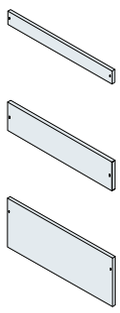
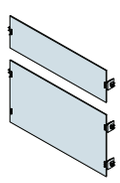
Solar Accessories

6.12 Gemini Enclosure



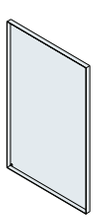
Blank hinged Panel (continued)

Dimensions	Description	Order Code
Suitable For Box Size 1	Blank Panel H=150mm	1SL0324A00
Suitable For Box Size 2 and 3		1SL0325A00
Suitable For Box Size 4 and 5		1SL0326A00
Suitable For Box Size 6		1SL0327A00
Suitable For Box Size 1	Blank Panel H=300mm	1SL0330A00
Suitable For Box Size 2 and 3		1SL0331A00
Suitable For Box Size 4 and 5		1SL0332A00
Suitable For Box Size 6		1SL0333A00



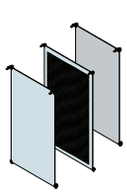
Mounting Plate

Dimensions	Description	Order Code
Suitable For Box Size 1	Mounting plate H=150mm	1SL0296A00
Suitable For Box Size 2 and 3		1SL0297A00
Suitable For Box Size 4 and 5		1SL0298A00
Suitable For Box Size 6		1SL0299A00
Suitable For Box Size 2 and 3	Mounting plate H=300mm	1SL0302A00
Suitable For Box Size 4 and 5		1SL0303A00
Suitable For Box Size 6		1SL0304A00



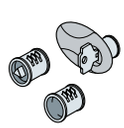
Inner Door

Dimensions	Description	Order Code
Suitable For Box Size 1	INNER DOOR SIZE 1	1SL0251A00
Suitable For Box Size 2	INNER DOOR-SIZE 2	1SL0252A00
Suitable For Box Size 3	INNER DOOR-SIZE 3	1SL0253A00
Suitable For Box Size 4	INNER DOOR-SIZE 4	1SL0254A00
Suitable For Box Size 5	INNER DOOR-SIZE 5	1SL0255A00
Suitable For Box Size 6	INNER DOOR-SIZE 6	1SL0256A00



Metal Base Plate

Dimensions	Description	Order Code
Suitable For Box Size 1	BLANK METAL BASE PLATE-SIZE 1	1SL0259A00
Suitable For Box Size 2	BLANK METAL BASE PLATE-SIZE 2	1SL0260A00
Suitable For Box Size 3	BLANK METAL BASE PLATE-SIZE 3	1SL0261A00
Suitable For Box Size 4	BLANK METAL BASE PLATE-SIZE 4	1SL0262A00
Suitable For Box Size 5	BLANK METAL BASE PLATE-SIZE 5	1SL0263A00
Suitable For Box Size 6	BLANK METAL BASE PLATE-SIZE 6	1SL0264A00



Accessories

Description	Order Code
SQUARE LOCK	1SL0339A00
LOCK AND HANDLE	1SL0340A00
TRIANGLE LOCK	1SL0341A00
FIXING BRACKETS	1SL0342A00
ANTI-CONDENSATION KIT	1SL0351A00
GEMINI SCREW & INSERT	1SL0397A00
GEMINI KEY	1SL0457A00
KIT FOR PADLOCK	1SL0458A00

Notes

SECTION 7

Uninterruptible Power Supplies and Low Voltage Power Conditioning

UPS Systems - Stand-alone

7.1 PowerValue 11T G2 1-10 kVA

1 kVA B | 2/3 kVA B | 1 kVA S | 2/3 kVA S | 6-10 kVA S | 6-10 kVA B/B2

The PowerValue 11T G2 with its cost-effective ABB UPS technology makes a high-performance and is now available to market sectors with lower power requirements: Small server rooms, critical lab or industrial equipment, security installations and applications of a similar power class can now profit from one of 12 PowerValue 11T G2 models.

With the most compact online UPS footprint available, the PowerValue 11T G2 features true on-line double conversion. This provides a flexible output frequency and isolates the UPS from upstream disturbances so that the critical load sees only stable, well-regulated, transient-free, pure sine wave AC power.

A rated output power factor up to 1.0 (kVA = kW) means the PowerValue 11T G2 delivers 11 percent more active power than a UPS with a power factor of 0.9. The UPS is optimized for modern IT loads and helps users reduce their energy budget with its double conversion efficiency of up to 95 percent (up to 98% in ECO mode).

- Low input line disturbances: input PF ≥ 0.995 @ 100 percent linear load – THDi < 3 percent
- Flexible configuration for scalable runtime: UPS and EBMs with and without batteries (long backup)
- Adjustable DC voltage and battery charger current
- Digital charger technology provides accurate charger current setting and reduces charger ripple current
- The UPS is delivered with an inbuilt parallel board and paralleling cables. No additional hardware is required for this installation.

All this with the same guaranteed high availability and quality standards as ABB's higher-power premium UPS models - and at the most attractive entry level price around.

Battery runtime at full nominal load

Model	Internal batteries	EBM	UPS	UPS + 1 EBM	UPS + 2 EBM	UPS + 3 EBM	UPS + 4 EBM
G2 1 kVA B	1 x 2 x 9.4 Ah	3 x 2 x 9 Ah	5	23	52	85	120
G2 1 kVA S	No	3 x 2 x 9 Ah	-	17	48	70	100
G2 2 kVA B	1 x 4 x 9.4 Ah	3 x 4 x 9 Ah	5.5	25	55	90	125
G2 2 kVA S	No	3 x 4 x 9 Ah	-	18	50	80	110
G2 3 kVA B	1 x 6 x 9.4 Ah	2 x 6 x 9 Ah	5.5	16.5	35	55	80
G2 3 kVA S	No	2 x 6 x 9 Ah	-	10.5	28	50	70
G2 6 kVA B	1 x 16 x 7.2 Ah	2 x 16 x 9 Ah	4	18	41	68	99
G2 6 kVA B2	1 x 20 x 7.2 Ah	2 x 20 x 9 Ah	5.5	25	55.5	92.5	134
G2 6 kVA S	No	2 x 20 x 9 Ah	-	18	49	88	133
G2 10 kVA B	1 x 16 x 9 Ah	2 x 16 x 9 Ah	3	12	25	39	55.5
G2 10 kVA B2	1 x 20 x 9 Ah	2 x 20 x 9 Ah	4	17	34	53	75
G2 10 kVA S	No	2 x 20 x 9 Ah	-	9	24	42.5	64

in minutes at full load

UPS Systems - Stand-alone

7.1 PowerValue 11T G2 1-10 kVA

GENERAL DATA	G2 1kVA B/ S	G2 2kVA B/ S	G2 3kVA B/ S	G2 6kVA B/ B2 / S	G2 10kVA B/ B2 / S
Output rated power	900 W	1'800W	2'400W	6'000W	10'000W
Output power factor	0.9	0.9	0.9	1.0	1.0
Topology	Online double conversion				
Parallel configuration	No	No	No	Yes, up to 3 UPS	Yes, up to 3 UPS
Inbuilt batteries	Yes/No	Yes/No	Yes/No	Yes/Yes/No	Yes/Yes/No
INPUT					
Nominal input voltage			220/230/240 VAC		208/220/230/240 VAC
Input voltage tolerance			100-300 VAC (load dependent)		100-276 (load dependent)
Input current THDi			5% with full resistive load		<3% with full resistive load
Frequency range			45-55 Hz / 54-66 Hz		45-55Hz / 54-66Hz (extendable to 40~70HZ at load < 60%)
Power factor			≥0.99		≥0.995
OUTPUT					
Rated output voltage			220/230/240 VAC		208/220/230/240 VAC
Voltage tolerance			±1% (referred to 230V)		
Voltage distortion			<2% linear load, <6% non linear load		<1% linear load, <5% non linear load
Overload capacity (linear load) on inverter			60s: 106-130% load 10s: 131-150% load 300ms: ≥ 150% load		10m: 102-125% load 30s: 126 to 150% load 500 ms: ≥ 150% load
Nominal frequency			50 or 60 Hz		
Crest factor			3:1 (load supported)		
EFFICIENCY					
Overall system efficiency	Up to 89%	Up to 91%	Up to 91%	Up to 95%	
In eco-mode	Up to 97.5%	Up to 98%	Up to 98%	Up to 98%	
ENVIRONMENT					
Protection rating			IP20		
Storage temperature		UPS: -25°C to 60°C; Batteries: 0°C to 35°C			
Operating temperature			0°C to 40°C		0°-40°C (up to 50°C at 50% load)
Relative humidity			0% to 95%		
Altitude (above see level)			1000m without derating		
BATTERIES					
Type	VRLA (valve regulated lead-acid)				
Inbuilt batteries	2x9.4 Ah (B)	4x9.4Ah(B)	6x9.4Ah(B)	16x9Ah(B) 20x9Ah (B2)	16x9Ah(B) 20x9Ah (B2)
Charging current	1.5A/3-6A adjustable	1.5A/1.5-6A adjustable	1.5A/1.5-6A adjustable	0-4A adjustable (B,B2) 0-12 adjustable (S)	
Recharge time (inbuilt batteries)	4h to 90%				
COMMUNICATIONS					
User interface	LCD display				
Optional communication cards				SNMP;ModBus;AS400;Environmental monitoring sensor probe	
STANDARDS					
Safety	IEC/EN 62040-1				
EMC	IEC/EN 62040-2				
Performance	IEC/EN 62040-3				
Manufacturing				ISO 9001:2015, ISO 14001:2015, OHSAS 18001	
WEIGHT, DIMENSIONS					
Weight	9.2/3.9 Kg	17.4/6.4 Kg	22.7/6.4 Kg	53/63/13 Kg	55.2/65.2/15.2 Kg
Dimensions w x h x d	144x228x356 mm 102x228x346mm	190x327x399 mm 102x327x390 mm	190x327x399 mm 102x327x390 mm	B / B2: 225 x 589x 452 mm S: 225x 348 x 452 mm	B / B2: 225 x 589x 452 mm S: 225x 348 x 452 mm

