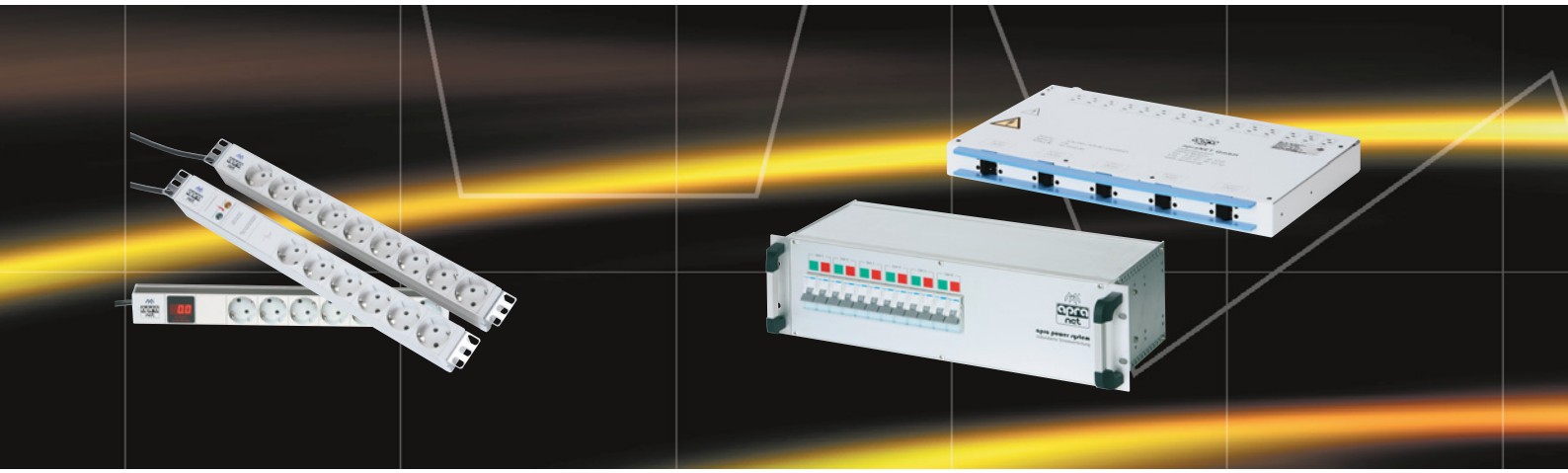
You can read more about products from the apra-group at www.apra-norm.com

