack (see page 138) or in the LAN small distribution unit (see page 77)
- shielded CAT.6A distribution panel
- 6-way RJ 45 (3 U / 8 HP) or 12-way RJ 45 (3 U / 10 HP)
- metal enclosure with large low-impedance galvanised surfaces
- LSA Plus connecting system
- labelled aluminium front panel

Finish:

front panel: anodised
enclosure: galvanised

| Description | Order no. |
|-----------------------|------------|
| 6-way distrib. panel | 213-503-10 |
| 12-way distrib. panel | 213-503-30 |



19" FO splice box 1 U

- ease of use and installation for structured cabling using fibre optics
- modular construction allows you to choose between an extractable or built-in box with different front panels
- installation of the front panels either recessed or flush with the 19" level
- also available pre-assembled

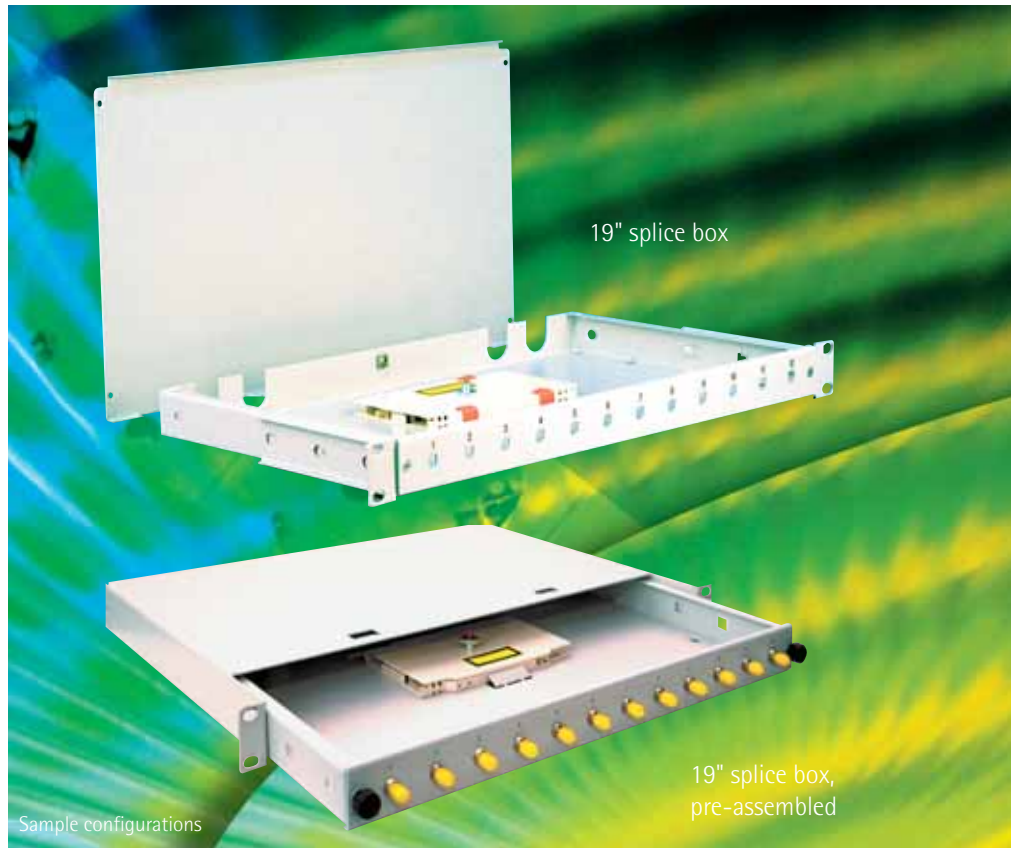
Dimensions (H x W x D):

44 mm x 482.6 mm x 260 mm (built-in)

44 mm x 482.6 mm x 313 mm (extractable)

Scope of delivery

| Item | Pc. | Description |
|------|-----|-------------|
| 1 | 1 | Drawer |
| 2 | 1 | Cover |
| 3 | 1 | Front panel |



| Description | 12 x ST | 24 x ST | 6 x SC-duplex (12 ports) | 12 x SC-duplex (24 ports) | 12 x SC* simplex | 24 x SC* simplex |
|---------------------------------|------------|------------|--------------------------|---------------------------|------------------|------------------|
| 19" FO splice box (built-in) | 213-301-12 | 213-301-24 | 213-302-12 | 213-302-24 | 213-303-12 | 213-303-24 |
| 19" FO splice box (extractable) | 213-311-12 | 213-311-24 | 213-312-12 | 213-312-24 | 213-313-12 | 213-313-24 |

* These boxes are also suitable for the integration of an E2000 simplex mid-section. • FO splice boxes for other plug-in connectors on request!

FO splice cassette/cover



- FO splice cassette with 4 cabling and wire entry areas
- one angled entry area is designed with 3 retention options
- fibre hold-down devices are integrated in the splice cassette area for the fibre lengths

Dimensions (L x W x H):

155 mm x 92 mm x 8 mm

Material: ABS

| Description | Order no. |
|--------------------------|------------|
| Splice cassette | 640-400-01 |
| Splice cassette cover | 640-400-02 |
| Splice protective sleeve | 640-400-05 |

Pre-assembly for 19" splice box 1 U

Of course, we also offer this box pre-assembled with fibre optics. This saves you time-consuming and costly on-site assembly.

