



PRODUCT PRESENTATION PROTECT 1.M

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

AEG
POWER SOLUTIONS

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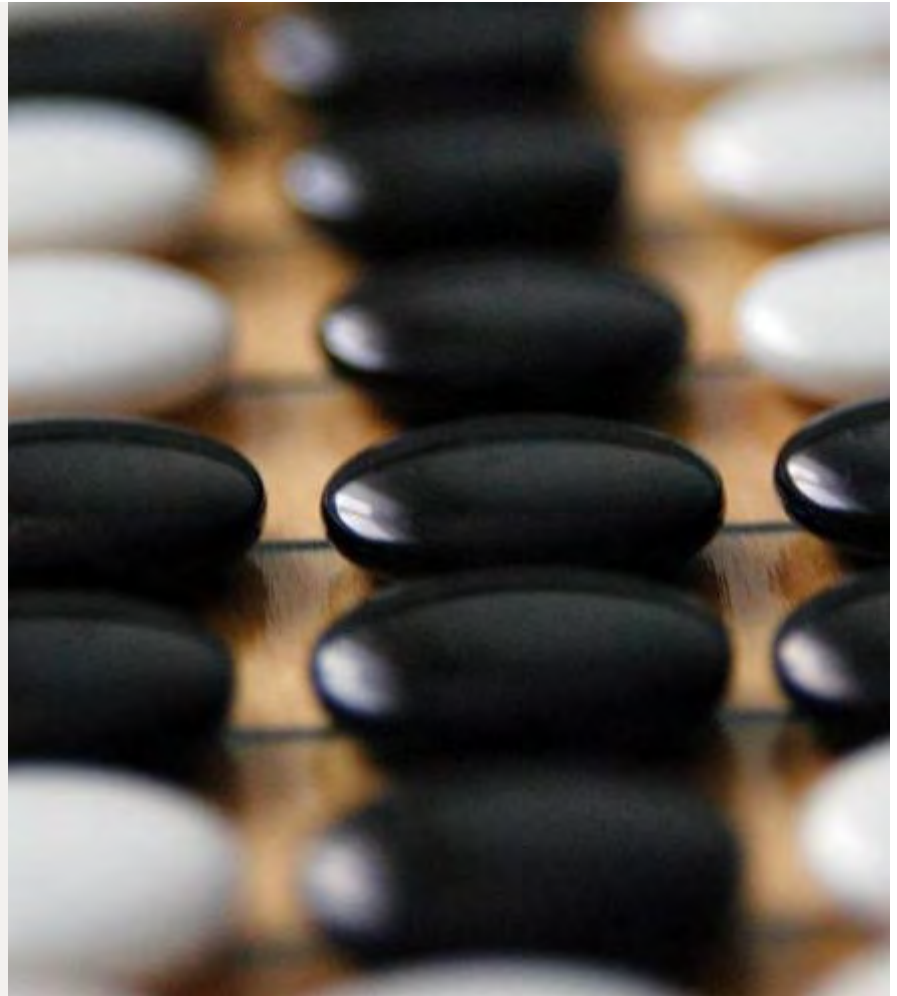