Power distribution system

www.apranet.de



Multiple socket strips

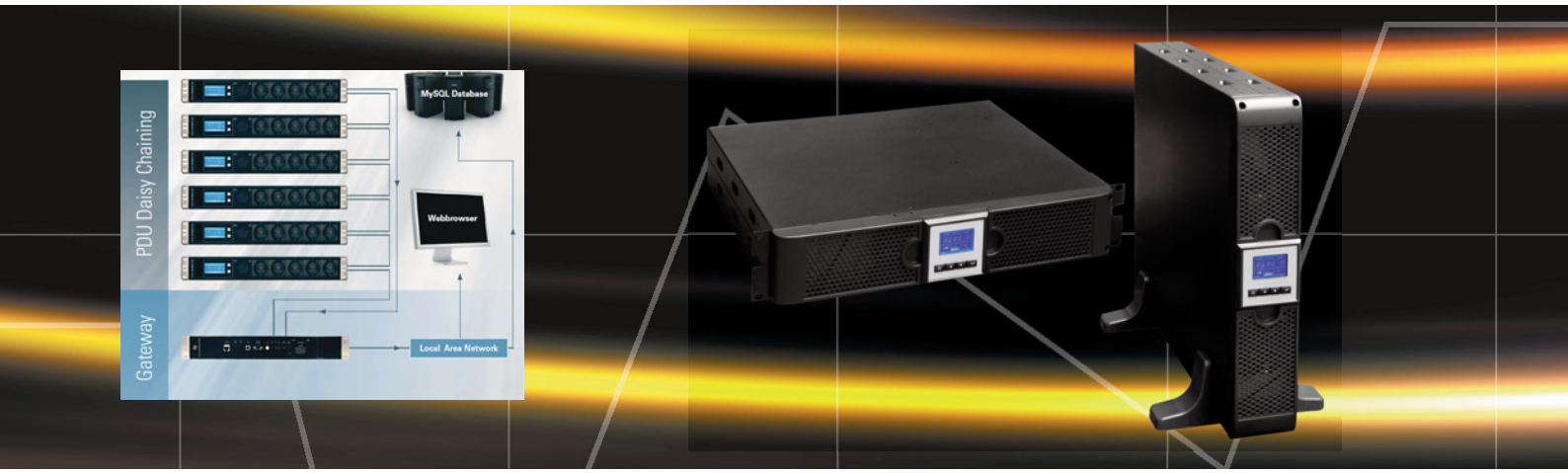
Page 88

- 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

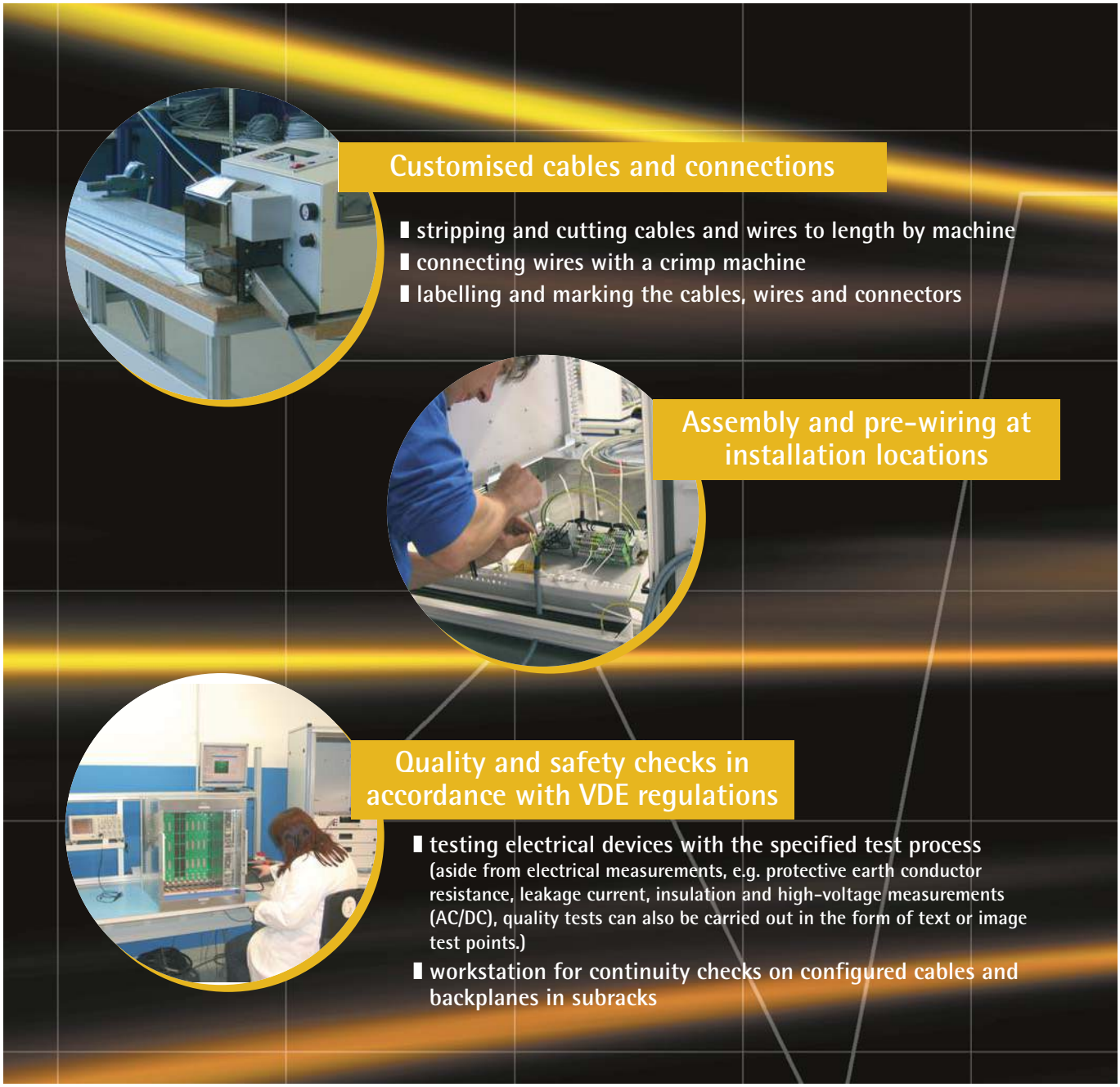
www.apranet.de

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!