Scope of delivery

| Item | Description |
|------|---|
| 1 | Configuration with pigtail (approx. 2.5 m) and coupling |
| 2 | Assembly of the coupling in the front panel |
| 3 | Secure storage of the fibre optics in the enclosure |

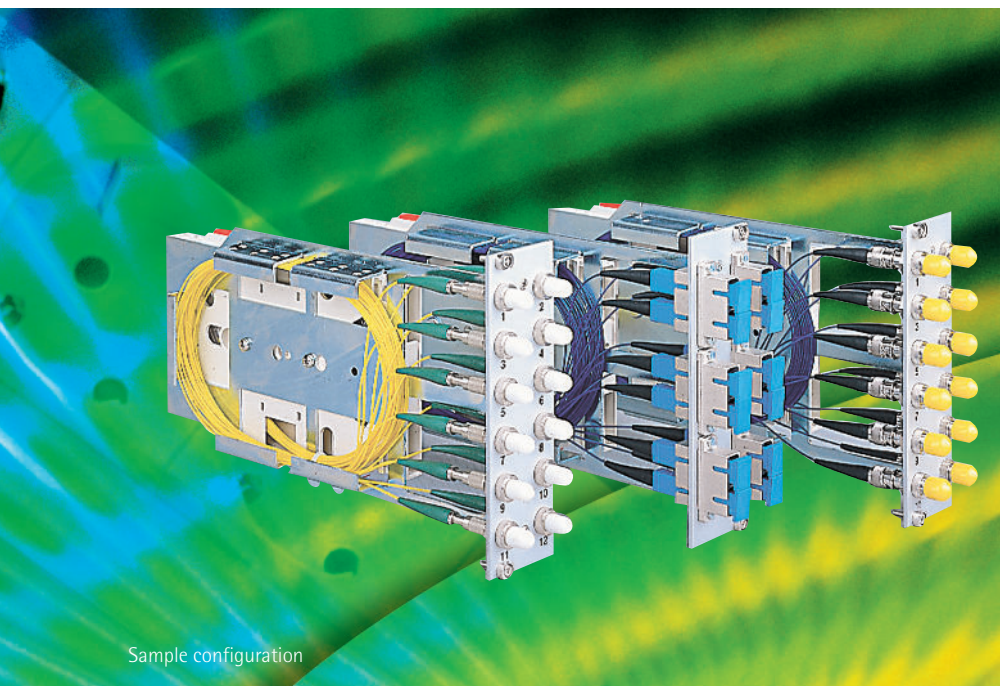
Order information

| Description | Order no. |
|-----------------|------------|
| 1 x ST 50/125 | 214-321-01 |
| 1 x ST 62.5/125 | 214-331-01 |
| 1 x ST 9/125 | 214-341-01 |
| 1 x SC 50/125 | 214-322-01 |
| 1 x SC 62.5/125 | 214-332-01 |
| 1 x SC 9/125 | 214-342-01 |

Please order FO splice box and accessories separately!

Pre-assembly means:

- mounting of the coupling on the front panel and fixing of the pigtail
- secure laying of wires from the front panel to the splice cassette with sufficient wire lengths of approx. 1.5 m
- deposit of an additional approx. 1 m wire in the splice cassette
- storing of the coloured fibres in the splice cassette



Sample configuration

Fibre optic modules assembled

The fibre optic modules (3 U, 8 HP) are ideal when high packing densities are required in professional distribution systems.

- an extended-length compartment is integrated on the opposite side of the splice cassette for accommodating spare wire lengths in the support panel.
- the front panel may be fitted with up to 12 numbered ST or SC couplings.
- wire pigtailed are routed from the front panel to the extended-length compartment and from there via openings into the splice cassette.
- approx. 1 m of the colour-coded wires is deposited and stored here.
- a whole range of feed-through and retainer options are available in the extended-length compartment and splice cassette.

Dimensions (H x W x D):
3 U x 8 HP x 240 mm

Material/finish:
front panel: aluminium, anodised
support panel: sheet metal, galvanised

Scope of delivery

| Item | Pc. | Description |
|------|-----|--|
| 1 | 1 | Front panel with screw holder and neck collar screws M 2.5 |
| 2 | 1 | Support panel with integrated extended-length compartment |
| 3 | 1 | Splice cassette |
| 4 | 1 | Splice cassette cover |
| 5 | 1 | Mounting material FO configuration |

Other plug-in connections (e.g. E2000) on request!

Pre-assembly means:

- mounting of the coupling on the front panel and fixing of the pigtail
- secure laying of wires from the front panel to the splice cassette with sufficient wire lengths of approx. 1.5 m
- deposit of an additional approx. 1 m wire in the splice cassette
- storing of the coloured fibres in the splice cassette

Order information

Pre assembled with 4, 8 or 12 FO pigtailed and **ST** couplings

| Assembly | Order no. | | |
|----------|------------|-------------|------------|
| | ST 50/125 | ST 62,5/125 | ST 9/125 |
| 4 | 214-221-04 | 214-231-04 | 214-241-04 |
| 8 | 214-221-08 | 214-231-08 | 214-241-08 |
| 12 | 214-221-12 | 214-231-12 | 214-241-12 |

Pre assembled with 4, 8 or 12 FO pigtailed and **SC** couplings

| Assembly | Order no. | | |
|----------|------------|-------------|------------|
| | SC 50/125 | SC 62,5/125 | SC 9/125 |
| 4 | 214-222-04 | 214-232-04 | 214-242-04 |
| 8 | 214-222-08 | 214-232-08 | 214-242-08 |
| 12 | 214-222-12 | 214-232-12 | 214-242-12 |



You can find the right LAN small distribution cabinet unit in the section "Wall-mounting enclosure systems" on page 75!



