

PRODUCT PRESENTATION PROTECT 1.

April 2012
DATA&IT, SBU C-UPS, PM/SR



AEG
POWER SOLUTIONS

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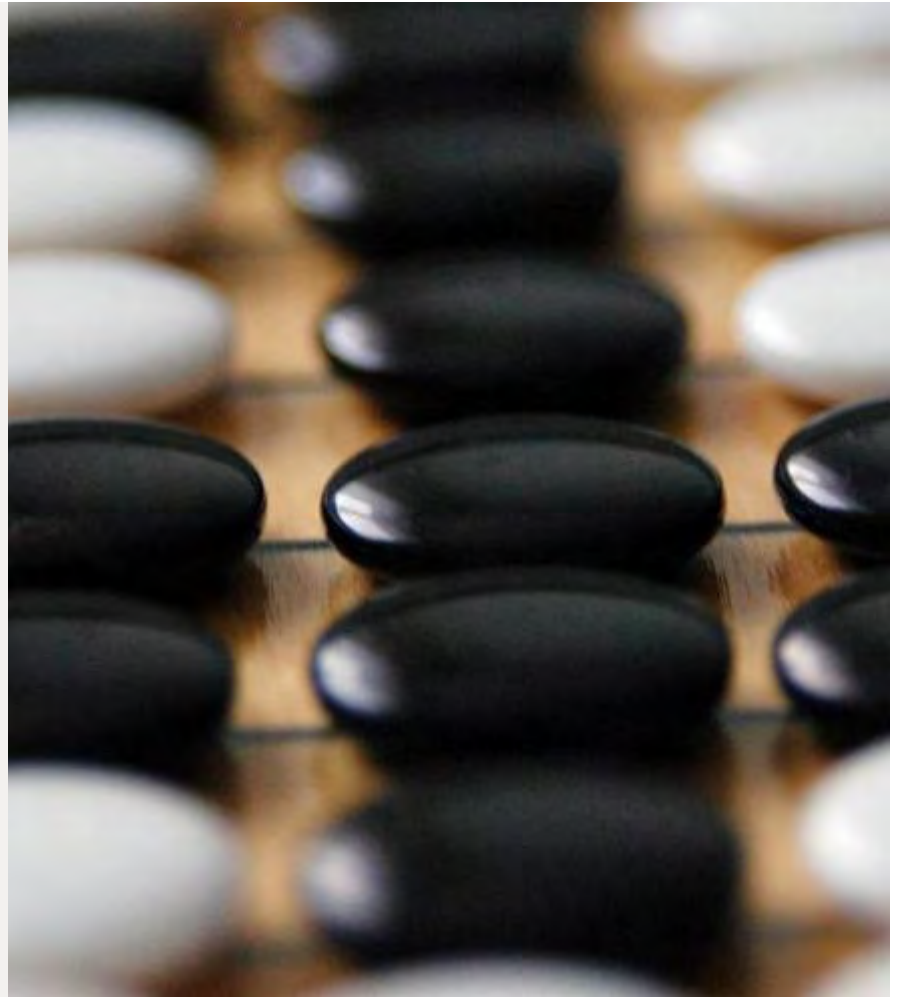


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A- CLASSIFICATION

CLASSIFICATION ACC. TO

- AEG'S UPS PRODUCT PORTFOLIO**
- IT'S APPLICATION ORIENTED USE**
- UPS PRODUCT NORM IEC 62040-3**



CLASSIFICATION ACC. TO AEG'S UPS PRODUCT PORTFOLIO

"Compact" UPS

PROTECT HOME. / PROTECT A.
500 / 600 (HOME.) / 700 / 1000 / 1400 [VA]
1-phase Output
VFD (PROTECT HOME.) / VI - technology

PROTECT B. / PROTECT B.PRO
750 (+B.) / 1000 (+B.) / 1400 / 1800 / 2300 / 3000 [VA]
1-phase Output
Line-Interactive / VI - technology

PROTECT C.(S) / PROTECT C.R(S)
1000 / 2000 / 3000 (+R/+RS) / 6000 / 10000 [VA]
1-phase Output
On-Line / VFI - technology

PROTECT D.
1000 / 1500 / 2000 / 3000 / 6000 / 10000 [VA]
1-phase Output
On-Line / VFI - technology

PROTECT 1.
10000 / 15000 / 20000 [VA]
1-phase Output
On-Line / VFI - technology

PROTECT 1.M
scalable: 4000 up to 24000 [VA]
1-phase Output
On-Line modular / VFI - technology

"All-round" UPS

PROTECT 3.31
10 / 20 / 30 / 40 / 60 [kVA]
1-phase Output
On-Line / VFI - technology

PROTECT 3.33
10/20/30/40/60/80/100/120 [kVA]
3-phase Output
On-Line / VFI - technology

PROTECT 2.33 2.0
10/15/20/30/40/60/80 [kVA]
3-phase Output
On-Line / VFI - technology

PROTECT 3.M 2.0
20/40/60/80/100/120 [kVA]
3-phase Output
On-Line modular / VFI - technology

PROTECT BLUE.
250 / 500 / 750 / 1000 / 1250 [kVA]
3-phase Output
On-Line / VFI - technology

PROTECT STS
100 / 200 / 400 / 600 / 800 / 1200 [A]
3-pole (4-pole on request)
Static Transfer Switch

"Industrial" UPS

PROTECT 8.31
10/20/30/40/60/80/100/120 [kVA]
1-phase Output
On-Line / VFI - technology

Rectifier + PROTECT 8. INV 1
10/20/30/40/60 [kVA]
1-phase Output
On-Line / VFI - technology