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A- CLASSIFICATION

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

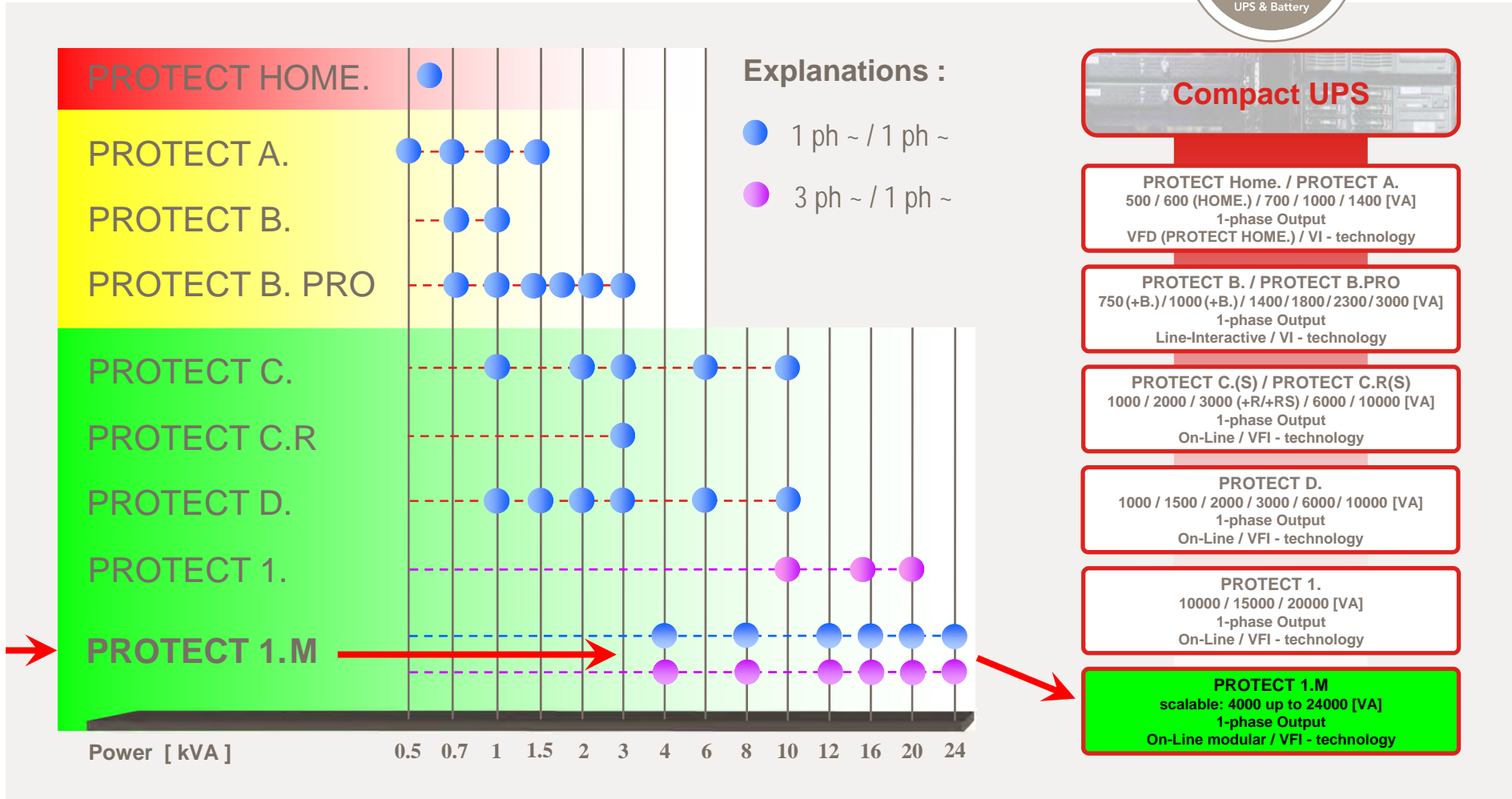
PROTECT 8.33
10/20/30/40/60/80/100/120 [kVA]
3-phase Output
On-Line / VFI - technology

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

CLASSIFICATION ACC. TO AEG S COMPACT-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

VFD technology (offline) VI technology (line-interactive) VFI technology (double-conversion)



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

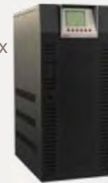
PROTECT 1.
10 to 20 kVA
For small data centres, protection of cash till systems, building technology.



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
PROTECTION	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 Line-Interactive	—
	5. Overvoltage	continuous				—
	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