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Empty fibre optic modules

- front panels with a pre-punched hole pattern and under anodising printing

Dimensions (H x W x D):

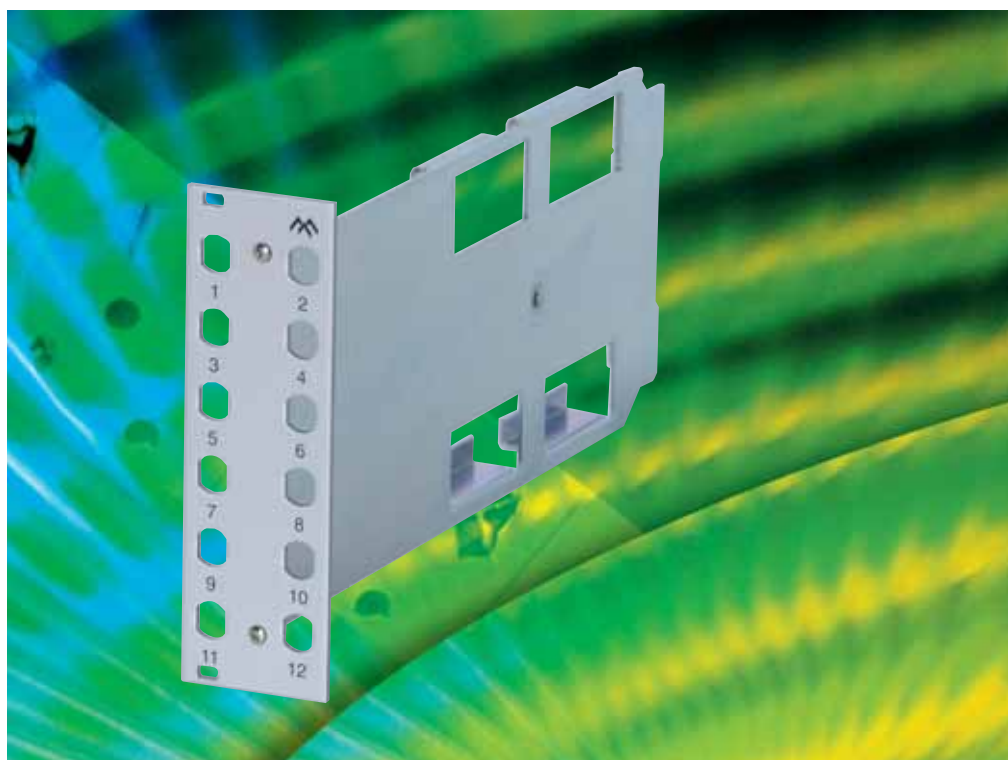
3 U x 7 HP x 240 mm or

3 U x 8 HP x 240 mm

Material/finish:

front panel: aluminium, anodised

support panel: sheet metal, galvanised



Scope of delivery

| Item | Pc. | Description |
|------|-----|--|
| 1 | 1 | Front panel with screw holder and neck collar screws M 2.5 |
| 2 | 1 | Support panel with integrated extended-length compartment |
| 3 | 1 | Splice cassette |
| 4 | 1 | Splice cassette cover |
| 5 | 1 | Mounting material |

Order information

| HP | Description | Order no. |
|----|-------------------------|------------|
| 8 | 12 x ST | 213-120-10 |
| 8 | 12 x SC (6 x SC-duplex) | 213-120-11 |
| 8 | 12 x E2000 (6 x duplex) | 213-120-12 |
| 7 | 12 x SC (6 x duplex) | 213-120-13 |
| 7 | 12 x E2000 (6 x duplex) | 213-120-14 |
| 7 | 12 x E2000 (SC-simplex) | 213-120-17 |

Other module variants on request!

Accessories

Blind/partial front panels 3 U



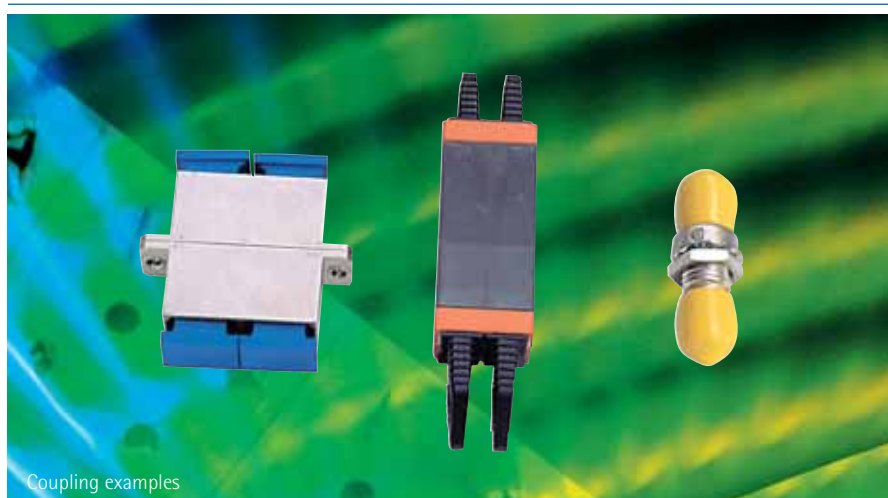
- for fitting non-reserved pitches (HP) in the subrack