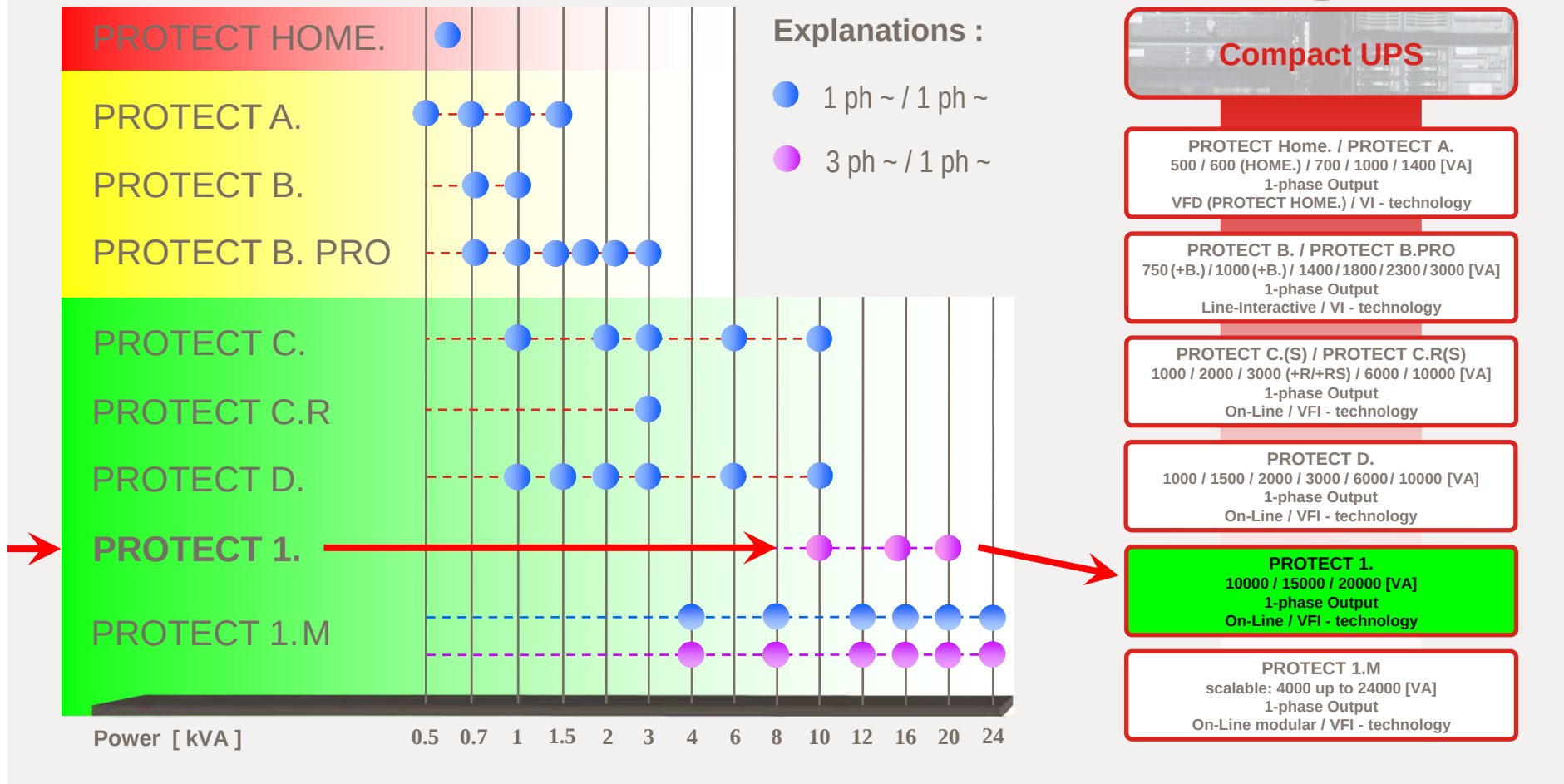
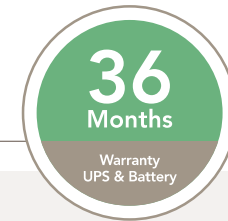
PROTECT 8.33
10/20/30/40/60/80/100/120 [kVA]
3-phase Output
On-Line / VFI - technology

Rectifier + PROTECT 8. INV 3
25/40/60/80/100/120 [kVA]
3-phase Output
On-Line / VFI - technology

PROTECT 8.33 „high power“
160 / 220 / 300 / 400 / 500 [kVA]
3-phase Output
On-Line / VFI - technology

Rectifier + Transokraft
30 / 50 / 80 / 120 / 170 [kVA]
3-phase Output
On-Line / VFI - technology

CLASSIFICATION ACC. TO AEG'S COMPACT-UPS PRODUCT PORTFOLIO



CLASSIFICATION ACC. TO IT'S APPLICATION ORIENTED USE

Compact UPS

Home, SoHo

PROTECT HOME.
600 VA
Comprehensive protection
for all Multimedia equipment.



PROTECT A.
500 to 1400 VA
Protects PCs, workstations
and phone systems.



Office, SoHo, IT segment

PROTECT B./B.PRO
750 to 3000 VA
Rack or tower for server and
network components with
sinusoidal output.



PROTECT C.
1000 to 10000 VA
Rack or tower for sensitive
networks, small computer
centres, Intranet and Internet
servers.



PROTECT D.
1000 to 10000 VA
Rack or tower for sensitive
networks, small computer
centres, Intranet and Internet
servers.



PROTECT 1.
10000 to 20000 VA
For small data centres,
protection of cash till
systems, building
technology.



Medium High Power UPS

Data Centre Industry

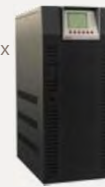
PROTECT 1.
10 to 20 kVA
For small data
centres,
protection
of cash till
systems,
building
technology.



PROTECT 1.M
4 to 24 kVA
Scaleable, modular
high-performance
UPS-system
for the
IT sector.



PROTECT 2.33 2.0
10 to 80 kVA
Host computers,
file servers,
Workstations and
computer centres
as well as complex
networks in
industrial
companies.



PROTECT 3.M 2.0
20 to 120 kVA (scaleable)
Computer centres, Internet
nodes, banks &
insurance
companies.



PROTECT BLUE.
250 to 1000 kVA
Building control systems,
data centres,
internet nodes,
banks, suitable
for all critical
applications
in this spectrum.



CLASSIFICATION ACC. TO UPS PRODUCT NORM IEC 62040-3



	Voltage Phenomenon	Time	e.g.	IEC 62040-3	UPS solution	Arrester solution
PROTECT 1	1. Outage - blackouts	> 10 ms		VFD Voltage + Frequency Dependent	Classification 3 Offline	—
	2. Sags / brownouts					—
	3. Dynamic overvoltage					—
	4. Undervoltage	continuous		VI Voltage Independent	Classification 2	—
	5. Overvoltage	continuous			Line-Interactive	—
	6. Transients (Surge)	< 4 ms		VFI Voltage + Frequency Independent	Classification 1 (true) Online real Double-Conversion	Limited protection via UPS (extended protection recommended (10.))
	7. Frequency variations	sporadic				—
	8. Voltage distortion (Burst)	periodic				see as well 10.
	9. Voltage harmonics	continuous				—
	10. Lightning	sporadic			—	Surge- and Over-voltage protection (IEC 60364-5-534)

Publication by ZVEI: UPS Guide

B- PRODUCT HIGHLIGHTS



AEG
POWER SOLUTIONS

POWER STEPS AT RATED POWER FACTOR OF 0.7 LAGGING



PROTECT 1.

