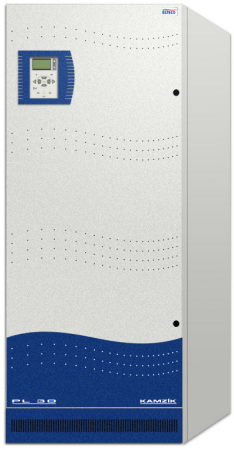
BASIC CHARACTERISTICS & PARAMETERS OF PL POWER SUPPLY UPS



- Uninterruptible power supply (UPS) of PL type ensures power supplying of devices despite of black outs and quality mains absence. Provides elimination of the voltage spikes and over voltage, filtration of shape distorted voltage and bypassing of blackout and low voltage of the powering mains
- ON-LINE technology with double conversion of energy and transfer to back up mode without interruption of the power supplying of load
- Developed by use an advanced technology (multiprocessor control on base of DSP – allows to implement newest control algorithm, which achieves significant increase of the quality of the system, SMD technology) and new semiconductor components (IGBT power transistors)
- High reliability of device
- High resistance against disturbances from mains and level of protection of load before failures
- High stability and quality of the output voltage
- Possibility of the parallel connection of up to eight UPS in order to increase power output and redundancy of the back up system
- Electronic compensation of power factor (power factor on the input is higher than 0.97)
- Excellent parameters of conformity of the input circuits with mains or with generating set possibility of the consecutive loading of the generating set, what decrease the necessity of dimension of the power generating set
- Setting and monitoring of the operating modes of the power supply directly on the front panel of the power supply by LCD graphical unit
- Acoustic and optical indication of states of power supply
- Record of the statistic data (it is important at diagnostic of the operating states of power supply)
- Possibility of power supplying of load during maintenance and prophylactic control of power supply (Manual Bypass)
- Possibility of operation in ECO mode (low consummation of energy)
- Serial interface RS 232, RS 485 as standard
- Installation not requiring a lot of space – possibility of placing directly to wall of room
- Possibility of connection of battery modules for increasing of the back up time
- Possibility of solution of the special requirements from the customer directly at the producer of UPS.

Extensions:

- SNMP adapter allows communication of MASTER computer with UPS
- Module of digital galvanic isolated inputs and outputs
- Possibility to connect a special module, which provides independent control of the quality of the input mains of UPS (control of the effective value, frequency, content high harmonic elements). This module allows location of UPS for example in the hard conditions of railways, where supervision is necessary important condition for their put into operation
- Possibility of input or output isolating transformer addition

Software

- **GLOBMON** - program system for the monitoring and setting devices, monitoring of operation states and states of the environment, control, record and archiving of the critical states of devices
- **UPSMON** - program assigned for monitoring of UPS and shutdown of back up PC.

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Specifications

Parameters \ TYPE		PL8	PL10	PL15	PL20	PL30	PL40
Nominal power / Active power [kVA/kW]		8 / 6,4	10 / 8	15 / 12	20 / 16	30 / 24	40 / 32
Nominal input voltage		3 x 230/400 V					
Range of input voltage	◆ max input voltage	3 x 265/459 V					
	◆ min input voltage transfer to back-up mode	it changes according to size of the connected load: 20 % P_{nom} – 160 / 277 V ÷ 265 / 459 V 100 % P_{nom} – 200 / 347 V ÷ 265 / 459 V					
Nominal input current		11 A	13 A	20 A	26 A	40 A	52 A
Maximal input current		20 A		30 A	40 A	60 A	80 A
Recommended input protection, char. C (D for parallel cooperation)		16 (20 A of 70 min.)		25 (32 A > 80 min.)	32 (40 A > 90 min.)	63 A	100 A
Frequency of the input voltage		45 ÷ 55 Hz (standard setting)					
Power factor		> 0,97					
Nominal output voltage		3 x 230/400 V (standard setting)					
Form of the output voltage		sinusoidal					
Distortion (linear load)		< 2 %					
Frequency of output voltage	◆ back up mode	50 Hz ± 0,1 %					
	◆ mains present	The same as frequency of the input voltage in set range (stand. 45 ÷ 55 Hz)					
Output effective current		11,6 A	14,5 A	21,7 A	29 A	43,4 A	58 A
Recommended output disconnector at parallel operation		16 A		25 A	32 A	63 A	100 A
Recommended input/output cables *		CGSG 5Cx2,5 (4)		CGSG 5Cx4 (6)	CGSG 5Cx6 (10)	CGSG 5Cx16	
Radiated Heat rate		0,65 kW	0,8 kW	1,2 kW	1,6 kW	2,4 kW	3,3 kW
Possible overloading	◆ 1minute without activation of BYPASS	150 %					
	◆ 80 ms	> 200 %					
	◆ on BYPASS	Limited by the input current of circuit breaker					
Electronic fuse on the UPS output		- during overload transfer to ByPass or output voltage limitation - during permanent overload automatic blocking of power supply					
Efficiency	◆ operation from mains	92%					
	◆ operation from battery	90%					
Power factor applied load		0,6 ÷ 1					
Crest factor		3					
Nominal voltage of batteries		2 x 192 V					
Battery type		Sealed, acid, maintenance free					
Control of the internal temperature		- during dropping below min. temperature (at startup) – UPS blocking - during excess of max. temperature – transfer to ByPass or blocking					
Protection		IP 20					
Operating temperature		from + 5 °C up to 40 °C					
Recommended temp. range for max. battery lifetime		from +18 °C up to 23 °C					
Storage temperature		from - 5 °C up to 50 °C					
Max transport temp. with batteries		from - 20 °C up to 50 °C					
Operating relative humidity		80 % max					
Storage relative humidity		90 % max					
Dust		Contents of dust particles in air cannot exceed 0,75 mg/m^3					