UPS Systems - Stand-alone

7.2 PowerValue 11 RT

High reliability
- Reliable double conversion topology protects load from all input disturbances
- Batteries can be added or replaced easily
- Reduced recovery time from discharge
- Redundant parallel operation available (6 and 10 kVA units)

Low cost of ownership
- Scalable runtime
- High operating efficiency, regardless of loading
- Reduced installation and upgrading costs
- Compact design

Flexible design
- Configurable in tower or rack-mount format
- Rotatable display
- UPS can be connected with up to four parallel battery modules for extended runtime
- Long backup models available
- Full set of accessories and connectivity options

Efficient service concept
- Manually operated maintenance bypass switch (optional)
- Easy set up and maintenance (plug and play)
- User-friendly display
- Hot swap user-replaceable batteries

Battery runtime at full / half nominal load

	1 kVA B		1 kVA S		2 kVA B		2 kVA S		3 kVA B		3 kVA S		G2 6 kVA		G2 10 kVA	
	100%	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%	50%
UPS	<4	8	n.a.	n.a.	4	11	n.a.	n.a.	4	11	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
UPS+1 EBM	16	40	6	22	12	29	<5	11	13	31	<5	10	7	18	3	9
UPS+2 EBM	32	76	22	62	22	54	11	34	23	56	10	34	18	49	9	24
UPS+3 EBM	52	119	40	112	32	78	22	62	35	82	21	61	33	88	16	42,5
UPS+4 EBM	68	166	62	160	45	105	34	99	49	111	33	98	49	133	24	64

UPS Systems - Stand-alone

7.2 PowerValue 11 RT

GENERAL DATA	1kVA B/ S	2kVA B/ S	3kVA B/ S	G2 6kVA	G2 10kVA
Output rated power	900 W	1'800W	2'400W	6'000W	10'000W
Output power factor	0.9	0.9	0.9	1.0	1.0
Topology					Online double conversion
Parallel configuration	No	No	No	Yes, up to 3 UPS	Yes, up to 3 UPS
Inbuilt batteries	Yes/No	Yes/No	Yes/No	No	No
INPUT					
Nominal input voltage					208/220/230/240 VAC
Input voltage tolerance			120-276 VAC (load dependent)		100-276 (load dependent)
Input current THDi			<5% with full resistive load		<3% with full resistive load
Frequency range			45-55 Hz / 54-66 Hz		45-55Hz / 54-66Hz (extendable to 40~70HZ at load < 60%)
Power factor			≥0.99		≥0.995
OUTPUT					
Rated output voltage					208/220/230/240 VAC
Voltage tolerance					±1% (referred to 230V)
Voltage distortion			≤2% linear load, ≤5% non linear load		<1% linear load, <5% non linear load
Overload capacity (linear load) on inverter			12s: 102-129% load 1.5s: 130-150% load 100ms: ≥ 150% load		10m: 102-125% load 30s: 126 to 150% load 500 ms: ≥ 150% load
Nominal frequency					50 or 60 Hz
Crest factor					3:1 (load supported)
EFFICIENCY					
Overall system efficiency			Up to 93%		Up to 95%
In eco-mode			Up to 95%		Up to 98%
ENVIRONMENT					
Protection rating					IP20
Storage temperature					UPS: -25°C to 60°C; Batteries: 0°C to 35°C
Operating temperature					0°C to 40°C
Relative humidity					0% to 95%
Altitude (above see level)					1000m without derating
BATTERIES					
Type					VRLA (valve regulated lead-acid)
Inbuilt batteries	3x7.2 Ah (B)	4x9Ah(B)	6x9Ah(B)	-	-
Charging current	1.5A/6A	1.5A/6A	1.5A/6A		0-12 A adjustable
Recharge time (inbuilt batteries)					3h to 90%
COMMUNICATIONS					
User interface					LCD display
Optional communication cards					SNMP;ModBus;AS400;Environmental monitoring sensor probe
STANDARDS					
Safety					IEC/EN 62040-1
EMC					IEC/EN 62040-2
Performance					IEC/EN 62040-3
Manufacturing					ISO 9001:2015, ISO 14001:2015, OHSAS 18001
WEIGHT, DIMENSIONS					
Weight	16.2/8.4 Kg	19.7/9.3 Kg	28.6/13 Kg	13.6 Kg	15.5 Kg
Dimensions w x h x d	438x86.5(2U) x436mm	438x86.5(2U) x436mm	438x86.5(2U) x608mm	438x86(2U) x573 mm	438x86(2U) x573 mm

UPS Systems - Stand-alone

7.3 PowerValue 11 / 31 T

High reliability
- Online double conversion topology
- Parallelable up to four units to provide system redundancy
- Programmed and automated battery tests ensure optimized battery management

Low cost of ownership
- Simple power increase by paralleling up to four units
- High operating efficiency, regardless of loading
- Reduced installation costs
- Compact design

Flexible design
- Different autonomy variations with inbuilt batteries or additional battery cabinets
- Long backup models available
- Single- or three-phase input – adaptable to installation requirements (field configurable)
- Single- or dual-input power source compatible (field configurable)

Efficient service concept
- Integrated manual bypass switch
- Easy to install and maintain
- User-friendly display
- User-replaceable batteries
- Remote monitoring and connectivity options

Battery runtime at full / half nominal load

	10kVA		10kVA S		10kVA B		10kVA B2		20kVA		20kVA S		20kVA B	
	100%	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%	50%
UPS internal battery	–	–	–	–	4	12	12	30	–	–	–	–	4	12
UPS + 1xEBM	30	69	30	69	39	87	49	109	12	29	12	29	21	49
UPS + 2xEBM	69	151	69	151	79	176	87	208	29	69	29	69	39	97