2nd generation Double-Conversion UPS
DSP controlled n+x technology

60000 VA
40000 VA
20000 VA

45000 VA
30000 VA
15000 VA

30000 VA
20000 VA
10000 VA



FEATURES



- Double-Conversion / true On-line UPS incl. SBS (VFI SS 111 acc. to IEC 62040-3)
- n+x technology (DSP controlled) to increase output power and/ or to achieve active redundancy
- State-of-the-art technology (DSP/ CAN-Bus/ IGBT)
- None troubling system perturbation, Input power factor >0.95 (PFC circuit)
- 3phase extreme wide input voltage range
- Low noise level, modern space-efficient design, blackline
- Compatible with all welknown EDP systems incl. management- and shutdown – software, e.g. Windows, Linux, Mac OS X and other
- Communication slot in series for expansion cards, e.g. SNMP/ SNMP PRO/ potential-free contacts/ Remote panel
- 36 months warranty (UPS & battery) with advanced replacement service (registration required)

POWER RANGE OVERVIEW – FEATURES

PROTECT 1.100 &
PROTECT 1.100 BP



10 kVA

PROTECT 1.150 &
PROTECT 1. BP20



15 kVA

PROTECT 1.200 &
PROTECT 1. BP20

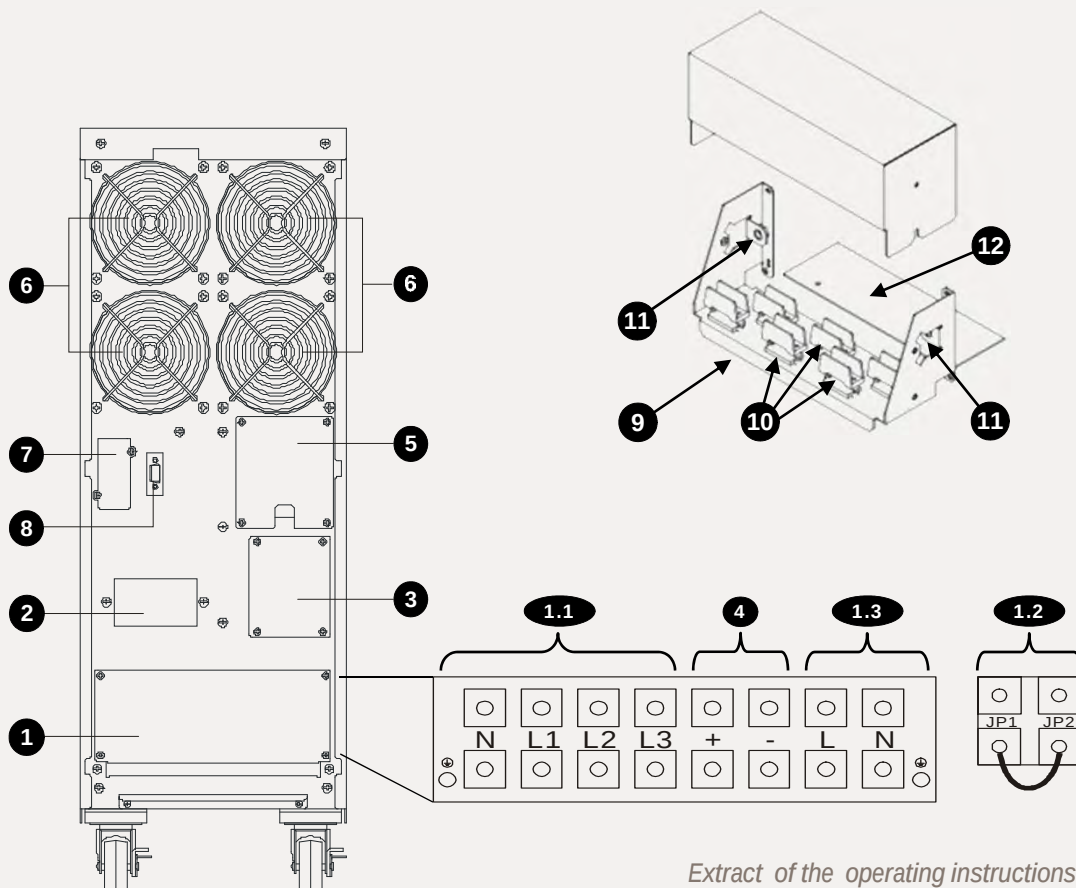


20 kVA

Communication slot for expansion cards • Parallel port • RS232 interface • Input fuse
Static Bypass Switch integrated • foolproof manual bypass switch • solid connection terminals

PROTECT 1.200 (20kVA) – CONNECTIONS

- 1** Connection terminal cover for
- 1.1** Mains/ UPS input
- 1.2** Setting for individual or parallel operation
- 1.3** UPS output
- 2** Mains input miniature circuit breaker
- 3** Manual bypass switch (foolproof)
- 4** Terminals for external battery
- 5** Connector for parallel operation
- 6** Fan (speed controlled)
- 7** Communication slot
- 8** RS232 interface
- 9** Cable clamping unit
- 10** Strain relief clamps
- 11** PE-/earthing terminals
- 12** Macrolon cover plate



LESS SPACE REQUIREMENT = BETTER USE OF SPACE, COST OPTIMIZED OPERATION



PROTECT 1.

10 / 15 / 20 kVA

- Extremely compact dimensions
 - less footprint, e.g.
UPS incl. battery system $< 0.5\text{m}^2$
- Battery cabinets with ...
 - same design as UPS
 - pre-assembled batteries
 - opportunity to operate with installed batteries of a design life of 10-12 years acc. to EUROBAT



AUTONOMY TIME DATA



Battery cabinets generally
in PROTECT 1. design



PROTECT 1.		Autonomy time (full/half-load) (min.)		
Coupled battery cabinets	Protect 1.100	Protect 1.150	Protect 1.200	
1 x Protect 1.100 BP	16/42	-	-	
2 x Protect 1.100 BP	42/97	-	-	
3 x Protect 1.100 BP	60/134	-	-	
1 x Protect 1. BP 20	19/47	10/29	6/19	
2 x Protect 1. BP 20	47/103	29/68	19/47	
3 x Protect 1. BP 20	78/177	47/103	34/62	
4 x Protect 1. BP 20	103/243	68/153	47/103	
5 x Protect 1. BP 20	138/312	85/202	63/138	

Design life of integr.
batteries 10-12 years
acc. to EUROBAT
(High Performance)