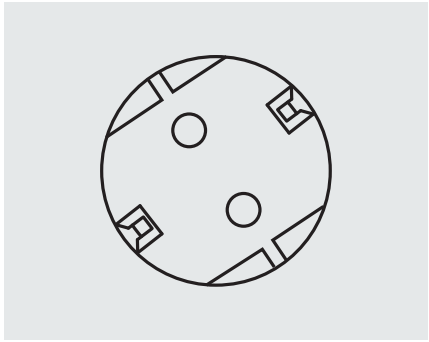


www.apranet.de

Multiple socket strips

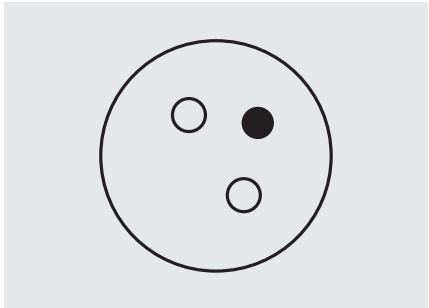
- space-saving design
- stable aluminium enclosure
- suitable for 19" mounting in 1 U division (L = 440 mm) and/or cabinet rack mounting
- connection: 3 × 1.5 mm²
- standard cable length: 2.0 m
- Earthing-pin and UTE standard sockets: twisted 35°
- incl. mounting bracket

Earthing-pin 230 V AC, 16 A



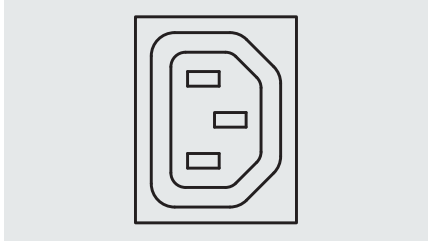
No. of sockets	Switch	Surge protection	Mains filter	Amp. meter	19" install.-compat-ible 1 U	Length L mm	Colour	Order no.
9	-	-	-	-	x	440	light grey	591-400-00
12	-	-	-	-	-	610	black	591-412-00
8	x	-	-	-	x	440	light grey	591-401-00
8	-	x	-	-	x	440	light grey	591-402-00
6	-	x	x	-	x	440	light grey	591-403-00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



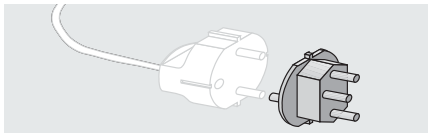
No. of sockets	Switch	Surge protection	Mains filter	Amp. meter	19" install.-compat-ible 1 U	Length L mm	Colour	Order no.
9	-	-	-	-	x	440	light grey	591-405-60
12	-	-	-	-	-	610	black	591-412-60
8	x	-	-	-	x	440	light grey	591-406-60
8	-	x	-	-	x	440	light grey	591-402-60
6	-	x	x	-	x	440	light grey	591-403-60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

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

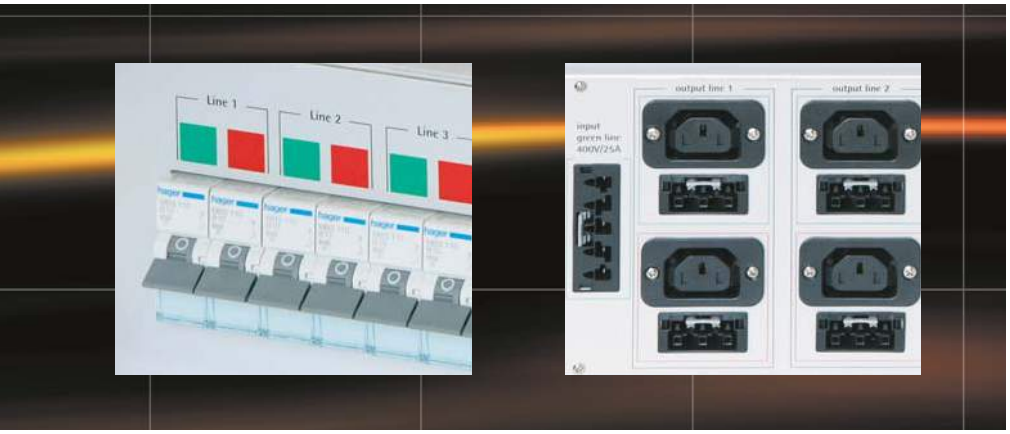
Mounting set for 19" installation (1 U)