in minutes at full / half load

Battery cabinet	Batteries
EBM 11/31T	4 × 24 × 9 Ah

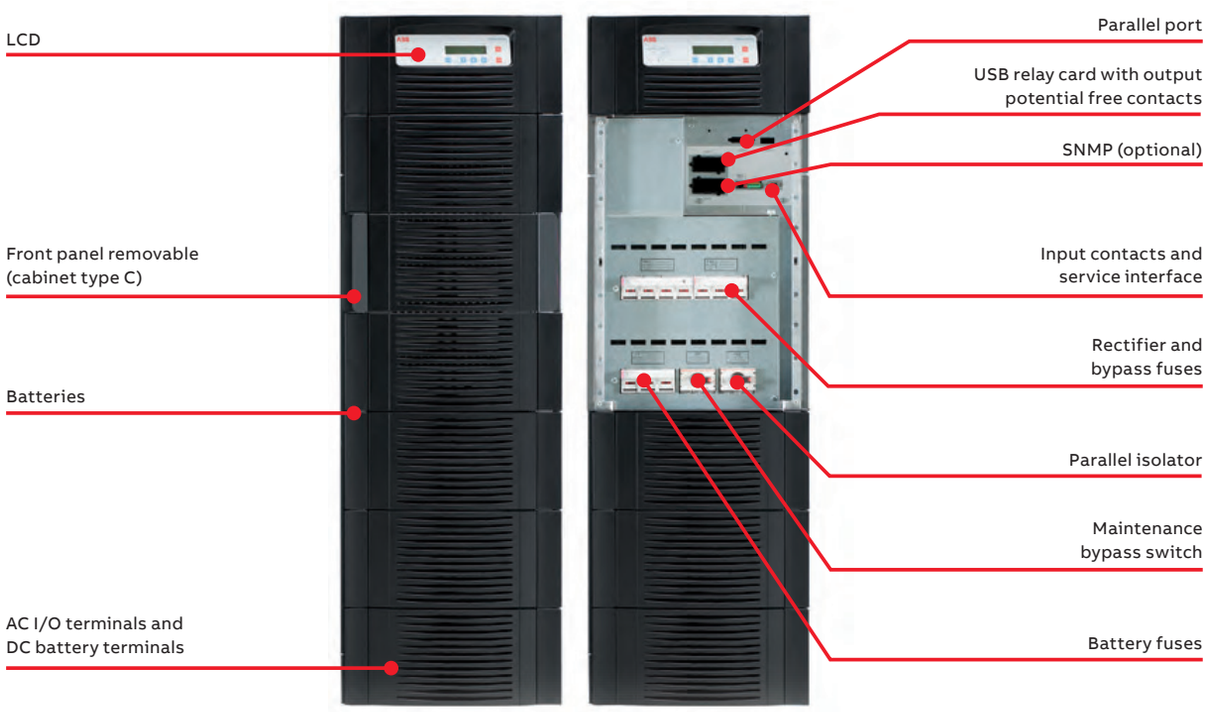
UPS Systems - Stand-alone

7.3 PowerValue 11 / 31 T

General data	10 kVA	10 kVA S	10 kVA B	10 kVA B2	20 kVA	20 kVA S	20 kVA B
Output rated power				9 kW			18 kW
Output power factor				0.9			
Topology				Online double conversion			
Parallel configuration				Up to 4 units			
Inbuilt batteries	No	No	Yes	Yes	No	No	Yes
Input							
Nominal input voltage							1 ph + N: 220 / 230 / 240 VAC 3 ph + N: 380 / 400 / 415 VAC
Input voltage tolerance							1 ph + N: 110–276 VAC 3 ph + N: 190–486 VAC
Input current THDi							<5% linear load, <7% non linear load
Frequency range							45–55 Hz for 50 Hz systems / 55–65 Hz for 60 Hz system
Power factor							≥0.99
Output							
Rated output voltage							220 / 230 / 240 VAC
Voltage tolerance							±2%
Voltage distortion							≤2% linear load, ≤5% non linear load
Overload capability (linear load)							1 min: 110–130% / 5 min: 105–110% 100 ms: >150% / 10 s: 130–150%
Nominal frequency							50 Hz or 60 Hz
Crest factor							3 : 1 (load supported)
Efficiency							
Overall efficiency				Up to 93.1%			Up to 93.9%
In eco-mode							≥97%
Environment							
Protection rating							IP 20
Storage temperature							–15 °C to +60 °C for UPS, 0 °C to approx. +35 °C for battery
Operating temperature							0 °C to +40 °C
Relative humidity							0% to 95% (Non-condensing)
Altitude (above sea level)							1000 m without derating
Battery							
Type							VRLA (vented lead-acid)
Inbuilt batteries	–	–	1 × 24	2 × 24	–	–	2 × 24
Battery capacity	–	–	9 Ah	9 Ah	–	–	9 Ah
Charging current	4 A	8 A	4 A	4 A	4 A	8 A	4 A
Recharge time	–	–	3 h to 90%	8 h to 90%	–	–	8 h to 90%
Communications							
User interface							LCD
Communication cards (option)							Network interface (SNMP card), dry-contact card (AS400)
Standards							
Safety							IEC / EN 62040-1
EMC							IEC / EN 62040-2
Performance							IEC / EN 62040-3
Manufacturing							ISO 9001:2015, ISO 14001:2015, OHSAS18001
Weight, dimensions							
Weight	56 kg	65 kg	116 kg	178 kg	67 kg	68 kg	190 kg
Dimensions w × h × d	350 × 890 × 715 mm	350 × 890 × 715 mm	350 × 890 × 715 mm	350 × 890 × 715 mm	350 × 890 × 715 mm	350 × 890 × 715 mm	350 × 890 × 715 mm

UPS Systems - Stand-alone

7.4 PowerScale 33 10-50 kVA



PowerScale is an online, double-conversion, VFI (voltage frequency independent) UPS that provides enhanced power protection in a compact format. Its outstanding price / performance delivers the best value for money in its category with uncompromised system reliability and power availability. PowerScale is available in three cabinet sizes, enabling you to choose the ideal capacity and required autonomy for your critical load.

High reliability
- Online double conversion technology
- Parallelable systems for increased redundancy

Low cost of ownership
- Scalable power and autonomy time
- Small footprint / high power density
- High efficiency at partial and rated loads (up to 95.5%)
- Reduced installation costs
- Ripple-free and temperature controlled battery chargers extend battery life time performance
- Low input harmonic distortion (THDi <3%)

Flexible design
- Available in seven power ratings and three cabinet sizes
- Parallel capacity up to 20 units
- External battery cabinets for extended autonomy

Efficient service concept
- Manually operated maintenance bypass switch
- User-friendly LCD
- Ergonomic design for easy serviceability
- Remote monitoring and connectivity options

UPS Systems - Stand-alone

7.4 PowerScale 33 10-50 kVA

General data	10 kVA	15 kVA	20 kVA	25 kVA	30 kVA	40 kVA	50 kVA
Output power max.	9 kW	13.5 kW	18 kW	22.5 kW	27 kW	36 kW	45 kW
Output power factor	0.9						
Topology	Online double conversion						
Parallel configuration	Up to 20 units in parallel configuration						
UPS type	Standalone						
Inbuilt batteries	Yes (model dependent)						
Input							
Nominal input voltage	3× 380 V / 220 V + N, 3× 400 V / 230 V + N, 3× 415 V / 240 V + N						
Voltage tolerance (referred to ×400 V / 230 V)	For loads <100% (–10%, +15%), <80% (–20%, +15%), <60% (–30%, +15%)						
Input distortion THDi	≤3 at 100% (sine wave)						
Frequency	35–70 Hz						
Power factor	0.99 at 100% load						
Output							
Rated output voltage	3× 380 V / 220 V + N, 3× 400 V / 230 V + N, 3× 415 V / 240 V + N						
Voltage tolerance (referred to ×400 V / 230 V)	1% (static), 4% (dynamic)						
Voltage distortion	<2% linear load, <4% non linear load (IEC / EN62040-3)						
Frequency	50 Hz or 60 Hz						
Overload capability	5 min.:110 % or 20 sec.: 125 % (10 kVA - 25 kVA); 10 min.: 110 % or 1 min.: 125 % (30 kVA - 50 kVA)						
Unbalanced load	100% (all three phases regulated independently)						
Crest factor	3:1 (load supported)						
Efficiency							
Overall efficiency	Up to 95.5%						
In eco-mode configuration	98%						
Environment							
Storage temperature	–25 °C to +70 °C						
Operating temperature	0 °C to +40 °C						
Altitude	1000 m without derating						
Battery							
Battery type	7 Ah / 8 Ah, sealed, lead-acid, maintenance-free, 6-9 years design lifetime						
Battery replacement	Field-replaceable						
Battery voltage	Flexible voltage for longer backup times						
Max battery capacity	48 or 96 × 7 / 8 Ah	48 or 96 × 7 / 8 Ah	48 or 96 × 7 / 8 Ah	96 or 144 × 7 / 8 Ah	144 × 7 / 8 Ah	144 × 7 / 8 Ah	144 × 7 / 8 Ah
Communications							
LCD	Yes (per module)						
LEDs	LED for notification and alarm						
Communication ports	RS-232, SNMP slot, USB and potential-free contacts						
Standards							
Safety	IEC / EN 62040-1						
Electromagnetic compatibility (EMC)	IEC / EN 62040-2						
Performance	IEC / EN 62040-3						
Product certification	CE						
Protection rating	IP 20						
Manufacturing	ISO 9001:2015, ISO 14001:2015, OHSAS18001						
Weight, dimensions							
Cabinet type	A or B	A or B	A or B	B or C	C	C	C
Weight	48 (cab A) - 68 (cab B)	48 (cab A) - 68 (cab B)	48 (cab A) - 68 (cab B)	68 (cab B) - 177 (cab C)	177 kg	177 kg	177 kg
Dimensions w × h × d (mm)	345 × 720 × 710 or 345 × 1045 × 710	345 × 720 × 710 or 345 × 1045 × 710	345 × 720 × 710 or 345 × 1045 × 710	345 × 1045 × 710 or 440 × 1400 × 910	440 × 1400 × 910	440 × 1400 × 910	440 × 1400 × 910

UPS Systems - Stand-alone

7.5 PowerWave 33

96 %
AC-AC efficiency

1.0
Output power factor

Fully scalable
up to 5 MW

ABB has always set global standards in uninterruptible-power-supply solutions. The latest generation of PowerWave 33 is the continuation of ABB's renowned tradition of developing state-of-the-art UPS systems, focusing on delivering the best combination of energy-efficiency and overall power performance in the industry.