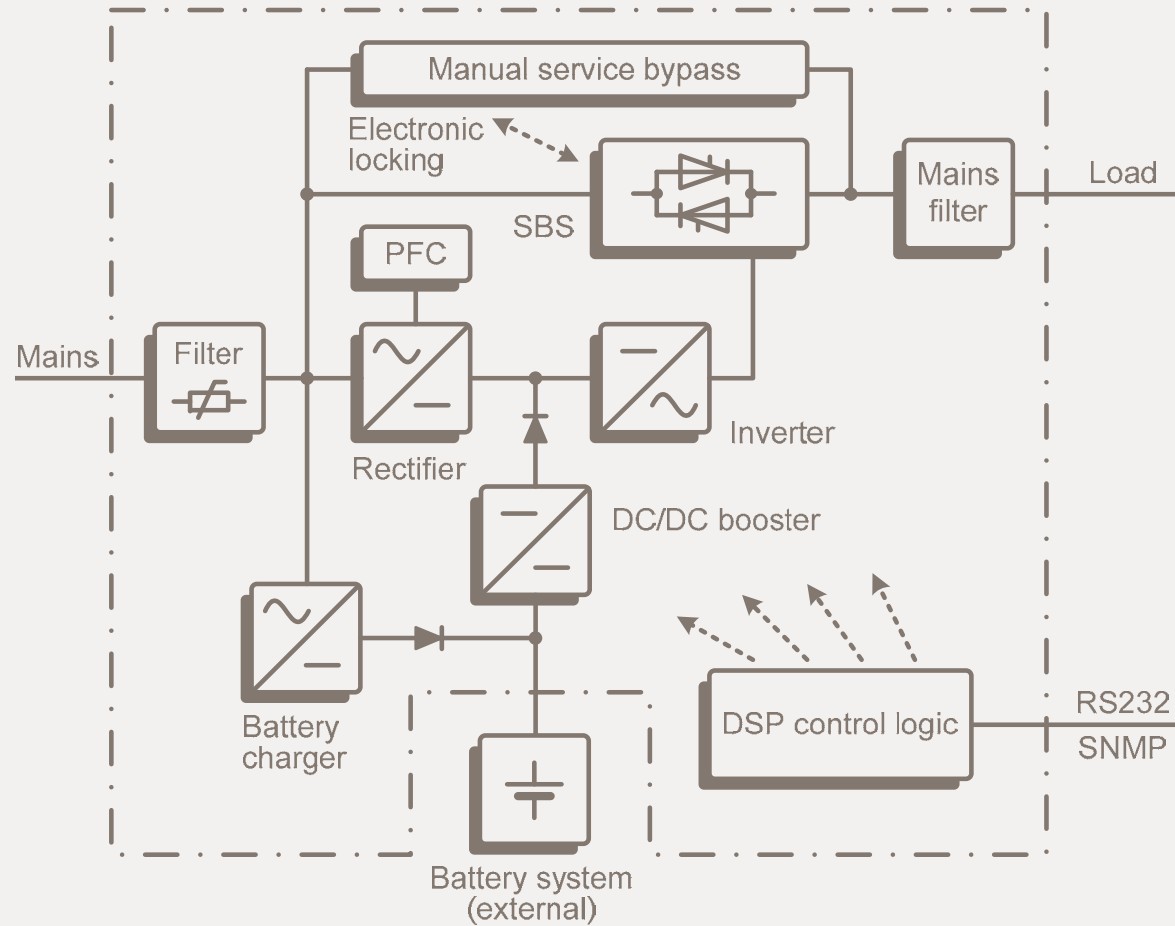
AUTONOMY TIME DATA AT PART LOAD



PROTECT 1. at part load	< < < < Autonomy time at > > > >			
	25% load	50% load	75% load	100% load
PROTECT 1.100 [10 kVA]	= 1750 W	= 3500 W	= 5250 W	= 7000 W
with 1 x PROTECT 1.100 BP	83 min.	42 min.	24 min.	16 min.
with 2 x PROTECT 1.100 BP	145 min.	97 min.	56 min.	42 min.
with 3 x PROTECT 1.100 BP	166 min.	134 min.	98 min.	60 min.
with 1 x PROTECT 1. BP 20	89 min.	47 min.	29 min.	19 min.
with 2 x PROTECT 1. BP 20	216 min.	103 min.	69 min.	47 min.
with 3 x PROTECT 1. BP 20	329 min.	177 min.	105 min.	78 min.
with 4 x PROTECT 1. BP 20	472 min.	243 min.	155 min.	103 min.
with 5 x PROTECT 1. BP 20	591 min.	312 min.	204 min.	138 min.
PROTECT 1.150 [15 kVA]	= 2625 W	= 5250 W	= 7875 W	= 10500 W
with 1 x PROTECT 1. BP 20	58 min.	29 min.	16 min.	10 min.
with 2 x PROTECT 1. BP 20	125 min.	68 min.	42 min.	29 min.
with 3 x PROTECT 1. BP 20	216 min.	103 min.	69 min.	47 min.
with 4 x PROTECT 1. BP 20	295 min.	153 min.	90 min.	68 min.
with 5 x PROTECT 1. BP 20	357 min.	202 min.	117 min.	85 min.
PROTECT 1.200 [20 kVA]	= 3500 W	= 7000 W	= 10500 W	= 14000 W
with 1 x PROTECT 1. BP 20	42 min.	19 min.	10 min.	6 min.
with 2 x PROTECT 1. BP 20	89 min.	47 min.	29 min.	19 min.
with 3 x PROTECT 1. BP 20	152 min.	62 min.	48 min.	34 min.
with 4 x PROTECT 1. BP 20	216 min.	103 min.	69 min.	47 min.
with 5 x PROTECT 1. BP 20	276 min.	138 min.	86 min.	63 min.