POWER STEPS AT RATED POWER FACTOR OF 0.7 LAGGING



PROTECT 1.M

Modular high-performance UPS
for the IT sector

24000 VA

20000 VA

16000 VA

12000 VA

8000 VA

4000 VA

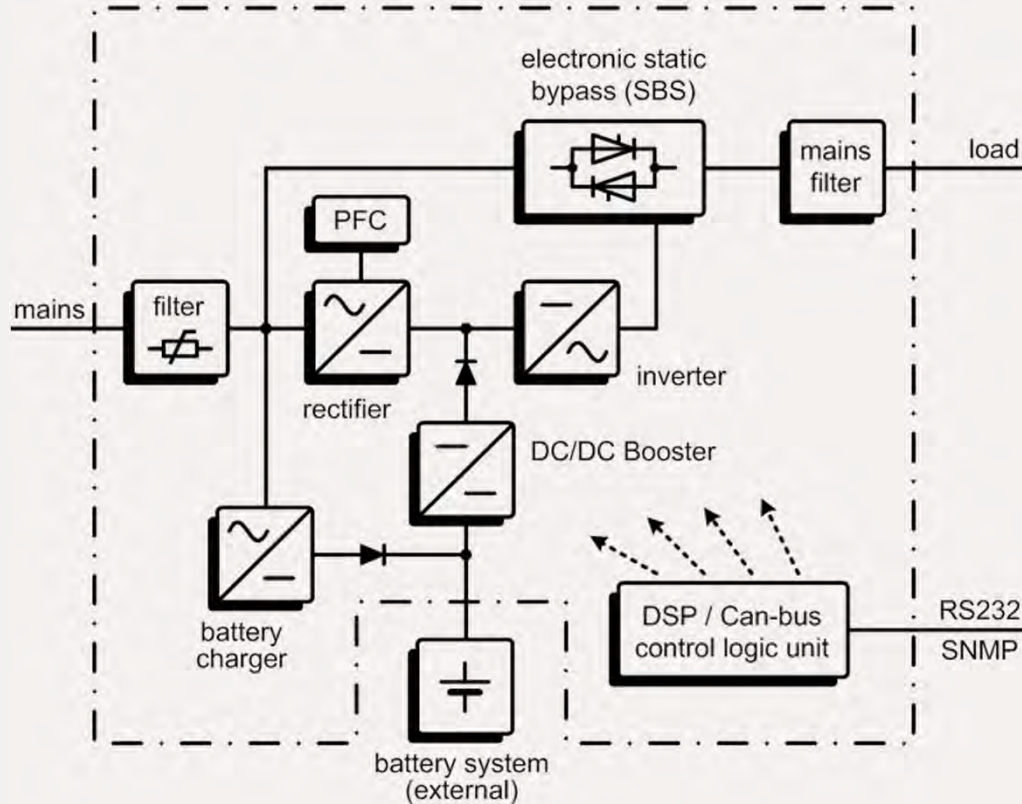


FEATURES



- Double-Conversion / true On-line UPS incl. decentral SBS (VFI SS 111 acc. to IEC 62040-3)
- n + x technology provides most flexible power extension and allows free selectable redundancy level
- Independent UPS plug-in modules (without any central control logic)
- 3- or 1-phase connection of the entire installation with automatic recognition; 1-phase output
- Battery cabinets in the PROTECT 1.M design supplied with 10-12 years batteries acc. to EUROBAT
- Compatible with all wellknown 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)