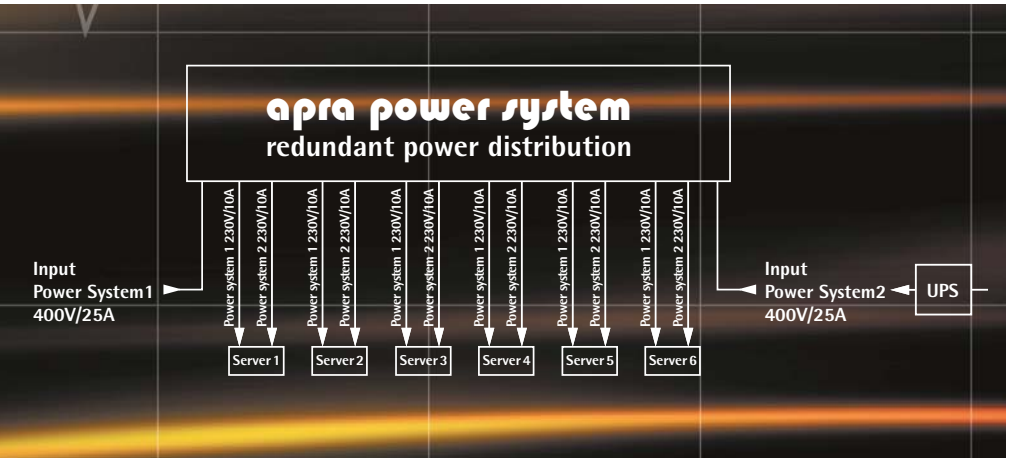
Order no. (set)
591-910-01

Surge protection with remote signalling output

10 A fuse

www.apranet.de





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 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

Order no.
591-910-10

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

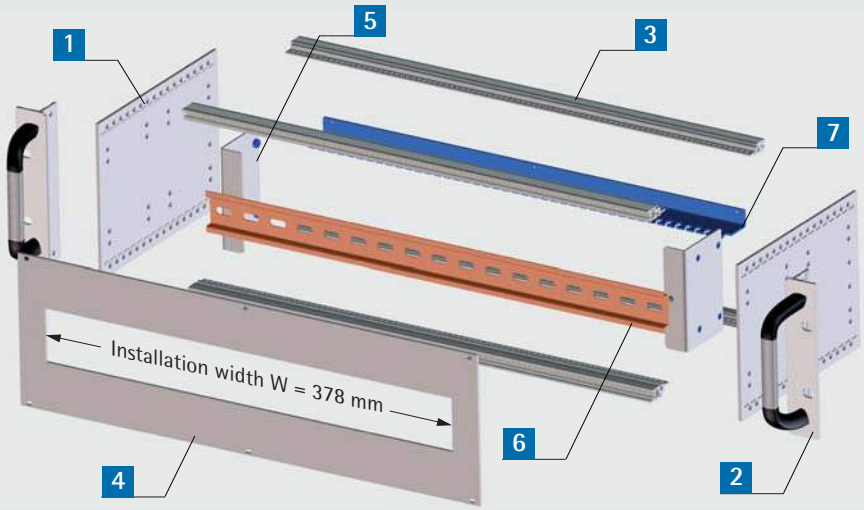
Material:
side panels: aluminium 2.5 mm
module rail: aluminium profile
front bracket: aluminium profile