Material: aluminium 2.5 mm

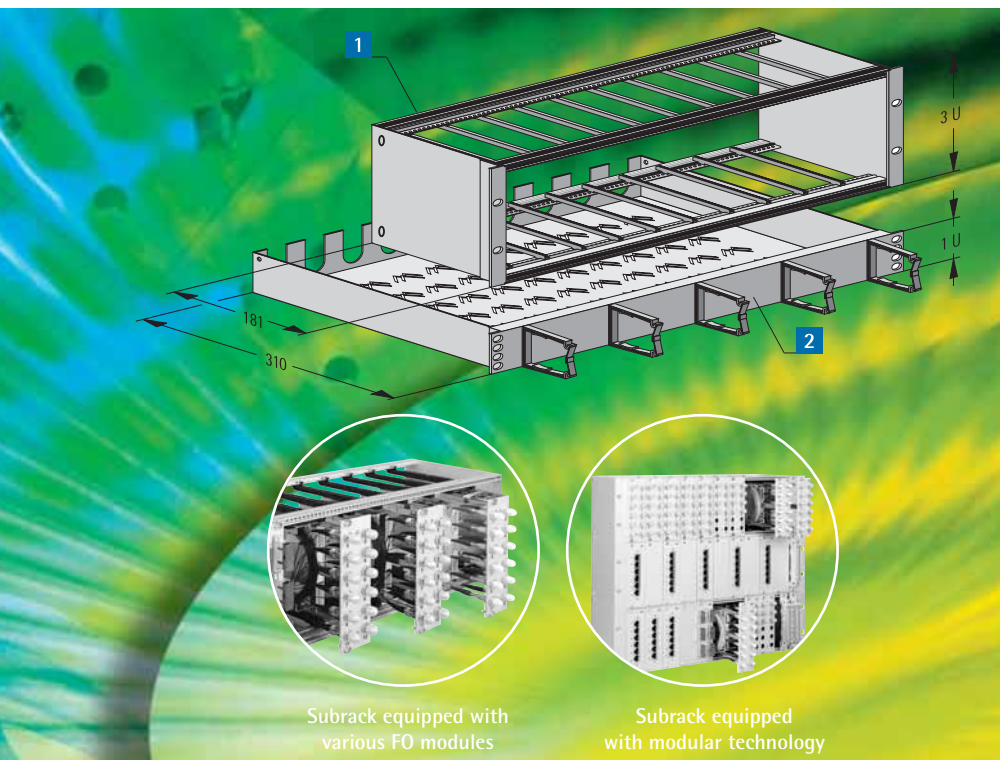
Finish: anodised/chromated

| Description | Order no. |
|------------------|------------|
| Blind panel 4 HP | 243-304-00 |
| Blind panel 7 HP | 243-307-00 |
| Blind panel 8 HP | 243-308-00 |

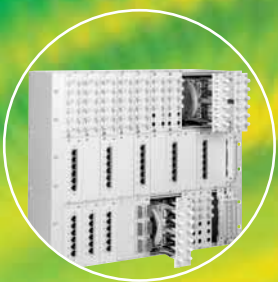
FO couplings available on request!



Coupling examples



Subrack equipped with various FO modules

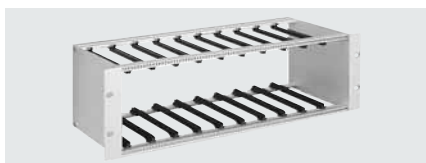


Subrack equipped with modular technology

Modular technology

- system for accommodating fibre optics, CAT.6 and telephone modules
- ideal for very high packing densities (max. 144 ports on 3 U or mixed hybrid use)
- based on a 19" subrack, which can accommodate up to 12 modules (7 HP per module)
- screw-on 19" FO shelf 1 U for secure cable feed through
- 5 front-mounted cable clips for neat horizontal switching
- compact and stable 4U component

1 19" subrack 3 U



- installation width 84 HP
- for the integration of up to 12 modules (with 7 HP module) including 24 plastic card guides
- includes mounting material

Finish: anodised/chromated

Material: aluminium/plastic

Dimensions (H x W x D):

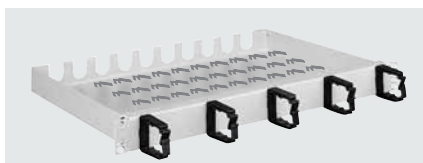
132.5 mm x 482.6 mm x 181 mm

Scope of delivery

| Item | Pc. | Description |
|------|-----|------------------------|
| 1 | 2 | Front bracket |
| 2 | 2 | Side panels |
| 3 | 4 | Module rails |
| 4 | 2 | Threaded strips M 2.5 |
| 5 | 24 | Card guides |
| 6 | 1 | Screw set M 5 x 8 (4x) |
| 7 | 1 | Mounting material |

Order no.
213-084-00

2 19" shelf 1 U



- for accommodation of wire and cable lengths routed from the rear through slot openings. M 20 screw connections are used in the openings to hold the cables.
- perforated in the bottom area for unhindered air circulation and neat cable arrangements, e.g. with cable ties
- includes mounting material

Finish: RAL 7035 light grey

Material: sheet metal/plastic

Dimensions (H x W x D):

44 mm x 482.6 mm x 310 mm

Scope of delivery

| Item | Pc. | Description |
|------|-----|-------------------|
| 1 | 2 | FO shelf |
| 2 | 5 | Cable conduit |
| 3 | 1 | Mounting material |