Offering maximum power protection, the PowerWave 33 helps you to use less energy and takes up less space, resulting in significant cost savings.

The PowerWave 33's exceptional design meets all modern requirements of building and operating energy-efficient and environmentally friendly data centers. The PowerWave 33 employs transformerless double conversion UPS topology and is available from 60 to 500 kVA.

The PowerWave 33 boasts features and options that cater to customers' needs, including the flexibility to accommodate an increase in power requirements and to provide n+1 parallel redundancy. Easy installation and maintenance form the basis of the core design for this standalone UPS system with front access to electrical connections and fully serviceable components.

Further highlights

- Up to 96 % efficiency in double conversion mode minimizes running costs
- Maximized output active power (kVA = kW)
- Excellent input performance minimizes installation costs
- Power density up to 363 kW / m2 minimizes space requirements
- Full front access maximizes system serviceability

UPS Systems - Stand-alone

7.5 PowerWave 33

GENERAL DATA	60 kW	80 kW	100 KW	120 kW	160 kW	200 kW	250 kW	300 kW	400 kW	500 kW
Output power max.	60 kW	80 kW	100 KW	120 kW	160 kW	200 kW	250 kW	300 kW	400 kW	500 kW
Output power factor	1.0									
Topology	True online double conversion									
Parallel configuration	Up to 10 units									
UPS type	Standalone									
Cable entry	Bottom front							Bottom front or top		
Inbuilt batteries	Optional									
INPUT										
Nominal input voltage	3 x 380 / 220 V + N, 3 x 400 / 230 V + N, 3 x 415 / 240 V + N									
Voltage tolerance (Ref. to 3 x 400 / 230 V)	For loads <100 % (-23 %, + 15 %), <80 %)-30 %, + 15%), <60 % (-40 %, + 15 %)									
Input distortion THDI	≤ 3.5% at 100%									
Frequency	35–70 Hz									
Power factor	0.99 at 100% load									
OUTPUT										
Rated output voltage	3 x 380 / 220 V + N, 3 x 400 / 230 V + N, 3 x 415 / 240 V + N									
Voltage distortion	< 2%									
Frequency	50 or 60 Hz									
Overload capability	10 min.: up to 125 % or 1 min.: up to 150 %									
Unbalanced load	100 % possible									
Crest factor	3 : 1									
EFFICIENCY										
Overall efficiency	Up to 96 %									
In eco-mode configuration	98 %									
Environment										
Storage temperature	–25–70 °C									
Operating temperature	0–40 °C									
Altitude configuration	100 m without derating									
BATTERY										
Battery type	Sealed, lead-acid, maintenance-free or NiCd									
COMMUNICATIONS										
LCD display	Yes									
LEDs	LED for notification and alarm									
Communication ports	USB, RS-232, SNMP slot, potential-free contacts									
STANDARDS										
Safety	IEC / EN 62040-1-1, IEC / EN 60950-1									
Electromagnetic	IEC / EN 62040-2, IEC / EN 61000-3-2									
compatibility (EMC)	IEC / EN 61000-3-3, IEC / EN 61000-6-2									
Performance	IEC / EN 62040-3									
Product certification	CE									
Protection rating	IP 20									
Manufacturing	ISO 9001:2008, ISO 14001:2004									
WEIGHT DIMENSIONS										
Weight (without batteries)	230 Kg	240 Kg	245 Kg	280 Kg	290 Kg	310 Kg	390 Kg	410 Kg	950 Kg	1000 Kg
Dimensions W x H x D (mm)	550 x 1820 x 750			850 x 1820 x 750			1100 x 1920 x 750		1650 x 1994 x 850	
Dimensions with battery	970 (or 1180) x 1820 x 750			-			-		-	
Enclosures W x H x D (mm)										

UPS Systems - Modular

7.6 DPA UPScale RI 10–80 kW

Product types with batteries	**RI 11**	**RI 12**	**RI 22**	**RI 24**	**RI 10**	**RI 20**	**RI 40**
Output power max.	20 kW	20 kW	40 kW	40 kW	20 kW	40 kW	80 kW
Number of batteries	40	80	80	160	–	–	–
Dimensions W × H × D (mm)	488 × 487 × 735 (11 HU)	488 × 665 × 735 (15 HU)	488 × 798 × 735 (18 HU)	488 × 1153 × 735 (26 HU)	488 × 310 × 565 (7 HU)	488 × 440 × 565 (10 HU)	488 × 798 × 735 (18 HU)
Weight sub-rack (without modules / without batteries)	40 kg	56 kg	66 kg	93 kg	20 kg	25 kg	50 kg

The core elements consist of best-in-class hardware and software that respond to diverse customer applications and changing business needs. All DPA UPScale RI components can be mounted directly in any 482.6 mm (19") cabinet of 800 or 600 mm (RI 10, RI 20) depth. Depending on the requirements, mixed equipment population is also possible. DPA UPScale RI is available in seven configurations – with or without inbuilt battery blocks.

Highlights for system integrators

- Rack-independence
- Efficient manufacture of individual solutions with standard products
- High local added value

DPA UPScale RI – safe-swap modularity

The ability to safe-swap modules significantly reduces the system's mean time to repair (MTTR) and simplifies system upgrades. Thanks to the unique, compact design and low weight (10 kW = 18.6 kg, 20 kW = 21.5 kg) of the DPA UPScale RI modules, inserting additional modules or replacing existing ones during operation is easy and can be performed by a single technician.

MODULES	**M 10 or M 20**
Maximum output power	10 or 20 kW
Weight	18.6 or 21.5 kg
Dimensions W × H × D (mm)	488 × 132 × 540 (3 HU)

UPS Systems - Modular

7.6 DPA UPScale RI 10–80 kW

GENERAL DATA	RI 10	RI 11	RI 12	RI 20	RI 22	RI 24	RI 40
UPS modules	1	1	1	2	2	2	4
Maximum number of inbuilt batteries	–	40	80	–	80	160	–
Output power max.	20 kW	20 kW	20 kW	40 kW	40 kW	40 kW	80 kW
Output power factor	1.0						
Topology	True online double conversion						
UPS type	Modular (Decentralized Parallel Architecture)						
Cable entry	Rear access						
INPUT							
Nominal input voltage	3 × 380 / 220 V + N, 3 × 400 / 230 V + N, 3 × 415 / 240 V + N						
Voltage tolerance (Ref. to 3 × 400 / 230 V)	For loads < 100 % (–20 %, +15 %), < 80 % (–26 %, +15 %), < 60 % (–35 %, +15 %)						
Input distortion THDi	≤ 3 % at 100 %						
Frequency	35–70 Hz						
Power factor	0.99 at 100 % load						
OUTPUT							
Rated output voltage	3 × 380 / 220 V + N, 3 × 400 / 230 V + N, 3 × 415 / 240 V + N						
Voltage distortion	< 1.5 %						
Frequency	50 or 60 Hz						
Overload capability	10 min.: 125 % or 1 min.: 150 %						
Unbalanced load	100 % possible						
Crest factor	3 : 1						
EFFICIENCY							
Overall efficiency	Up to 96 %						
In eco-mode configuration	98 %						
COMMUNICATIONS							
LCD display	Yes (per module)						
LEDs	LED for notification and alarm						
Communication ports	USB, RS-232, SNMP slot, potential-free contacts						
STANDARDS							
Safety	IEC / EN 62040-1						
Electromagnetic compatibility (EMC)	IEC / EN 62040-2						
Performance	IEC / EN 62040-3						
Product certification	CE						
Manufacturing	ISO 9001:2015, ISO 14001:2015, OHSAS18001						
WEIGHT, DIMENSIONS							
Weight (with modules / without batteries)	Up to 39 kg	Up to 62 kg	Up to 78 kg	Up to 68 kg	Up to 109 kg	Up to 136 kg	Up to 136 kg
Dimensions W × H × D (mm)	488 × 310 × 565 (7 HU)	488 × 487 × 735 (11 HU)	488 × 665 × 735 (15 HU)	488 × 440 × 565 (10 HU)	488 × 798 × 735 (18 HU)	488 × 1153 × 735 (26 HU)	488 × 798 × 735 (18 HU)