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

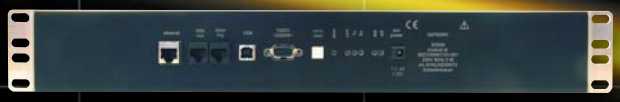
Material: plastic

Length mm	Order no.
219	640-222-00

www.apranet.de

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

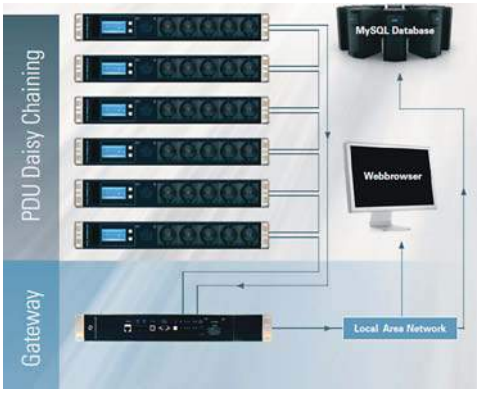
- inputs: one-phase or three-phase, 16A or 32A via CEE-plug
- thermal fuses against overload
- measurement of outbound electric circuits if required
- switching of individual outputs if required
- measurement of power, voltage, output and consumption as well as the internal temperature of the strip and 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

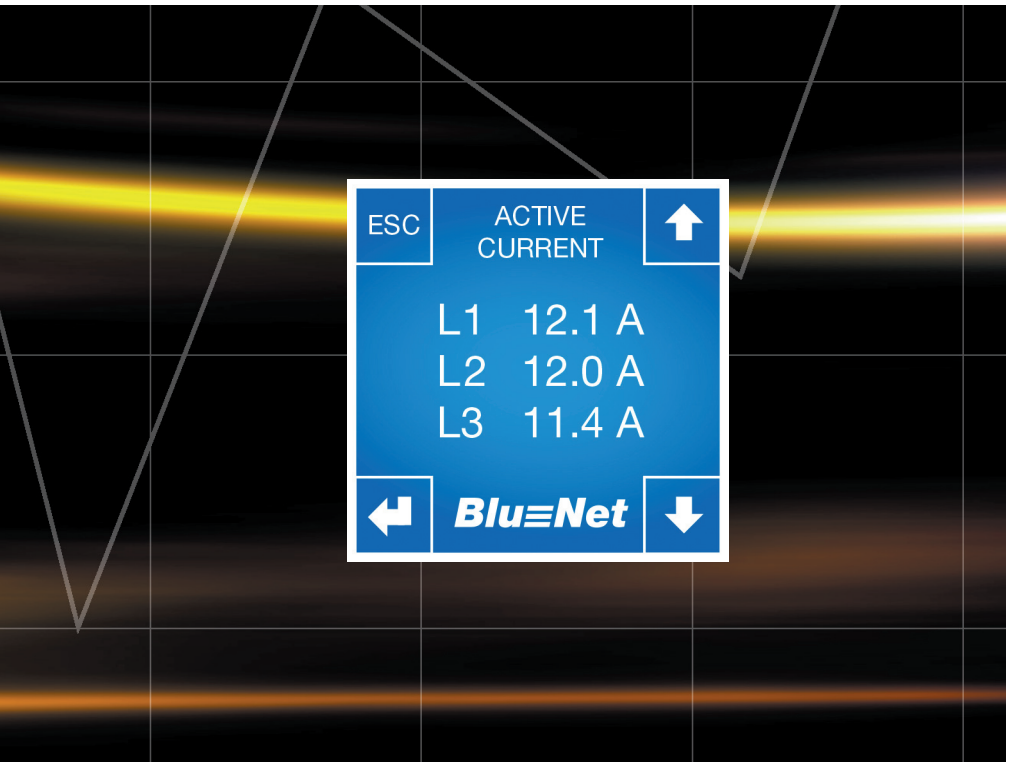
- all strips are connected to a data bus for management purposes and "remote monitoring".
- the gateway is the interface between the data bus and a TCP/IP network.
  This means that you have access to all your PDUs via one single IP-address.

  This reduces costs for infrastructure and for security measures.