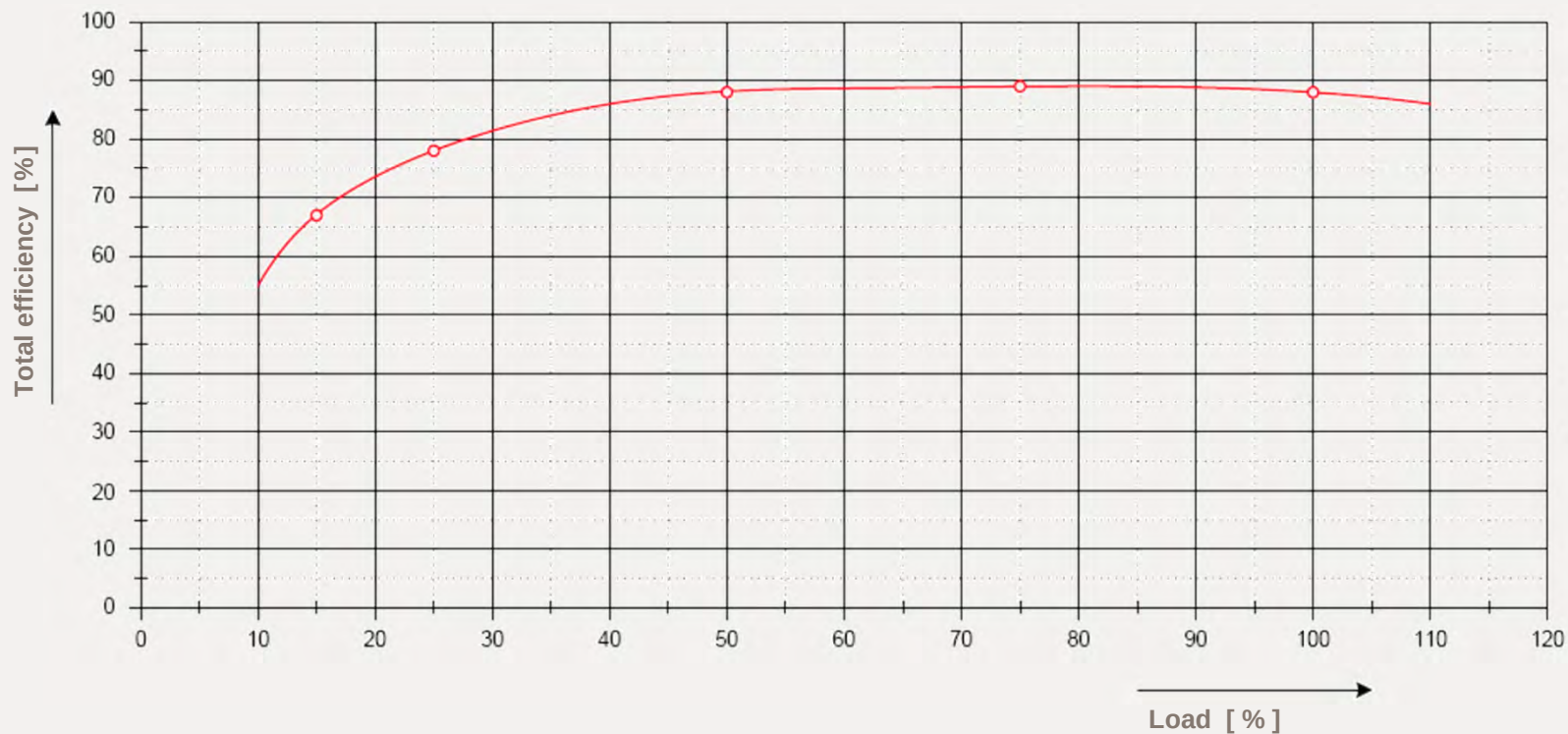
COMPONENT DIAGRAM

Component diagram :



Total efficiency curve PROTECT 1. series

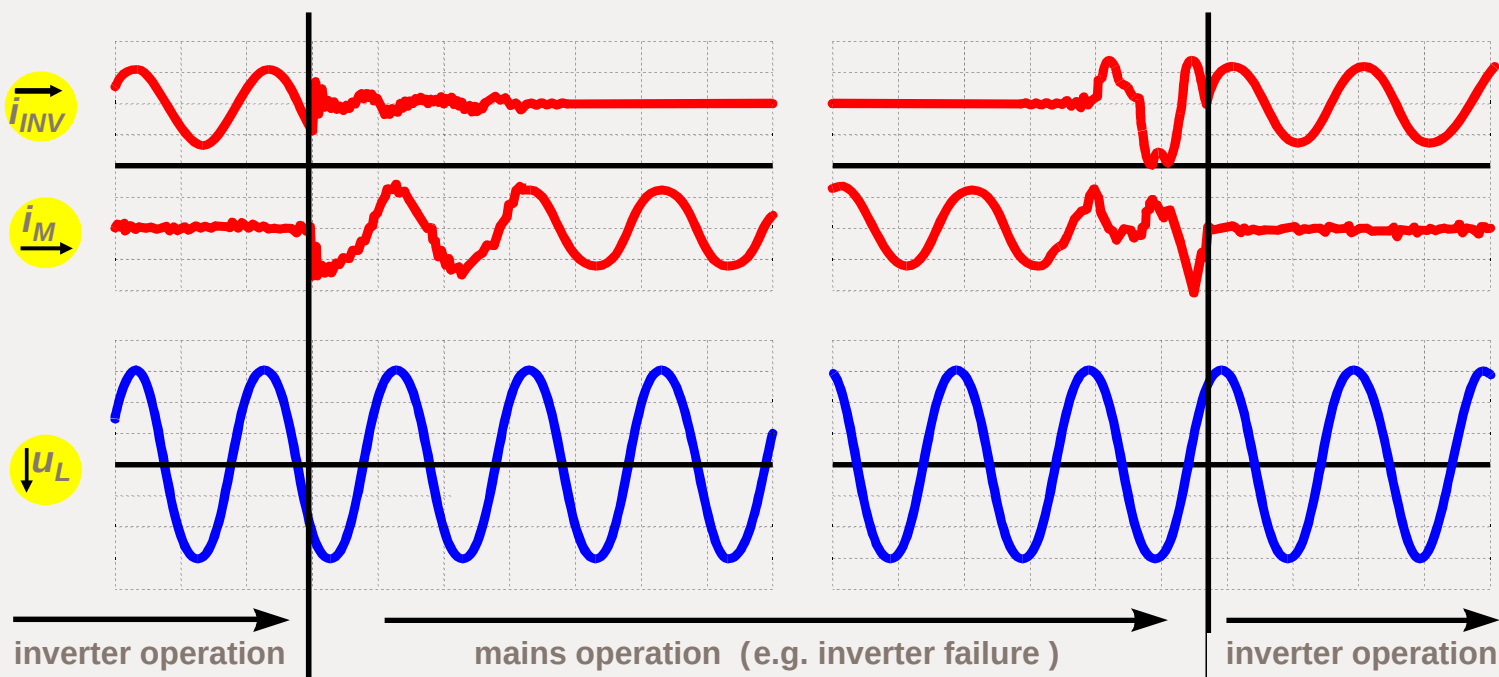
in pure AC-AC/ normal operation plus 2%, that means at nominal operating point > 90%



BYPASS TECHNOLOGY (SBS)

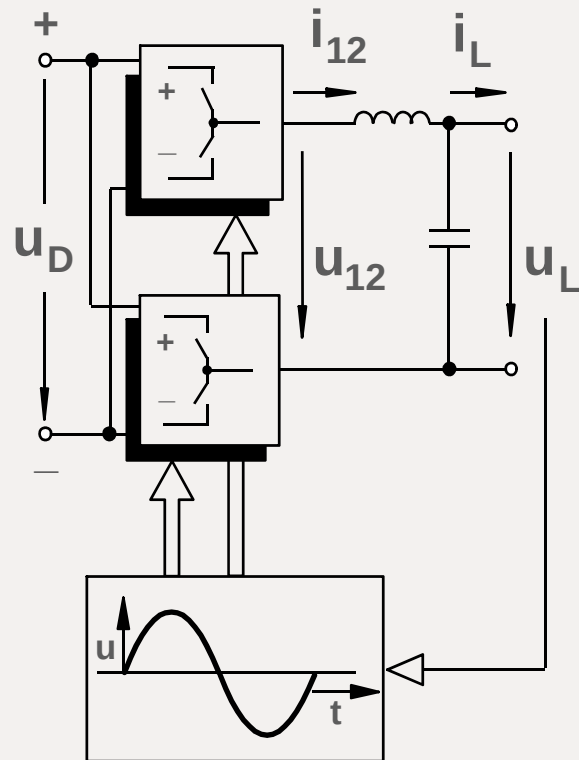
Electronical Static Bypass Switch (SBS)