UPS Systems - Modular

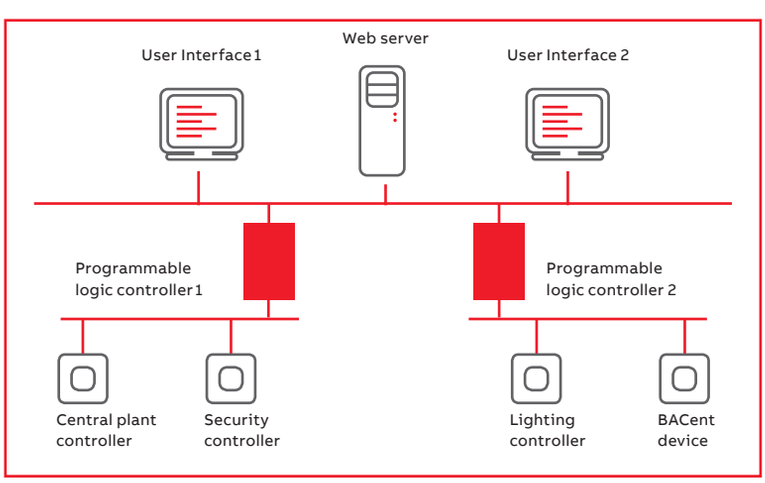
7.7 DPA UPScale ST 10 – 200 kW

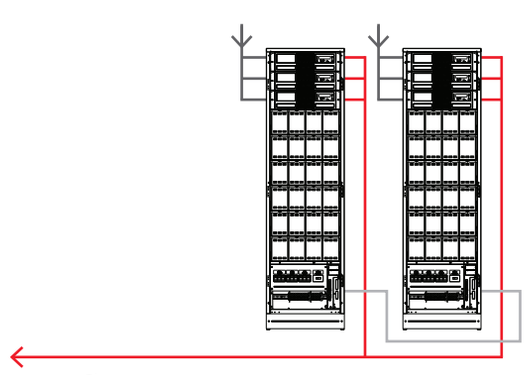
Cabinet type	ST 40	ST 60	ST 80	ST 120	ST 200
Number of modules per cabinet	1 to 2	1 to 3	1 to 4	1 to 6	1 to 10
Parallel frames per system	4	4	4	3	2
Max. number of modules per system	8	12	16	18	20
Max. total system capacity w/o redundancy	160 kW	240 kW	320 kW	360 kW	400 kW

The ideal solution for small- to medium-sized critical power IT applications

The DPA UPScale ST can be deployed in a variety of small- to medium-sized system architectures. In addition to traditional server load applications, the DPA UPScale ST is ideal to protect critical applications such as building management systems (BMS). Large facilities are often provided with BMS to control and monitor the building's mechanical and electrical systems such as ventilation, lighting, fire alarms and security. The BMS is designed to create and maintain a safe, productive and comfortable environment, thus increasing operational efficiency, decreasing the energy consumption and ensuring the safety of personnel and equipment.

The DPA UPScale ST offers clean backup power for sensitive electronic devices (controllers, I/O devices and user interfaces) designed to monitor and control the infrastructure thus avoiding loss of data or damage to equipment.





UPS Systems - Modular

7.7 DPA UPScale ST 10 – 200 kW

General data	ST 40	ST 60	ST 80	ST 120	ST 200
System power range	10–400 kW				
Nominal power per module	10 kW / 20 kW				
Nominal power / frame	40 kW	60 kW	80 kW	120 kW	200 kW
Number of UPS modules	1 to 2	1 to 3	1 to 4	1 to 6	1 to 10
Max. number of inbuilt batteries (7 / 9 Ah)	80	240	–	–	–
Output power factor	1.0				
Topology	Online double conversion				
Parallel configuration	Up to 20 modules (up to 4 frames)				
UPS type	Modular (Decentralized Parallel Architecture)				
Input					
Nominal input voltage	3 × 380 / 220 V + N, 3 × 400 / 230 V + N, 3 × 415 / 240 V + N				
Voltage tolerance (referred to 3 × 400 / 230 V)	For loads <100% (–20%, +15%), <80% (–25%, +15%), <60% (–35%, +15%)				
Input distortion THDi	≤3%				
Frequency	35–70 Hz				
Power factor	0.99				
Output					
Rated output voltage	3 × 380 / 220 V + N, 3 × 400 / 230 V + N, 3 × 415 / 240 V + N				
Voltage distortion (referred to 3 × 400 / 230 V)	<1.5%				
Frequency	50 Hz or 60 Hz				
Overload capability	1 min.: up to 150% / 10 min.: up to 125%				
Unbalanced load	100% (all three phases regulated independently)				
Crest factor	3:1 (load supported)				
Efficiency					
Overall efficiency	Up to 96%				
In eco-mode configuration	98%				
Environment					
Storage temperature	–25 °C to +70 °C				
Operating temperature	0 °C to +40 °C				
Altitude configuration	1000 m without derating				
Communications					
LCD	Yes (per module); system display optional (graphical touch screen display)				
LEDs	LED for notification and alarm				
Communication ports	USB, RS-232, SNMP slot, potential-free contacts				
Standards					
Safety	IEC / EN 62040-1				
Electromagnetic compatibility (EMC)	IEC / EN 62040-2				
Performance	IEC / EN 62040-3				
Product certification	CE				
Manufacturing	ISO 9001:2015, ISO 14001:2015, OHSAS18001				
Weight, dimensions					
Weight (with modules / without batteries)	Up to 135 kg	Up to 238 kg	Up to 168 kg	Up to 262 kg	Up to 389 kg
Dimensions w × h × d (mm)	550 × 1135 × 775	550 × 1975 × 775	550 × 1135 × 775	550 × 1975 × 775	550 × 1975 × 775

UPS Systems - Modular

7.8 DPA 250 S4

The DPA 250 S4 online double conversion modular uninterruptible power supply (UPS) represents the latest technological innovation.

The DPA 250 S4 has a high-efficiency, modular architecture that offers best reliability for environmentally conscious organizations that also need zero downtime and low cost of ownership. The DPA 250 S4 is specially designed for critical, high-density computing environments such as small- to medium-sized data centers.

The DPA 250 S4 sets the standard for the next decade of UPS progress with advanced features such as its transformer-free IGBT converters that feature three-level topology with interleaving controls to enable market-leading efficiency of 97.6 percent for the UPS module. This high efficiency reduces operational costs and minimizes environmental impact.

This modular UPS is based on **decentralized parallel architecture (DPA™)**, where every UPS module is practically its own UPS, having all the essential functional units needed for independent operation. DPA increases system reliability and availability compared to other modular UPS solutions in the market, as there is inherent redundancy between the UPS modules on all functional levels.

The DPA 250 S4 is specially designed for critical, high-density computing environments such as:

- Small- to medium-sized data centers
- Commercial buildings and general IT applications
- Healthcare facilities
- Railway signaling applications and airports

50 kW power in one UPS module. Truly scalable power - featuring DPA.

250 kW N+1 redundant power. In one UPS frame cabinet.

1,500 kW power in one system. By paralleling up to six frames.

97.6% module efficiency. Top-of-the-market performance.

> 30% reduced power losses. Compared to similar products in the market.

< 10min service time. All it takes to exchange one UPS module.

UPS Systems - Modular

7.8 DPA 250 S4

GENERAL DATA	
System power range	50 - 1,500 kW
Nominal power per module	50 kW
Nominal power / frame	250 kW (N+1)
Number of UPS modules	5 + 1
Topology	Online double conversion
Parallel configuration	Up to 30 modules
Cable entry	Top or bottom
Output power factor	1.0
Serviceability	Only frontal access needed
Back-feed protection	Built-in as standard
INPUT	
Nominal input voltage	380 / 400 / 415 VAC
Voltage tolerance (referred to 400 V)	- 30% at partial loads
Current distortion THDi	<2.8%
Frequency range	35 – 70 Hz
Power factor	0.99
Walk in / soft start	Yes
OUTPUT	
Rated output voltage	380 / 400 / 415 VAC
Voltage tolerance (referred to 400 V)	± 1%
Voltage distortion THDU	<2.0%
Frequency	50 or 60 Hz (selectable)
Rater power factor	1.0
EFFICIENCY	
Module efficiency	Up to 97.6%
Overall system efficiency	Up to 97.4%
In eco-mode	Up to 99%
ENVIRONMENT	
Protection rating	IP 20 (IP 21 optional)
Storage temperature	-25 °C to +70 °C
Operating temperature	0°C to +40°C
Altitude (above sea level)	1,000 m w/o derating
BATTERIES	
Types	VRLA, open cells, NiCd and Li-Ion
Battery charger	Decentralized charger per module
COMMUNICATIONS	
User interface	Graphical touch screen (one per frame as standard) Decentralized LCD and mimic diagram (one per module as standard)
Communication ports	Communication ports USB, RS-232, potential-free contacts, SNMP (optional)
Customer interface	Remote shutdown, gen-set interface, external bypass contact
COMPLIANCY	
Safety	IEC / EN 62040-1
EMC	IEC / EN 62040-2
Performance	IEC / EN 62040-3
Manufacturing	ISO 9001:2015, ISO 14001:2015, OHSAS18001
DIMENSIONS	
Weight (without modules / without batteries)	270 kg
Weight module	68 kg
Dimensions w x h x d	795 x 1 978 x 943 mm

UPS Systems - Modular

7.9 Conceptpower DPA 500

The Conceptpower DPA 500 boasts the lowest cost of ownership of any UPS system by offering energy efficiency, scalability and ergonomic design to enable easy serviceability.