Design	Input	Phases Input	Current per phase	Outputs	Measure-ment 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 × W × D):
44.4 (1U) × 438 × 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

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

www.apranet.de

Monitored PDU

Integrated measurement of: power, active power, voltage, frequency, cos ϕ 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

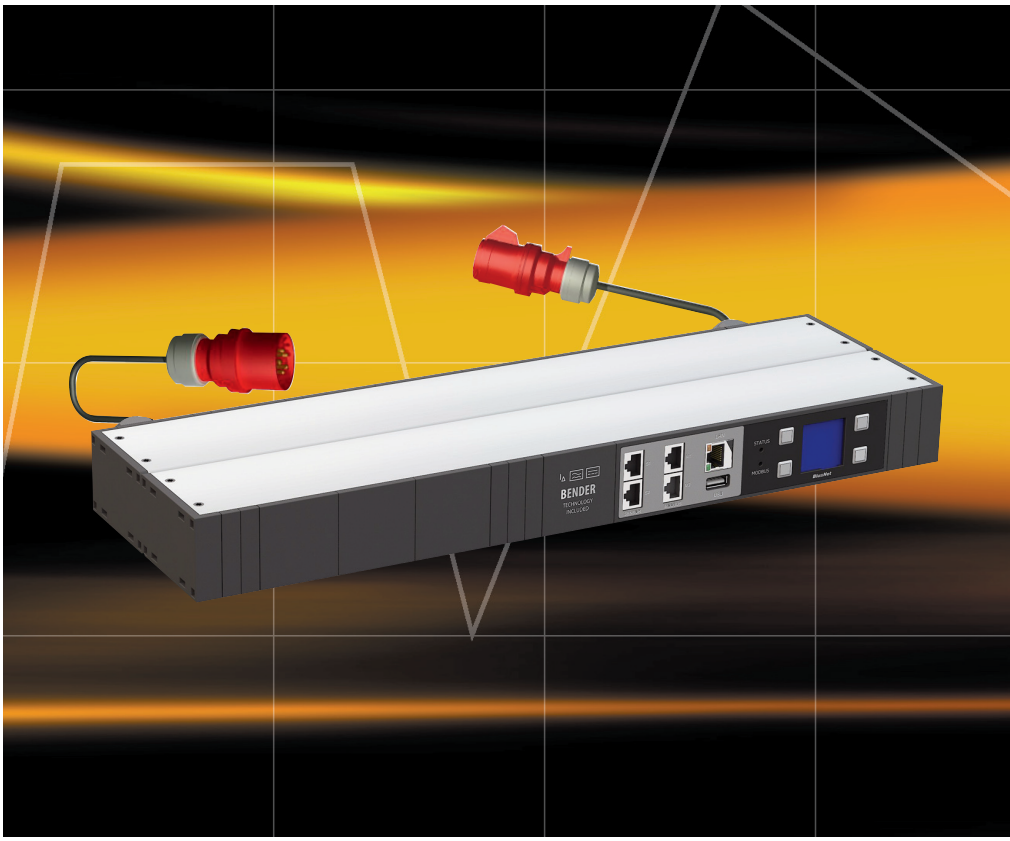
Retrofit module for existing systems

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

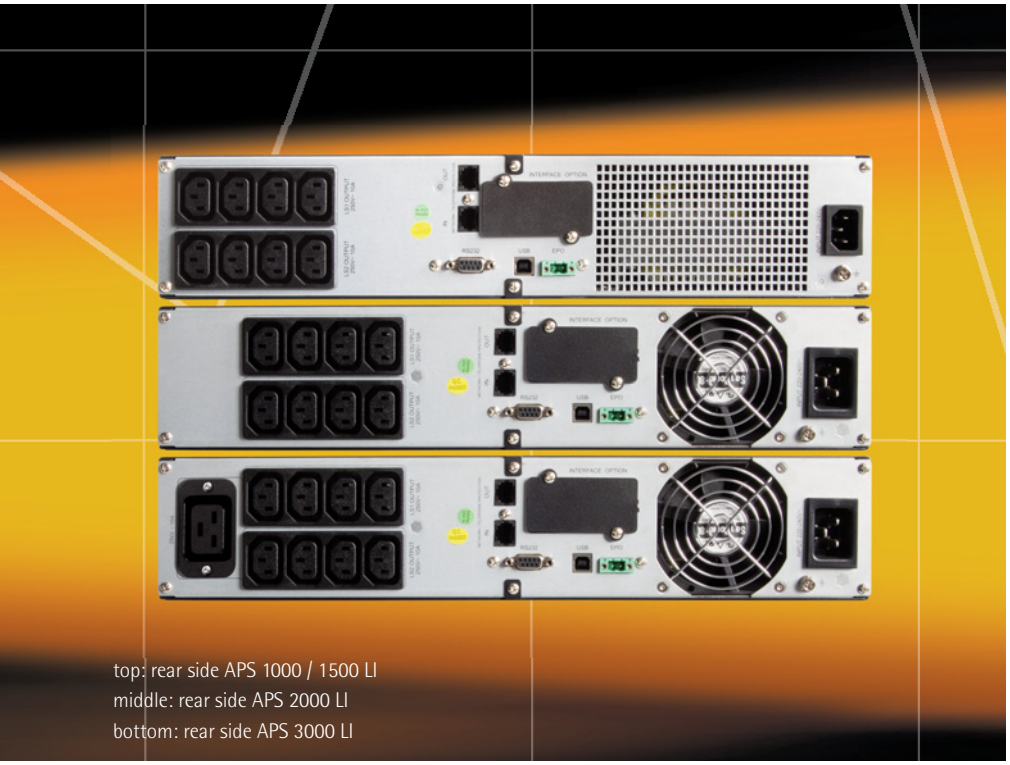
The PDU has an integrated ethernet connection and can therefore be easily operated via a web browser.