Order no.
213-085-00

CAT.6A patch panel 6-way/12-way

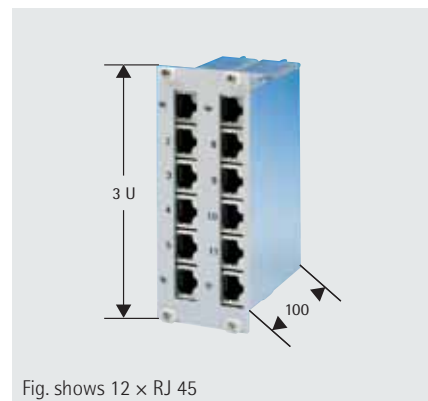


Fig. shows 12 x RJ 45

- shielded CAT.6 distribution panel
- 6-way RJ 45 (3 U / 8 HP) or 12-way RJ 45 (3 U / 10 HP)
- metal enclosure with large low-impedance galvanised surfaces
- LSA Plus connecting system
- labelled aluminium front panel

Finish:

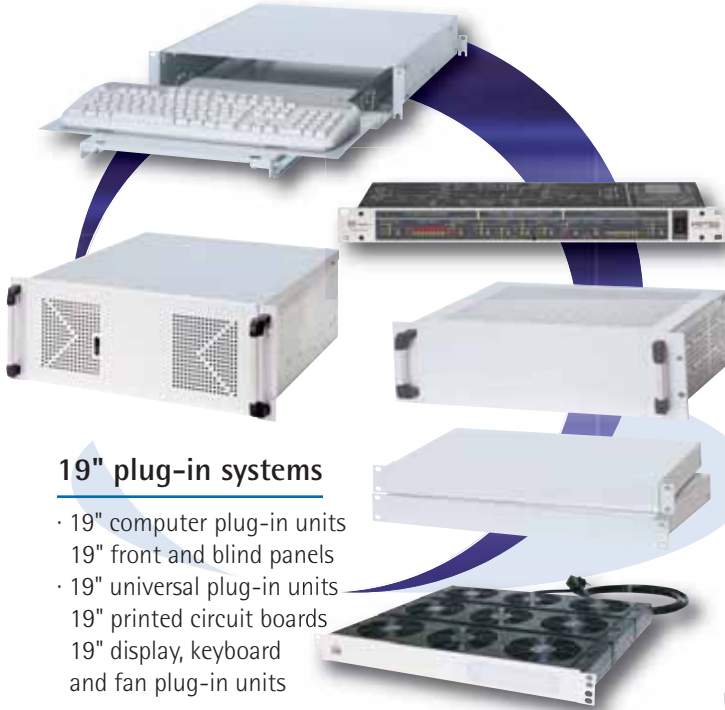
front panel: anodised
enclosure: galvanised

| Description | Order no. |
|-----------------------|------------|
| 6-way distrib. panel | 213-503-10 |
| 12-way distrib. panel | 213-503-30 |



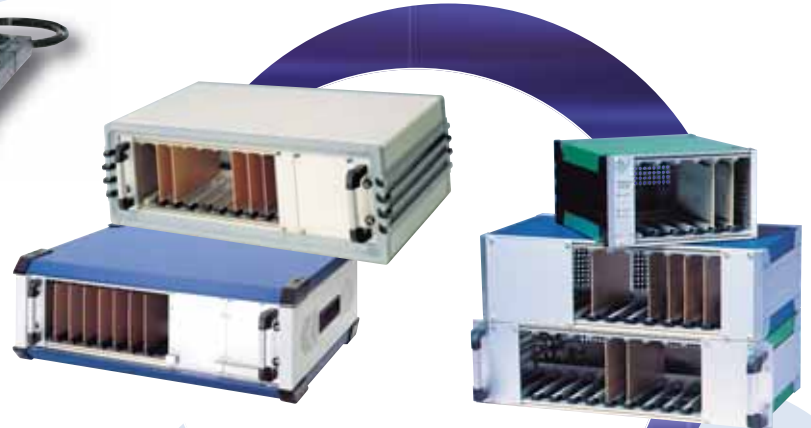
19" cabinet systems

- 19" "TiRAX" cabinet system (from page 3)
- 19" "NETcell" cabinet system (from page 31)
- VARI 2000 wall-mounting distribution system (from page 63)
- Power supplies (from page 85) and air conditioning technology (from page 77)



19" plug-in systems

- 19" computer plug-in units
- 19" front and blind panels
- 19" universal plug-in units
- 19" printed circuit boards
- 19" display, keyboard and fan plug-in units



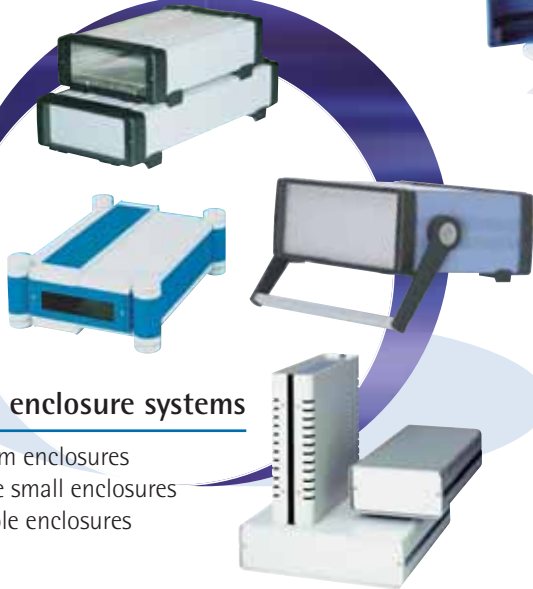
19" enclosure systems

- Desktop enclosure systems
- 19" enclosures



19" electronics module systems

- Subracks 1-14 U, VME, Compact PCI, Advanced TCA
- EMC subracks
- Customer-specific subracks
- Cassettes, plug-in modules, partial front panels