UPS PROTECT 1.M MODULE – COMPONENT DIAGRAM



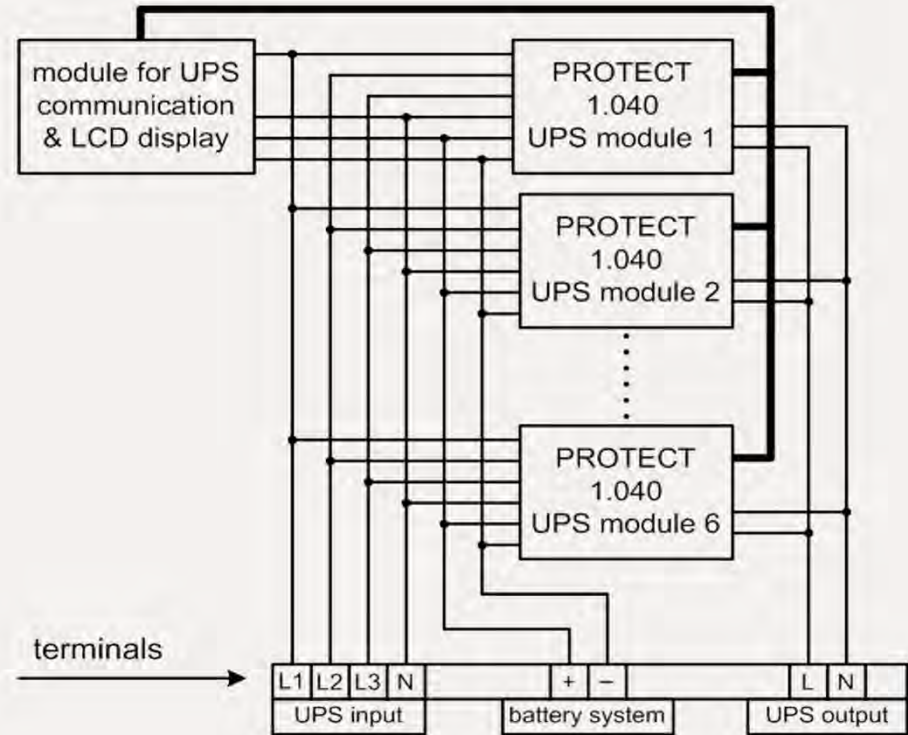
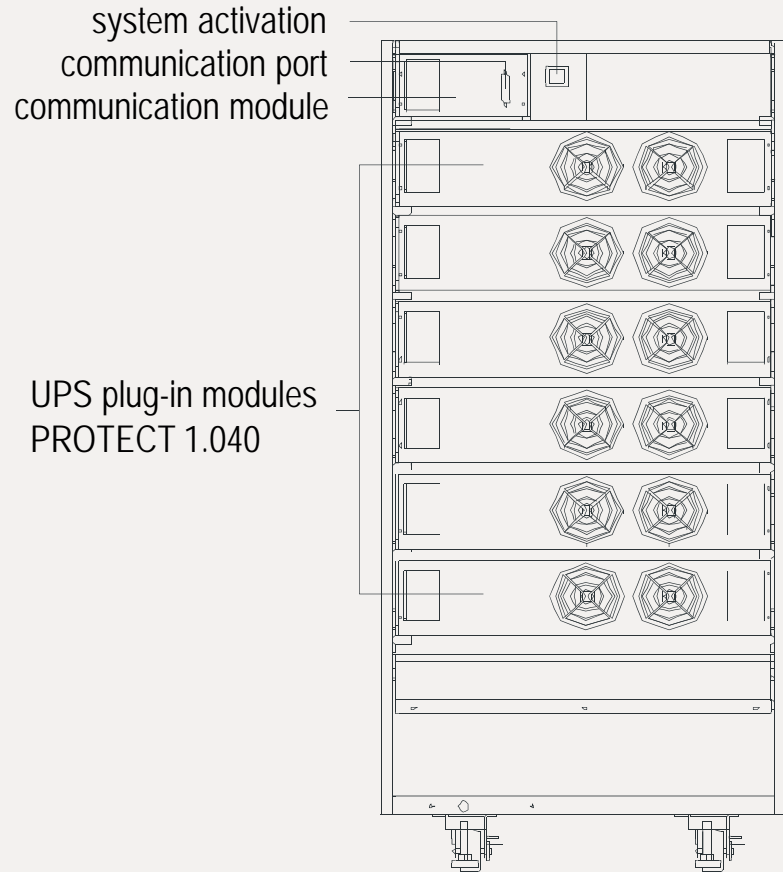
- High power reserves as a result of 24 kVA totally
- High safety reserves as a result of n+x technology
- Choice of three phase or single phase connection with automatic recognition
- Independent UPS modules (no central control) slide-in types; suitable for rackmount)
- UPS modules hot-swappable with automatic detection

FEATURES

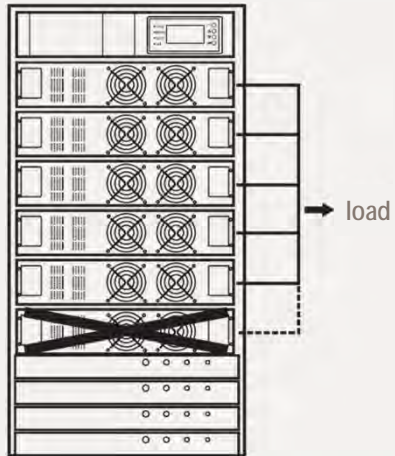
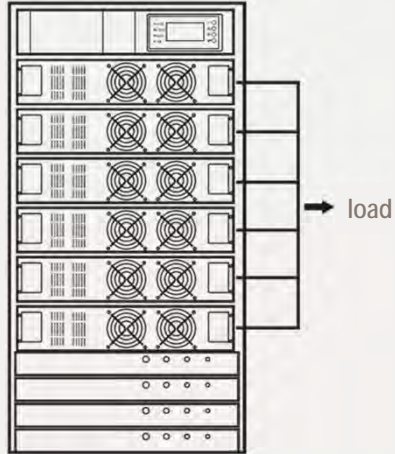


Connector for ext. BP • Various communication ports (RS232, RS485, RJ45) • Communication slot (for expansion cards) • Integrated foolproof manual bypass switch • Input circuit breaker