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!



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

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.

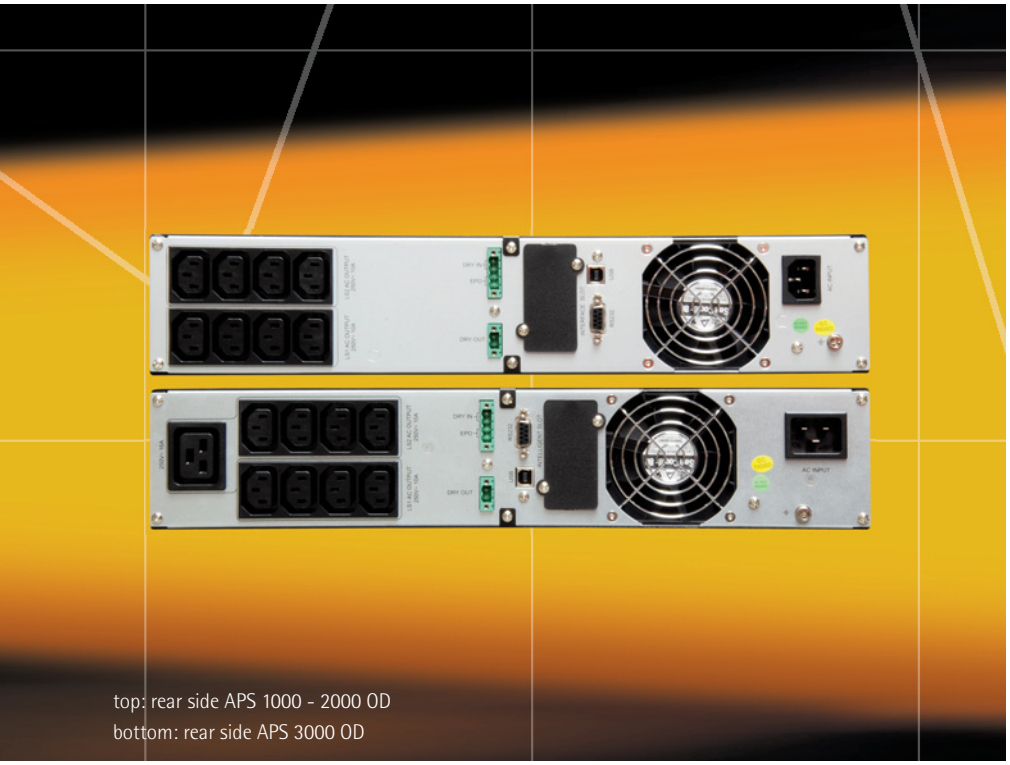
The series is equipped with RS-232, USB and emergency contacts as standard. The card slot can be equipped with additional communications cards like a SNMP adapter or a relay card.

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

	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**



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

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

Subject to technical modification and errors. Picture can differ from actual product.

	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**

www.apranet.de

Guarantee success with a unique combination of our individual products!

Contact us and we will be happy to advise you.