e.g. technical behaviour at overload or inverter fault

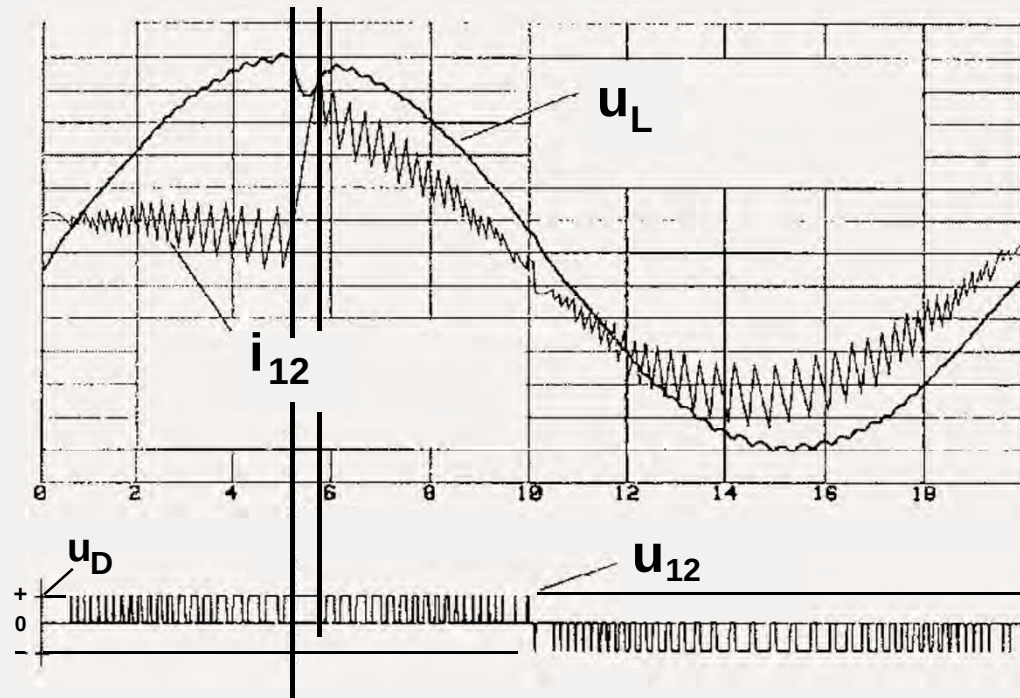


INVERTER CONTROL PROCESS (PWM)

Instantaneous value regulation of the output voltage



comparison u_L with u_R



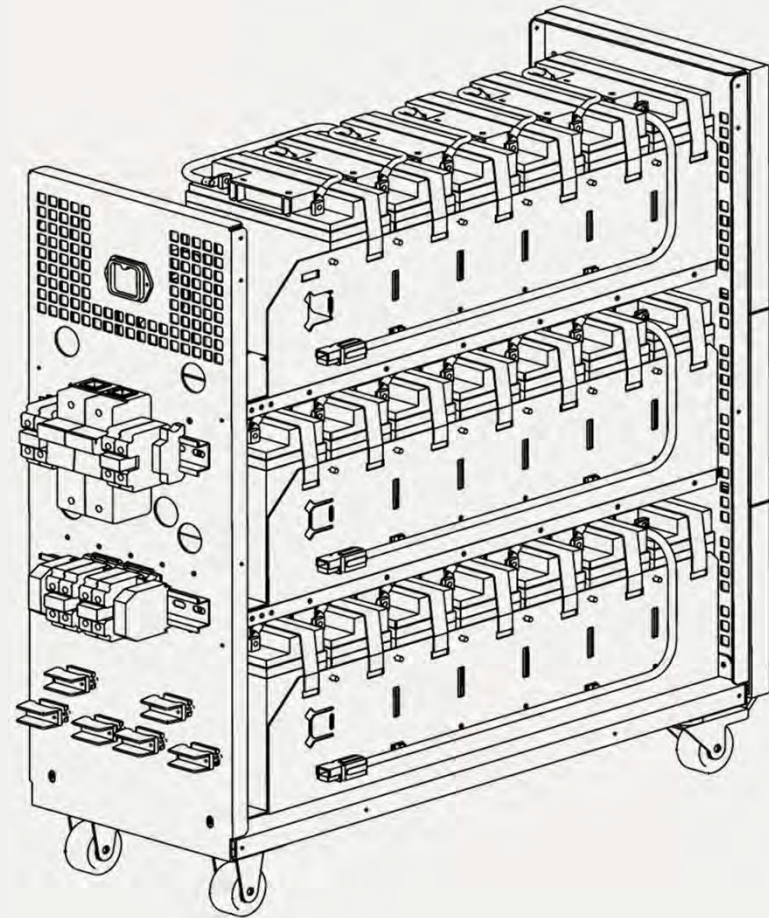
load / demand

BATTERY CABINET PROTECT 1.BP20

PROTECT 1. BP 20

10 / 15 / 20 kVA

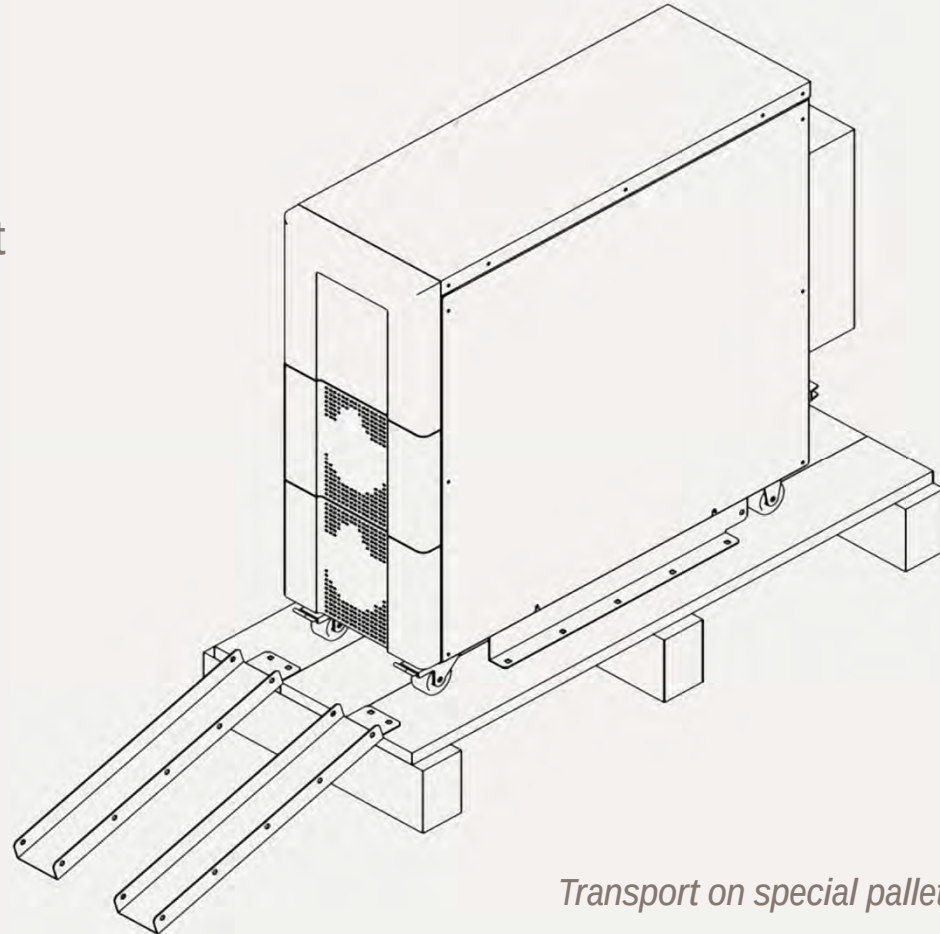
- Battery cabinet on wheels, pre-assembled completely
- Well-built terminals for 35mm² wire connection/pole
- Batteries on sliders, for easy future battery exchange
- High-performance batteries (design life 10-12 years acc. to EUROBAT)