It can be sized to align closely with prevailing IT requirements, but can be added to incrementally as IT needs grow. This means that you only power and cool what you need. The resulting savings in power usage over the service life of the UPS are substantial.

Rack-mounted configurations can be right-sized by inserting or removing 'online-swappable' modules while the systems remain online, enabling power to be added as requirements grow without any footprint penalty. This makes servicing simple as modules can be replaced without powering down.

Together with the excellent efficiency rating (up to 96 %) of the product, all these factors gives the Conceptpower DPA 500 the lowest total cost of ownership of any similar UPS system.

Six frames in parallel can be scaled to provide 3 MW of clean and reliable power.

Sized to fit your needs

Designers often over-specify UPS systems to take account of future demand growth. With the Conceptpower DPA 500, modules can simply be added in parallel to increase the system's total capacity. The Conceptpower DPA delivers power protection from 100 to 500 kW (one to five modules) in a single cabinet. Cabinets can operate in a parallel configuration to build a system of up to 3 MW.

The Conceptpower DPA 500's horizontal and vertical scalability allows:

- Flexible power upgrades and downgrades
- Easy maintenance
- Pay as you grow

Scalable up to 3 MW

Vertical scalability: one to five modules in one single cabinet

Horizontal scalability: cabinets in parallel configuration up to 3 MW

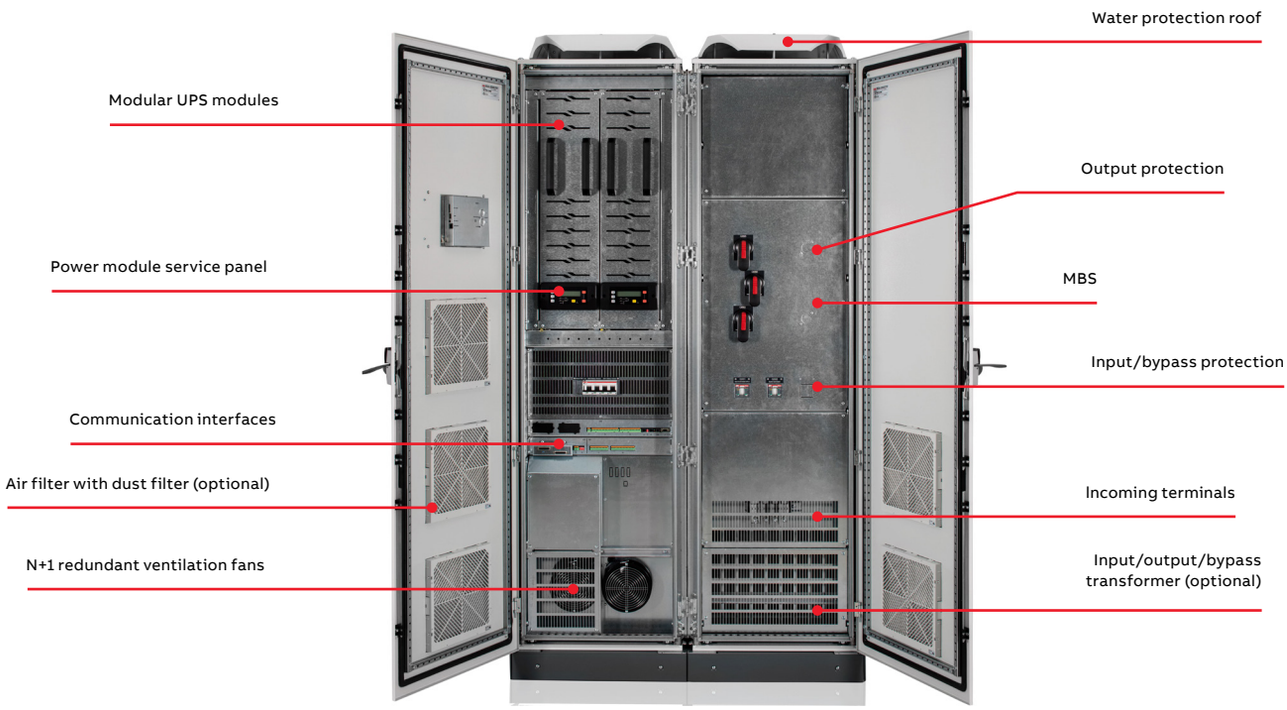
UPS Systems - Modular

7.9 Conceptpower DPA 500

GENERAL DATA	
System power range	100 kW - 3 MW
Nominal power / module	100 kW
Nominal power / frame	500 kW
Output power factor	1.0
Topology	Double conversion, transformer-free, modular, Decentralized Parallel Architecture
Parallel configuration	Up to 5 modules in one frame (500 kW) / up to 6 frames in parallel (3 MW)
Cable entry	Bottom or top as standard
Serviceability	Fully front serviceable
Back-feed protection	Built-in as standard
INPUT	
Nominal input voltage	3 x 380 / 220 V + N, 3 x 400 / 230 V + N, 3 x 415 / 240 V + N
Voltage tolerance (referred to 400 / 230 V)	308 - 460 V (-23- +15 %) <100 % load, 280 - 460 V (-300 +15 %) <80 % load, 240 - 460 V (-40- +15 %) <60 % load
Input distortion THDi	≤3 % at 100%
Frequency range	35 - 70 Hz
Power factor	0.99 @ 100 % load
Walk in / Soft start	Yes
OUTPUT	
Rated output voltage	3 x 380 / 220 V + N, 3 x 400 / 230 V + N, 3 x 415 / 240 V + N
Voltage tolerance (referred to 400 / 230 V)	< ±1 % with static load / < ±4 % with step load
Voltage distortion	<2 % with linear load / <4 % with non-linear load
Frequency	50 or 60 Hz (selectable)
EFFICIENCY	
AC-AC	Up to 96 5
In eco-mode	≥ 99 %
ENVIRONMENT	
Protection rating	IP 20
Storage temperature	-25° - +70°
Operating temperature	0° - +40°C
Altitude (above sea level)	1000 m without de-rating
BATTERIES	
Number of 12V blocks / string	Flexible number from 40 - 50 blocks
Types	VRLA, vented lead-acid, NiCd, super capacitors
Battery charger	Decentralized charger per module
COMMUNICATIONS	
User interface	Graphical touch screen (one per frame as standard) Decentralized LCD + mimic diagram (one per module as standard)
Communication ports	USB, RS-232, voltage-free contacts, SNMP (optional)
Customer interface	Remote shutdown, gen-set interface, external bypass contact
COMPLIANCY	
Safety	EC / EN 62040-1
EMC	EC / EN 62040-2
Performance	EC /EN 62040-3
Manufacturing	ISO 9001:2008, ISO 14001:2004
WEIGHT, DIMENSIONS	
Weight	approx. 975 Kg (500 kW system without batteries)
Dimensions W x H x D	1580 x 1975 x 945

Industrial UPS Systems

7.10 PowerLine DPA



Available models

Cabinet type	PowerLine DPA 20–40	PowerLine DPA 80	PowerLine DPA 120
Number of modules	1	2	3
Dimension w × h × d	800 × 2200 × 800mm	1200 × 2200 × 800mm	1600 × 2200 × 800mm
Weight in kg (without transformers)	Up to 550 kg	Up to 650 kg	Up to 850 kg

UPS cabinet configuration

- 3ph online double conversion UPS
- Decentralized Parallel Architecture
- Housed in an industrial metal enclosure, IP31, RAL 7035, bottom cable entry
- Halogen free cable
- Forced ventilation with monitored fans
- Input, bypass and battery protection
- Manual bypass switch
- Integrated back-feed protection
- HMI interface with graphical display, control push keys, UPS operating status indication and programmable alarm section
- Communication interfaces: Relay board with 9 programmable outputs and 8 inputs, RS-232 and USB ports

Options

- Input, output, bypass aluminum transformer
- Customized input & output voltages
- Ingress protection IP42
- Top cable entry
- Ventilation frame fans
- Tropicalization and anti-corrosion protection for electrical boards
- Anti-condensator heater
- Lifting eyes
- Control and monitoring (ModBus RS-485, ModBus TCP/IP, SNMP)
- Battery temperature sensor
- Cold start
- Redundant configuration