Small enclosure systems

- Modem enclosures
- Profile small enclosures
- Console enclosures



Plastic enclosures

- Individual plastic enclosures in milling, bending, casting and deep drawing technology
- Film technology



Display and control enclosures

- TFT terminals
- Enclosures for information technology (e.g. visualisation of information in public transport)
- Enclosures for advertising technology



Panel instrument cases and top hat rail enclosures

- Enclosures in accordance with IEC 61554
- Plastic injection moulding
- Plastic mould construction

Whether it be metal or plastic, standard or customer-specific - we can help you plan the optimum shell for your valuable electronics. Contact us to find out more!

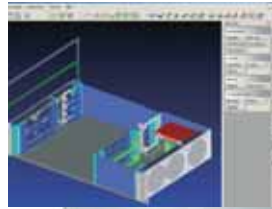




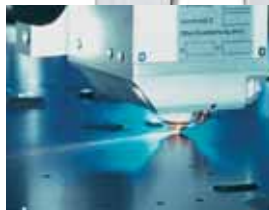
A holistic approach

With our expertise and ultra-modern machinery, we can develop, produce and assemble the perfect enclosure for you.

1. DEVELOPMENT



- 3D design
- Construction
- Testing and simulation (EMC, IP, trial, etc.)
- Consulting and technical support



2. PUNCHING/ PRESSING TECHNOLOGY

- Laser cutting
- Punching/pressing
- Imprinting



3. BENDING TECHNOLOGY

- Robot-supported bending
- Crimping
- Deposit



4. PLASTICS PROCESSING

- Milling and bending technology
- Vacuum casting technology (SYN-PRO tech)
- Cast moulding technology (GIEFO tech)
- Injection moulding
- Rapid prototyping

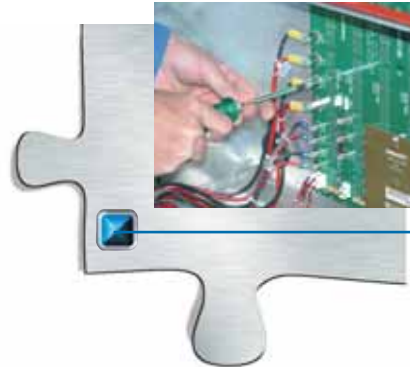


to production



5. JOINTING TECHNOLOGY

- Robot-supported welding
- Press-fitting
- Pressure joining
- Riveting



8. ASSEMBLY

- Assembly service
- Pre-wiring
- Cable configuration
- System integration



7. LABELLING

- Screen printing
- Digital printing
- Pad printing
- Sub-oxal printing
- Films and membrane keypads



6. SURFACE TECHNOLOGY

- Powder coating
- Wet painting
- Chromating
- Conductive paint coating
- Nano paint coating





IP protection classes in accordance with DIN EN 60529

In order to ensure reliable operation, all electronic devices and systems must be protected against possible interference. Enclosures and/or cabinets must therefore fulfil certain protection requirements depending on the area of application. These requirements are specified in

the standards DIN EN 60529 with IP protection classes (IP = international protection). They indicate the capacity of an enclosure to protect installed components against contact and the ingress of foreign bodies and water. The first digit of the IP protection class defines the degree of protection against contact and foreign bodies, while the sec-

ond digit indicates the degree of water protection. The table below shows the meaning of the individual numbers.



Degrees of protection in accordance with DIN EN 60529

| Protection against contact and foreign bodies | | | Protection against ingress of water | |
|---|--|--|-------------------------------------|---|
| First digit | Contact | Foreign bodies | Second digit | Contact |
| 0 | No protection | No protection | 0 | No protection |
| 1 | Protection against contact with larger body parts | Protection against large foreign bodies, diameters greater than 50 mm | 1 | Protection against water dripping vertically |
| 2 | Protection against finger contact | Protection against medium-size foreign bodies, diameter greater than 12.5 mm | 2 | Protection against water dripping at an enclosure angle up to 15° to the vertical |
| 3 | Protection against contact with tools and wires, diameters greater than 2.5 mm | Protection against small foreign bodies, diameter greater than 2.5 mm | 3 | Protection against spray up to 60° to the vertical |
| 4 | Protection against contact with tools and wires, diameters greater than 1 mm | Protection against granular impurities, diameter greater than 1 mm | 4 | Protection against splash water from any direction |
| 5 | Full protection | Protection against harmful dust deposits | 5 | Protection against jet water from any direction |
| 6 | Full protection | Protection against dust entry | 6 | Protection against heavy jet water from any direction |
| | | | 7 | Protection when temporarily immersed in water |
| | | | 8 | Protection when immersed in water for an extended period |



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Certification

The apra Group relies on innovative products of high quality, which form the basis of the continually growing corporate group. A sound quality and environmental management system is a prerequisite for this.

Independent proof of this system is provided by means of a certificate issued when a company can prove by means of an audit that all requirements arising from the DIN standard have been met.

One of these requirements is, for example, that all processes are documented clearly, transparently and in full.