TRANSPORT & UNLOADING

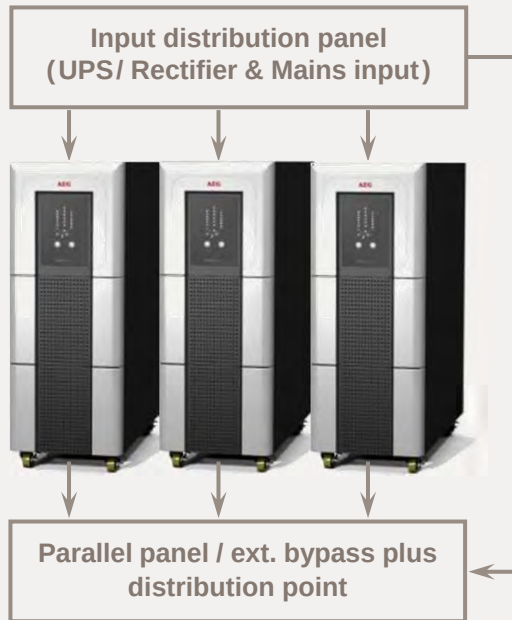


- Pair of rails below the unit fixes and stabilizes the product on the pallet during the transport
- Pair of rails easily can be used for unloading as shown on the illustration

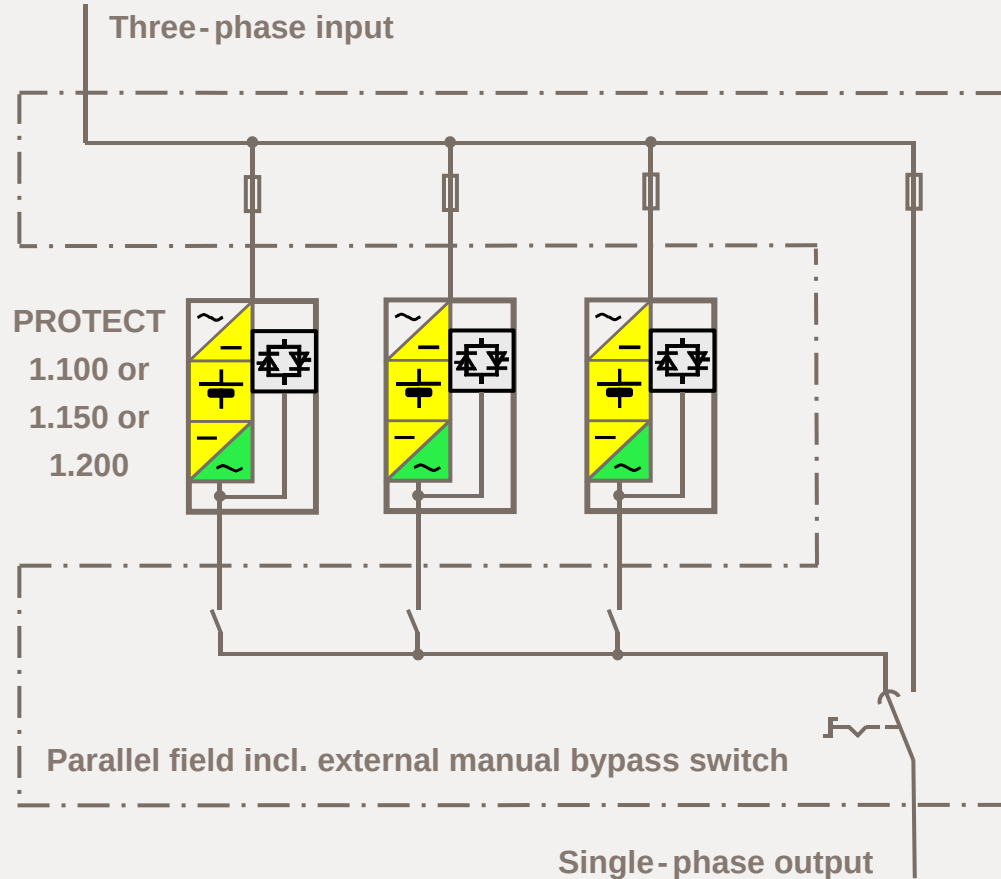


Transport on special pallet

PARALLEL OPERATION (ILLUSTRATION)



up to 3 units in parallel
to increase output power
and/ or to provide redundancy



PARALLEL OPERATION (REDUNDANCY LEVELS)



Parallel system with PROTECT 1.200

Available power		Quantity of installed UPS units		
		1	2	3
Active redundancy level	0	20 kVA	40 kVA	60 kVA
	1	---	20 kVA	40 kVA
	2	---	---	20 kVA

Parallel system with PROTECT 1.150

Available power		Quantity of installed UPS units		
		1	2	3
Active redundancy level	0	15 kVA	30 kVA	45 kVA
	1	---	15 kVA	30 kVA
	2	---	---	15 kVA

Parallel system with PROTECT 1.100

Available power		Quantity of installed UPS units		
		1	2	3
Active redundancy level	0	10 kVA	20 kVA	30 kVA
	1	---	10 kVA	20 kVA
	2	---	---	10 kVA