Industrial UPS Systems

7.10 PowerLine DPA

General data									
System power range	20–120 kW								
Nominal power / frame	20 kW	40 kW			80 kW			120 kW	
Number of UPS modules	1		2			3			
Output power factor	1.0								
Topology	Online double conversion								
UPS configuration	Single, parallel-redundant, dual								
UPS type	Modular (Decentralized Parallel Architecture)								
Input									
Nominal input voltage	3 × 380/220 V + N, 3 × 400/230 V + N, 3 × 415/240 V + N (others on request)								
Voltage tolerance (referred to 3 × 400 / 230 V)	For loads <100% (–15%, +10%), <80% (–20%, +10%), <60% (–30%, +10%)								
Input distortion THDi	≤4%								
Frequency	50 or 60 (selectable)								
Power factor	0.99								
Output									
Rated output voltage	3 × 380/220 V, 3 × 400/230 V, 3 × 415/240 V (others on request)								
Voltage distortion (referred to 3 × 400/230 V)	<2.5%								
Frequency	50 Hz or 60 Hz								
Overload capability	150% 1 min, 125% 10 min								
Output short capability	2.7 × Inom								
Unbalanced load	100% (all three phases regulated independently)								
Crest factor	3:1 (load supported)								
Efficiency									
Overall efficiency / transformerless	Up to 96%								
In eco-mode configuration	98%								
Environment									
Storage temperature	–25 °C to +70 °C								
Operating temperature	–5 °C to +45 °C								
Humidity	5% to 95% without condensation								
Altitude configuration	1000 m without derating								
Communications									
HMI	Graphical display for control and metering, 8 programmable alarm indications								
Relay contactors	8 in /9 out programmable relays								
LCD	On system level HMI with graphical display and alarm indications; on module level service control interface								
LEDs	LED for notification and alarm								
Communication ports	USB, RS-232, SNMP slot, potential-free contacts								
Electrical / Mechanical									
Degree of protection	IP31, IP42 (optional)								
Color	RAL 7035								
Cable entry	Bottom, Top (optional)								
Wiring	Halogen free cable								
Operating and maintenance access	Front access								
Ventilation	Forced ventilation with monitored fans								
Battery									
Battery type	VLRA / NiCd								
Autonomy	According to customer's requirement								
Standards									
Safety	IEC / EN 62040-1								
Electromagnetic compatibility (EMC)	IEC / EN 62040-2								
Performance	IEC / EN 62040-3								
Product certification	CE								
Manufacturing	ISO 9001:2015, ISO 14001:2015, OHSAS18001								
Weight, dimensions									
Weight (with modules / without transformers)	Up to 550 kg			Up to 650 kg			Up to 850 kg		
Dimensions w × h × d (mm)	800 × 2200 × 800 mm			1200 × 2200 × 800 mm			1600 × 2200 × 800 mm		

HiPerGuard
Medium Voltage UPS 6.6 kV - 24 kV

- **Continuous clean power**
- **Efficiency of 98 %**
- **Scalable power from 2.25 MW up to 22.5 MW**
- **System energy reserve available for grid support services**
- **Design life of fifteen years**

Industrial UPS Systems

7.11 HiPerGuard

The space and electrical power needed to run a large critical power facility have increased over the past decade. Facilities are now faced with the need for energy efficient and reliable power as it is essential to have clean, continuous power to avoid any major losses

01

ABB's HiPerGuard MV UPS is the next generation of medium voltage UPS intended for multi megawatt power protection. Based on the ZISC architecture, the HiPerGuard MV UPS introduces a flexible solution for higher reliability and efficiency in critical power installations.

01. HiPerGuard MV UPS

Medium voltage

The transition from low voltage (LV) to medium voltage (MV) level is a natural progression of power protection for large critical power installations. The approach offers two main benefits. It increases reliability and reduces costs of the critical power facility build and operation.

Increased reliability is derived from the MV design approach with larger protected load blocks, lower switchgear count and the operating culture of medium voltage systems.

Installing the power protection at the MV level provides the most energy efficient configuration as the lower currents at this voltage result in smaller cables and lower losses, leading to less cooling requirements.

HiPerGuard

HiPerGuard is the next generation of medium voltage UPS intended for multi megawatt power protection. Based on the impedance isolated static converter (ZISC) architecture, the HiPerGuard MV UPS introduces a flexible solution with high reliability and high efficiency for critical power installations.

The HiPerGuard is the most recent addition to ABB's Power Protection product portfolio, creating a complete power protection solution. This increased flexibility removes the need for complex power distribution architectures.

Industrial UPS Systems

7.11 HiPerGuard MV

The HiPerGuard MV UPS's key benefits and advantages create a robust and extremely reliable power protection device for critical facilities.

High Efficiency
- Leading efficiency UPS - 98% at 50% to 100% loading.
- Substantial energy savings during the product lifespan when compared to rotary systems.

Performance
- Performance in line with IEC62040-3 Class 1.
- High fault clearing capability.
- Higher availability due to modular design.

Flexibility
- Scalable power from 2.25MW up to 22.5MW in parallel allows load growth with less stranded capacity, minimizing CAPEX.

Sustainability
- CO_2 emissions reduced thanks to the high efficiency.

Connectivity and monitoring
- Event analysis and waveform capture.
- Remote monitoring and diagnostics.
- ABB Ability ™ to increase productivity and safety at lower costs.

Serviceability
- Plug and play power converters.
- Power converters and energy storage at low voltage.
- MTTR typically less than fifteen minutes.
- Comprehensive service log.
- Up to ten years between intrusive maintenance activities.

Demand Response
- System energy storage reserve available for grid support services or peak shaving.

02. Graphical Display Module (GDM)

03. Power Electronics Building Block (PEBB)

Industrial UPS Systems

7.11 HiPerGuard MV - Technical Data

Product Class	7.2 kV IEC	12 kV IEC	15 kV ANSI	24 kV IEC	
Rated Voltage1	6-6.6 kV	10 – 11 kV	12.47 – 13.8 kV	20 – 22 kV	
Rated apparent power		2250 kVA			Single unit
Rated active power		2250 kW			Load power factor 1.0
Hard parallel configuration		Up to 10 units			
Performance					
Efficiency		98% for 50% to 100% loading			Under nominal conditions
Dynamic output performance		In line with IEC62040-3 VI SS 111			
Architecture		ZISC enabled line interactive			
Input					
Voltage tolerance		±10 %			From nominal voltage
Rated frequency		50 Hz/60 Hz			
Power Distribution system1		IT, 3-Wire Input			
Output					
Rated frequency		50 Hz or 60 Hz			
Load power factor range		0.9 leading to 0.8 lagging			
Energy Storage					
Energy storage type		Li-Ion batteries			
Energy storage supplier		ABB qualified			
Energy storage autonomy range1		15 sec to 15 min			
Interface					
System display		10" touchscreen display			
Display advanced functionality		Waveform capturing Event analysis Trending Comprehensive service log			
Communication		Ethernet Modbus TCP™			

Note1: For other voltages, distribution systems, and autonomy options, please contact ABB.

Industrial UPS Systems

7.12 PCS100 UPS-I

Semiconductor fabrication, test and assembly lines
Flat panel and LCD production lines need to be in operation 24/7 in order to meet today's demands. ABB have installed many UPS-Is, that amount to hundreds of MVA at leading companies like, Samsung and many other LCD manufacturing plants worldwide.

High-speed packaging lines
Voltage variations in high-speed packaging lines cause major disruptions. The PCS100 UPS-I is protecting many high speed packaging lines, including a dairy operation in Washington DC, that produces several million "one time use" plastic coffee creamers per day.

Medical
To ensure that production at multi-billion dollar companies is not brought to a standstill by power failures, voltage sags and other electrical disruptions, power protection is needed. ABB's PCS100 UPS-I is protecting major medical suppliers like B.Braun from such events.

Cable manufacture
Contact manufactures such as NKT's specialist cable factory at Karlskrona, Sweden know the impact of an unplanned shutdown on their operation and invested in two high capacity UPS-I. The UPS-I secure the factory's operations against seasonal weather related utility disturbances along with less predictable voltage events caused by accidents.

Data centers HVAC and servers
PCS100 UPS-Is protects data centers and servers from voltage sags and surges. For example, the PCS100 UPS-I is supporting one of the Swiss government data centers with emergency power supply and a major data center based in Memphis, USA.

Aerospace application
Carbon fiber is extensively used in the aerospace industry. The PCS100 UPS-I protects the production of the carbon fibers, ensuring quality and yield requirements are met. Carbon fiber is the base fiber for all carbon composites.