The apra Group can produce proof of certification of its quality and environmental management system for all locations.

DIN EN ISO 9001:2008 is a standard that regulates the selection and installation of a quality management system within a company.

DIN EN ISO 14001:2009 is the environmental standard. It is awarded when a company complies with all environmental aspects.

The management systems described in a management manual for quality and the environment set out all organisational measures to ensure that all products comply with the rules and regulations to be applied as agreed and function as intended during operation.

The apra Group undertakes to comply with the environmental requirements and to continuously improve its environmental protection. Compliance with the environmental protection policy is monitored regularly.

The certificates issued are checked annually by TÜV to ensure they are valid.

A quality management system certified in accordance with the standard proves to the customer that the supplier will deliver good products in compliance with its own rules.

These certificates significantly reduce the cost for the verification of suppliers and customers on both sides.



Approvals



Verein Deutscher Elektrotechniker



Underwriters Laboratories



Conformité Européenne



Canadian Standards Association



Tested Safety



Technischer Überwachungsverein



Terms of Delivery and Payment

1. Application

- 1.1 These terms and conditions of sale shall apply exclusively. Differing or contrary terms shall not apply except if expressly agreed upon in writing.
- 1.2 These terms and conditions of sale shall also govern all future transactions between the parties and shall also apply if we perform delivery despite our knowledge of differing or contrary terms.
- 1.3 These terms and conditions of sale shall only apply vis à vis entrepreneurs, governmental entities, or special governmental estates within the meaning of sec. 310 para. 1 BGB (German Civil Code).

2. Offer, Acceptance

- 2.1 Our offerings are subject to change, the agreement shall only come into effect upon receipt of our order confirmation or when the order is carried out. Changes in price or cost (e.g. salary increases as agreed by collective agreement or material cost increases) entitle us to adjust our prices. Provided such change occurs after an order confirmation, we are entitled to withdraw, as far as the customer does not agree to a price adjustment.
- 2.2 The cabinets and enclosures depicted are configuration examples. These are not identical with the scope of delivery. The right to make technical changes is reserved.

3. Prices, Payment

- 3.1 Except as otherwise stated under the terms of any quotation or unless otherwise agreed in writing all prices are ex works („ex works“, Inco-terms® 2010), exclusive of the respective statutory VAT and exclusive of costs for packaging. Transport and packaging costs will be calculated separately, and the respectively applicable VAT applied separately.
- 3.2 The purchase price is due and payable net within 30 days from the date of the invoice. From the due date default interest in the amount of 9% above the respective base interest rate p. a. shall accrue. We reserve all rights to claim further damages for delay.
- 3.3 Payments to agents or our employees shall only be effective if a written authorization to receive money or a receipt from us is submitted.
- 3.4 First orders to new clients shall generally only be made with cash on delivery (standard products) or with advance payment (customized products). We reserve the right to specify the terms of payment for future deliveries after submission of a completed customer dataset and credit assessment.

4. Offset, Retainer

The customer shall be entitled to offset or to claim retainer rights only insofar as the customer's counterclaim is acknowledged, undisputed or assessed in a legally binding judgment. Additionally, the customer is entitled to claim retainer rights only to the extent such rights are based on the same transaction.

5. Delivery

- 5.1 Delivery of the goods shall be made by the customer collecting the goods at our premises after we have notified the customer that the goods are ready for collection („ex works“, Inco-terms® 2010) or, if agreed otherwise by us delivering the goods to the agreed place. Delivery is conditioned upon timely and proper performance of all duties of the customer. Defences based on non-performance of the contract are reserved.
- 5.2 In case of default in acceptance or other breach of duties to cooperate by the customer we are entitled to claim any resulting damage including but not limited to additional expenses, if any. Further damages are reserved. In this case, the risk of loss or damage to the goods passes to the customer at the time of such default or breach of duty to cooperate.
- 5.3 In the event that the financial circumstances of the ordering party deteriorate significantly (e.g. protest of bill of exchange, application to open insolvency proceedings, submission of affidavit, etc.) as well as any disclosure of insufficient credit worthiness, we are entitled to request advance payments or the provision of security or to withdraw from the agreement.

6. Passing of Risk, Shipment

- 6.1 Risk of loss or damage to the goods shall pass to the customer as follows:
 - In the case of goods to be delivered otherwise than at our premises, at the time of delivery, or if the customer wrongfully fails to take delivery of the goods, the time when the seller has tendered delivery of the goods;
 - In the case of goods to be delivered at our premises („ex works“ Inco-terms® 2010) at the time we notify the customer that the goods are available for collection.
- 6.2 Unless otherwise specifically agreed upon, the means of transportation (shipping company, package service, post, etc.) shall be selected by us.
- 6.3 The delivery deadline is kept if, by its expiration, the subject of the agreement has left the factory or if we have declared that the subject of the agreement is ready for dispatch.
- 6.4 If we fall in default of delivery, we shall have an extension period of two weeks. In the case of force majeure (e.g. operational failures, difficulties with raw materials, war, strikes, etc.), we are released from the delivery deadline.