* May differ according to installation conditions

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Back-up time and dimensions of the UPS with internal batteries:

Type	Capacity of bat. [Ah]	Back-up Time [min] P_{out}=75%P_{nom} pF=0,8	Back-up Time [min] P_{out}=75%P_{nom} pF=1	Back-up Time [min] P_{out}=100%P_{nom} pF=0,8	Dimensions [mm] W x H x D	Weight [kg]
PL08N7S1	7	13:19	9:55	8:32	762 x 1214 x 524	239
PL08N9S1	9	19:41	15:10	12:11	762 x 1214 x 524	248
PL08N9M2	18	46:19	36:30	33:34	762 x 1444 x 524	350
PL10N7S1	7	9:34	7:05	6:23	762 x 1214 x 524	240
PL10N9M2	18	35:37	27:55	23:54	762 x 1444 x 524	351
PL10N9L3	27	50:04	39:20	35:00	762 x 1904 x 524	475
PL10N9L4	36	78:51	62:30	57:34	762 x 1904 x 524	562
PL15N9S1	9	7:41	5:40	5:50	762 x 1214 x 524	250
PL15N9M2	18	21:17	16:35	13:52	762 x 1444 x 524	352
PL15N9L3	27	35:43	27:55	25:36	762 x 1904 x 524	476
PL15N9L4	36	50:04	39:45	33:00	762 x 1904 x 524	563
PL20N9L3	27	20:43	11:50	10:07	762 x 1904 x 524	480
PL20N9L4	36	35:43	29:30	25:19	762 x 1904 x 524	567
PL30N9M2	18	7:41	5:40	5:49	762 x 1444 x 524	354
PL30N9L3	27	8:21	6:15	4:52	762 x 1904 x 524	481
PL30N9L4	36	21:17	16:35	13:52	762 x 1904 x 524	567

Example of labelling: PL10N7L3

PL – 3-phase UPS
10 – output power 10kVA, the entire output range is 8,10,15, 20, 30 kVA
N – 5-year batteries; or L – batteries with extended service life
7 – capacity of one battery set in Ah, 9Ah batteries are preferred
L – mechanics type, small=S, medium=M, large=L
3 – number of parallel battery sets of 36 pcs.

Back-up time and dimensions of the UPS and additional battery module containing batteries with **normal lifetime (3-5 years):**

Parameters \ UPS & BM type		PL 10 + BM65CN32P10 - 249	PL 15 + BM65CN32P15 - 159	PL 15 + BM40CN64P15 -215	PL 20 + BM65CN32P20 - 112	PL 20 + BM40CN64P20 - 154	PL 30 + BM40CN64P30 - 95	PL 30 + BM65CN64P30 - 159	PL 40 + BM65CN32P40 - 46	PL 40 + BM40CN64P40 - 65	PL 40 + BM65CN64P40 - 112
Total capacity of battery [Ah]		65	65	80	65	80	80	130	65	80	130
Back-up time at **100%** load [min.]	pf=0,8	130	79	112	54	76	44	79	19	29	54
	pf=0,6	181	112	159	79	109	65	112	30	44	79
Back-up time at **75%** load [min.]	pf=0,8	181	112	159	79	109	65	112	30	44	79
	pf=0,6	249	159	215	112	154	95	159	46	65	112
Weight of UPS + BM [kg]		177+820		177+ 1100	177+820	177+1100		177+2x820	185+820	185+ 1100	185+ 2x820
Dimensions [mm]	width UPS + BM	762+800		762+ 1000	762 + 800	762 + 1000		762+2x800	762+800	762+ 1000	762+ 2x800
	depth UPS + BM	524 + 800							800		
	UPS height	1444									
	BM height	1400									

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Back-up time and dimensions of the UPS and additional battery module containing batteries with **extended lifetime (8-10 years):**

Parameters \ UPS & BM type		PL 10 + BM65CL32P10 - 222	PL 15 + BM65CL32P15 - 151	PL 15 + BM40CL64P15 -173	PL 20 + BM65CL32P20 - 112	PL 20 + BM40CL64P20 - 141	PL 30 + BM40CL64P30 - 79	PL 30 + BM65CL64P30 - 151	PL 40 + BM75CL30P40 - 48	PL 40 + BM75CL60P40 - 117
Total capacity of battery [Ah]		65	65	80	65	80	80	130	75	150
Back-up time at **100%** load [min.]	pf=0,8	128	72	103	47	58	37	72	22	54
	pf=0,6	164	112	141	62	100	51	112	33	87
Back-up time at **75%** load [min.]	pf=0,8	164	112	141	62	100	51	112	33	87
	pf=0,6	222	151	173	112	141	79	151	48	117
Weight of UPS + BM [kg]		177+820		177+1100	177+820	177+1100	177+1100	177+ 2x820	177+884	177+ 2x884
Dimensions [mm]	width UPS + BM	762+800		762+1000	762 + 800	762 + 1000		762+ 2x800	762+800	762+ 2x800
	depth UPS + BM	524 + 800								
	UPS height	1444								
	BM height	1444								

There are average back-up times presented. Tolerances of back-up times:
T<6min(+15%~-15%), 6min<T<10min(+12%~-12%), 10min<T<60min(+8%~-8%),
T>=60min(+5%~-5%)

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