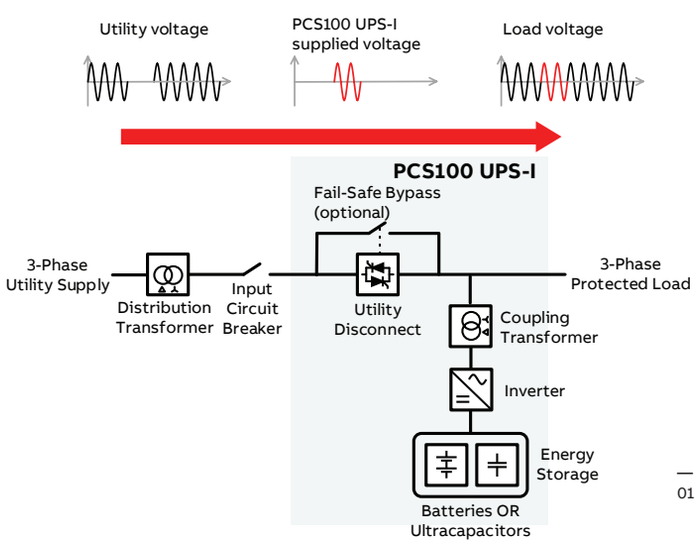
Industrial UPS Systems

7.12 PCS100 UPS-I

The PCS100 UPS-I is a high performance, high efficiency UPS system that ensures protection from power quality events, such as deep sags or short-term outages, enabling continuous power supply to modern industrial processes.

The PCS100 UPS-I uses a modular energy storage and inverter system to supply continuous power during utility events. The PCS100 UPS-I provides flexibility in the choice of energy storage, ultracapacitors or VRLA batteries to suit the required autonomy. Battery systems can deliver autonomy up to 5 minutes. Ultracapacitors provide seconds of protection for short power quality events, which are the most common power quality problems around the world. Ultracapacitors have extremely high power density and long lifetime resulting in a very compact and low maintenance solution.

Harsh electrical environments are often found in modern industry. The PCS100 UPS-I uses a robust high-speed power electronic disconnect switch to connect the load to the utility. The modular inverter construction and fail-safe electromechanical bypass provides the highest system availability. Coupled with the small footprint and easy serviceability, this low maintenance, high efficiency industrial UPS is the solution for all power protection applications.



01 PCS100 UPS-I Single line diagram

How it works

When the utility voltage is within a user defined range, the load is supplied directly by the utility. When a sag, surge or outage occurs, the PCS100 UPS-I immediately transfers the load onto its inverter and energy storage.

When the utility voltage returns to within specification the PCS100 UPS-I will seamlessly transfer the load from the inverter back to the utility.

Key benefits

- Robust fail-safe modular industrial design
- Long lifetime energy storage
- Small footprint
- Highest efficiency and availability
- Low maintenance requirements
- Easy serviceability

Key features

- Very high efficiency (99% typical)
- Designed specifically for industrial loads (motors, drives, transformers, production tools)
- Modular design providing high reliability and typically 30 minutes MTTR (mean time to repair)
- Very high fault current capacity
- Advanced ultracapacitor or high discharge rate battery storage
- Generator walk-in algorithm for a controlled transfer of the load to backup generators
- Ratings from 150 kVA to 3000 kVA and voltages
- 208 Vac to 480 Vac

PCS100 UPS-I advantages compared to alternative solutions

- Robust with high availability
- Designed for harsh industrial electrical environments
- Modular design
- Lowest cost of ownership
- Highest efficiency
- Long lifetime energy storage
- Small footprint
- Flexible energy storage options (ultracapacitors or VRLA batteries)

Active Voltage Conditioners

7.13 PCS100 AVC-20

The PCS100 AVC-20 ensures a continual, regulated supply of utility voltage where the electric infrastructure is stressed, unstable or unreliable.

Typical applications

- **Commercial**
  - Hotels and resorts
  - Embassies
  - Sports stadiums
  - Office buildings
  - Entertainment
  - Remote locations
  - Medical equipment

- **Industrial**
  - Manufacturing
  - Assembly
  - Chemical
  - Petrochemical
  - Food and beverage
  - Oil and Gas
  - Printing
  - Pulp and Paper

For further technical information, please refer to the PCS100 AVC-20 Technical Catalogue.

Technical specifications

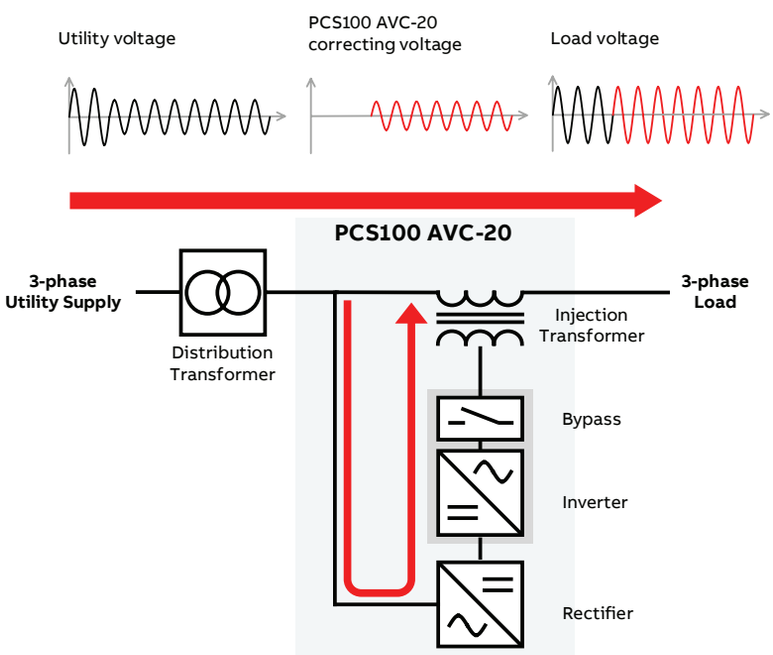
Utility – Input	
Power range	250 – 3000 kVA
Rated voltage	380 V - 415 V, 3 phase
Performance	
Efficiency	Typically >98%
Voltage variation detection time	250 µs
Voltage regulation time	<20 ms for any voltage deviation within the specification
Continuous regulation Undervoltage Overvoltage	 -15% (load power factor 1.0) -20% (load power factor 0.75) +20%

Active Voltage Conditioners

7.13 PCS100 AVC-20

Designed for use in industrial and large commercial operations in environments where an unstable network or utility voltage affects productivity.

01 PCS100 AVC-20
Single line diagram



Benefits to your business

Increase your operational reliability

- Achieve consistent processes
- Increase the lifetime of your equipment
- Experience fewer equipment malfunctions
- Improve the quality of your products and services
- Reduce your usage of expensive critical back-up systems

A fluctuating voltage supply affects your productivity and the consistency of your operations, leading to a reduction in the quality of your products and services. Fluctuating voltage also leads to increased wear on machinery components, resulting in a greater number of malfunctions and a reduced life expectancy of your equipment. The PCS100 AVC-20's fast, accurate voltage regulation secures your productivity by improving consistency in your operations and reducing the impact of fluctuating voltage on your equipment and production.

Reduce your costs

- Optimize your energy usage
- Improves motor efficiency
- Better use of your resources
- Increase your usage of cheaper utility power

Brownouts, over-voltages and an unbalanced voltage supply cause motors in your equipment and machinery to function inefficiently and can result in poor use of resource, in terms of staff, materials and energy consumption. It can also cause reliance on costly back-up systems, such as diesel generators. The PCS100 AVC-20 ensures a regulated supply of voltage, helping you to streamline your operations and optimize your resource to reduce wasted capacity and improve the return on your operational investment. At the same time, the PCS100 AVC-20 allows you to use utility power, resulting in a cost saving on power generation from captive power plants.

Key product features

- Proven and dependable converter platform with sophisticated control software
- Full range voltage correction completed in 20 milliseconds
- Rugged electrical overload capability
- Modular design providing high reliability and scalability
- Low mean time to repair
- Internal bypass mechanism providing fail-safe operation
- Small footprint with industry leading power density (power per unit volume)
- Touch screen control panel supporting over 15 languages
- Industry-leading efficiency of over 98 percent
- Low cost of ownership due to few moving parts

Active Voltage Conditioners

7.14 PCS100 AVC-40

The PCS100 AVC-40 ensures that equipment receives a clean, continuous flow of power, even during grid disturbances.

- **Electronics industry**
  - Sensitive machinery
  - Clean room control
- **Food and beverage**
  - High speed bottling
  - Packaging lines
  - Dairy processing
- **Automotive**
  - Welding process
  - Coating process
  - Painting process
- **Continuous process**
  - Fibre production lines
  - Film production lines
  - Extrusion process
- **Pharmaceutical**
  - Batch process
  - Climate control
- **Medical**
  - Sensitive medical
  - Imaging equipment

For further technical information, please refer to the PCS100 AVC-40 Technical Catalogue.

Technical specifications

Utility – Input	
Power range	150 – 3600 kVA
Voltage (model specific)	220 V – 480 V, 3-phase
Performance	
Efficiency	Typically >98%
Sag correction response	Initial < 250 µs, complete < ½ cycle
Sag correction Three phase sags	60% to 100% for 30 s, 50% to 90% for 10 s
Single phase	45% to 100% for 30 s
Continuous regulation range	±10%