REAR VIEW

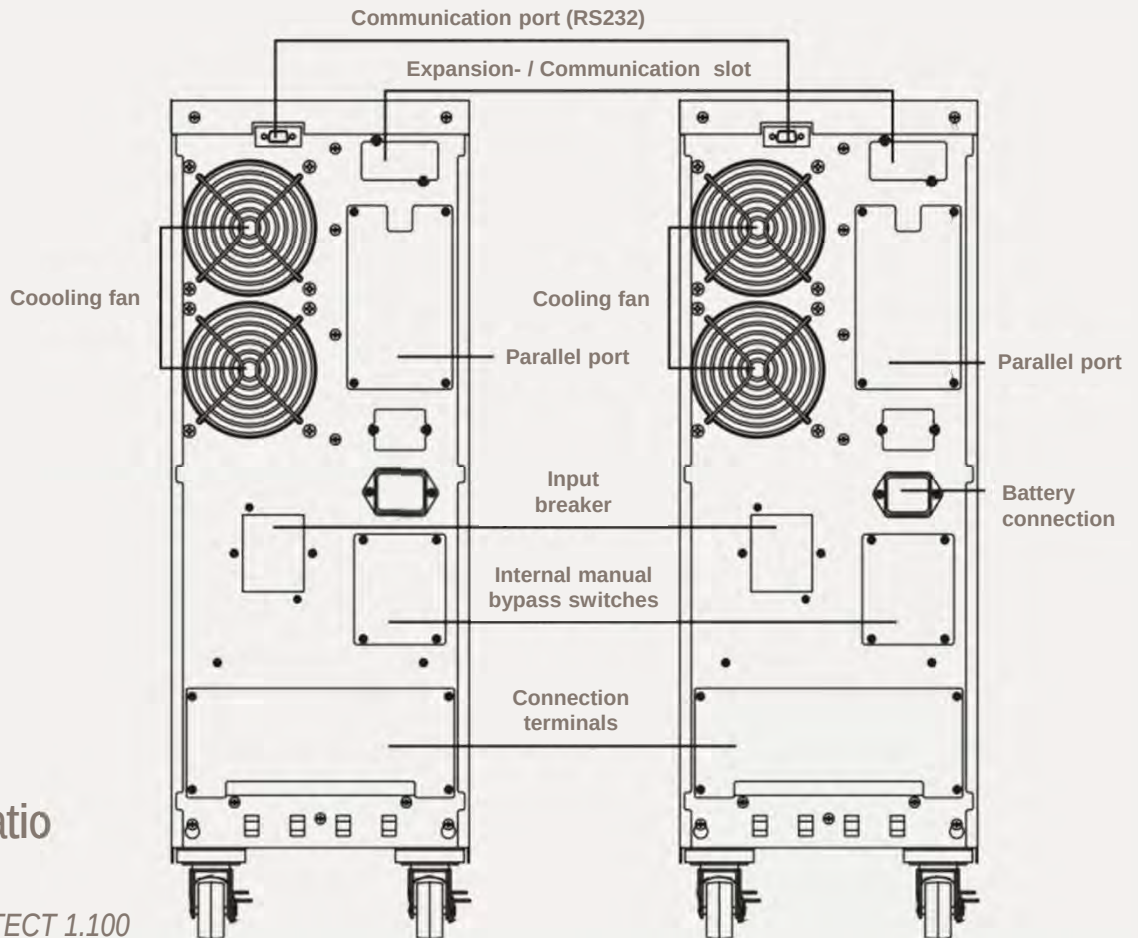
PROTECT 1.100

PROTECT 1.150

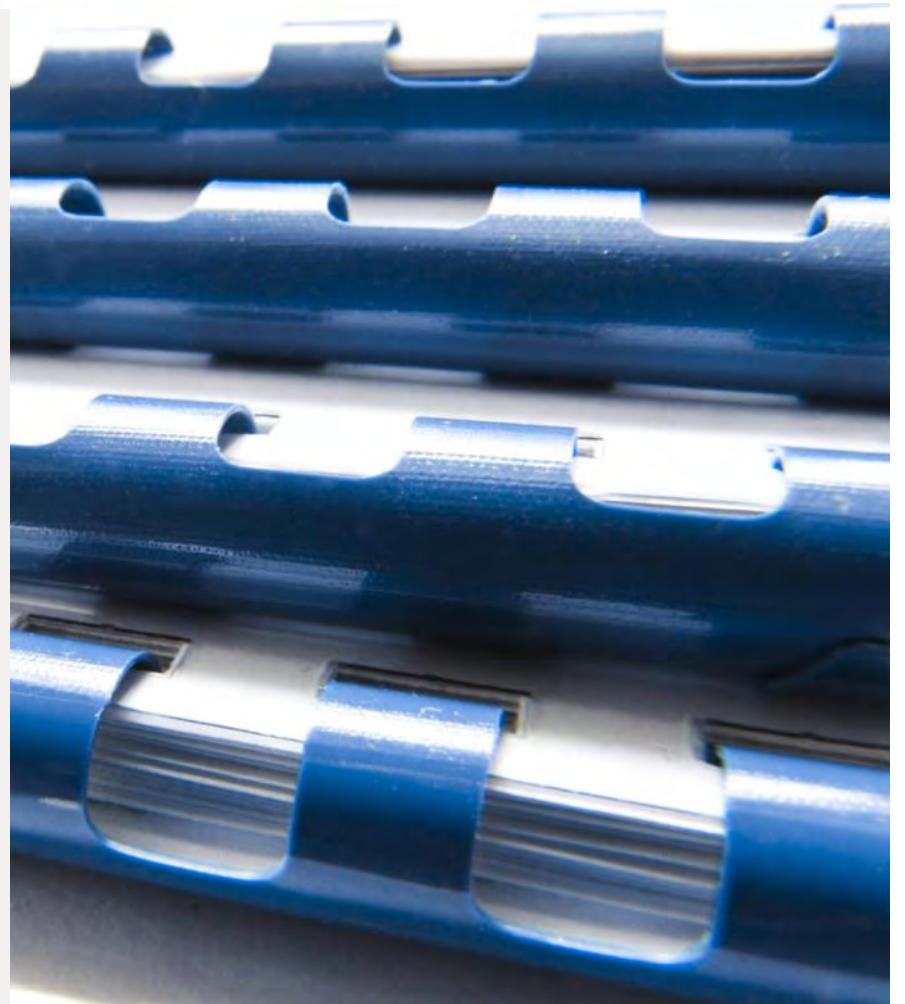
PROTECT 1.200

- n+x technology, increase of power and/or active redundancy
- Simple to install
- Highest flexibility
- Cost effective solution with excellent price-performance ratio

e.g. PROTECT 1.100



C- CONCLUSION



COMPETITIVENESS – CONCLUSION



- **State-of-the-art-technology for best reliability (DSP, CAN-Bus, IGBT-semiconductor)**
- **Compact non-stationary design, modern attractive look**
- **Easy installation acc. to mounting (weight) and electrical connection (removable cable clamping unit – solid connection terminals)**
- **Electronical static bypass switch (SBS) incl. integrated foolproof maintenance bypass switch**
- **n + x technology to operate up to 3 units in parallel for active redundancy and/ or performance increase**
- **36 months warranty (UPS & battery) with advanced replacement service (registration required)**