7. Withdrawal, Request of Partial Delivery

- 7.1 If our contractual partner withdraws unauthorized from the agreement or unauthorized refuses satisfaction of the agreement, the contractual partner shall be obligated to pay 15% of the gross value of the order as a lump sum in compensation unless it can prove that no damages were incurred or that damages were not incurred in this amount. The right to claim further damages is expressly retained.
- 7.2 Orders may then only be requested for delivery in partial quantities if this has been expressly previously agreed. Partial deliveries are excluded if the total order value is less than € 2,500.00 net, the term of the order is over six months and a single request for delivery amounts to a delivery value of less than € 1,000.00 net. If the ordering party withdraws unauthorized from the agreement, refuses satisfaction of the agreement or we are entitled to claim for damages, the regulations of aforementioned paragraph 1 shall apply. If we request neither satisfaction nor damages, we reserve the right to recalculate the prices of the quantities requested for standard parts, at the prices which would have been calculated had the order been restricted to this quantity at the onset. If the order concerns cus-

tomized products, we insist on satisfaction of the order in any eventuality. Prices offered or confirmed for larger procurement quantities can not be claimed for smaller quantities. Decreased or increased efficiency of 10% of the order volume is permissible for customized products.

8. Retention of Title

- 8.1 We retain title to the delivered goods until receipt of all payments in full regarding the purchase agreement. In case of breach of contract by the customer including, without limitation, default in payment, we are entitled to take possession of the goods.
- 8.2 Aforementioned title retention shall also apply to all claims from current and future business connections with the customers, including any current accounts.
- 8.3 The customer shall handle the goods with due care, maintain suitable insurance for the goods and, to the extent necessary, service and maintain the goods.
- 8.4 As long as the purchase price has not been completely paid, the customer shall immediately inform us in writing if the goods become subject to rights of third persons or other encumbrances.
- 8.5 The customer may resell goods subject to the above retention of title only in the course of his regular business. For this case, the customer hereby assigns all claims arising out of such resale, whether the goods have been processed or not, to us. Notwithstanding our right to claim direct payment the customer shall be entitled to receive the payment on the assigned claims. To this end, we agree to not demand payment on the assigned claims to the extent the customer complies with all his obligations for payment and does not become subject to an application for insolvency or similar proceedings or to any stay of payments. Storage of goods delivered under retention of title shall be at the cost and risk of the customer. Decrease in value of such goods shall be borne by the customer.
- 8.6 Insofar as the above securities exceed the secured claim by more than 20%, we are obligated, upon our election, to release such securities upon the customer's request.

9. Warranty

- 9.1 The customer is obligated to inspect the goods immediately upon receipt of delivery and to submit defects or deviations in quantity without delay - at least within 5 days of receipt of delivery - to us in writing. The deadline shall be met by receipt of the report of defects to us. Otherwise, the goods shall be deemed as accepted and approved regarding such defect or deviation in quantity. If defects or deviation in quantity are not recognized during the inspection mentioned above and are established later, declaration thereof must be made without delay within one week after discovery at the latest. Otherwise, the goods shall be deemed as accepted and approved also as regards such defect or deviation in quantity.
- 9.2 In the event of founded complaints, we resolve at our discretion pursuant to sec. 439 BGB (German Civil Code) the defect or deliver a replacement. If resolution of a defect fails, the ordering party can demand delivery of a defect-free product or reduction of the purchase price or withdraw from the agreement.
- 9.3 If inspection of a complaint determines no defect, we are entitled to charge the ordering party for the costs incurred.
- 9.4 The customer is obligated to inform us without delay of any expected claims resulting from a supply chain. Complaints concerning a part of a delivery do not justify complaints regarding the entire delivery.
- 9.5 Warranty claims expire by limitation within 12 months after delivery of goods.

10. Liability

- 10.1 Any liability not expressly provided below-mentioned shall be disclaimed as far as permitted by law.
- 10.2 In case of intent or gross negligence on our part or by our agents or assistants in performance we are liable according to the provisions of applicable law; the same applies in case of breach of fundamental contract obligations. To the extent the breach of contract is unintentionally our liability for damages shall be limited to the typically predictable damage.
- 10.3 Our liability for culpable damage to life, body or health as well as our liability under the Product Liability Act shall remain unaffected.

11. Customer's Obligations

- 11.1 The customer accepts the obligation to dispose properly of the delivered goods after the end of usage at its own cost and in accordance with legal regulations. The customer is obligated to keep us indemnified against all obligations under sec. 10, para. 2 ElektroG (Electrical and Electronic Equipment Act) (Take-back obligation of the Producer) and from any claims to which third parties are entitled thereunder.
- 11.2 The ordering party shall bear partial costs for special tools and related machinery and programs. The partial cost for tools shall be due at the latest upon presentation of the sample produced with the tool and must be paid in the net amount within 10 days of the date of invoice. These special tools, machinery and programs shall remain our unlimited property.

12. Final Clauses

- 12.1 This contract shall be governed by the laws of the Federal Republic of Germany excluding the Convention on Contracts for the International Sale of Goods (CISG).
- 12.2 If the conditions for a court agreement pursuant to sec. 38 ZPO (German Code of Civil Procedure) have been met, then the court of jurisdiction for all claims by the contractual partner shall be - depending on the value of the subject matter - Amtsgericht (District Court) Daun or Landgericht (County Court) Trier. We are entitled at our discretion to file an action against the customer at all his places of jurisdiction whether to German law or the national law of the customer.
- 12.3 If any individual provision herein is or becomes ineffective, the validity of the remaining provisions shall remain unaffected thereby. Contractual partners shall be obligated to replace an ineffective provision with a new provision that is as close as possible to the fiscal meaning and purpose of the ineffective provision.
- 12.4 In case of doubt to the interpretation of these general terms and provisions the German version shall obtain.