SYSTEM ARCHITECTURE



REDUNDANCY LEVEL

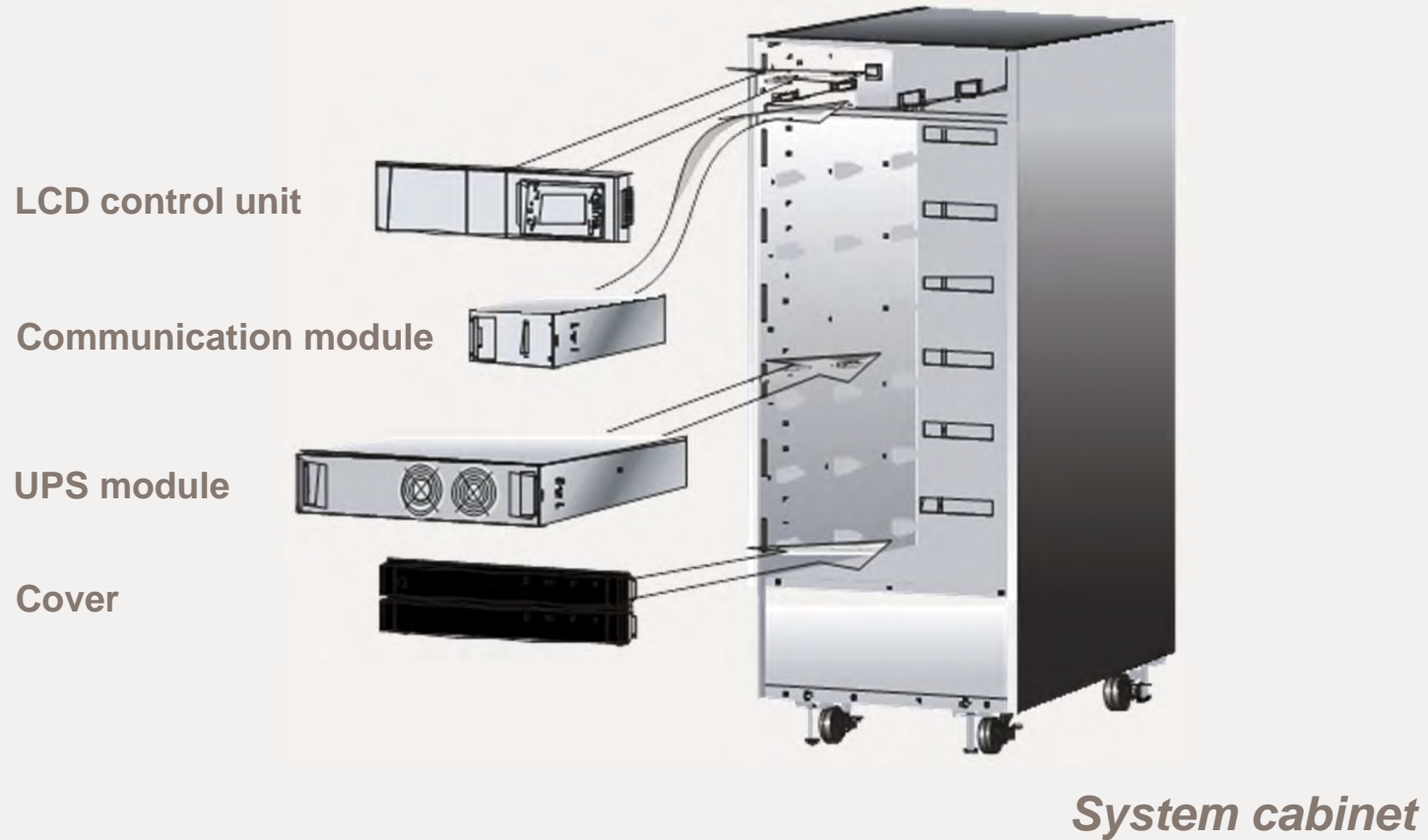


Quantity of UPS modules	1 module	2 modules	3 modules	4 modules	5 modules	6 modules
Load						
4 kVA	no redundancy	n+1 (4kVA)	n+2 (8kVA)	n+3 (12kVA)	n+4 (16kVA)	n+5 (20kVA)
8 kVA	---	no redundancy	n+1 (4kVA)	n+2 (8kVA)	n+3 (12kVA)	n+4 (16kVA)
12 kVA		no redundancy	n+1 (4kVA)	n+2 (8kVA)	n+3 (12kVA)	
16 kVA		no redundancy	n+1 (4kVA)	n+2 (8kVA)	n+3 (12kVA)	
20 kVA		no redundancy	n+1 (4kVA)	n+2 (8kVA)	n+3 (12kVA)	
24 kVA						

Advantage of n+x technology

- higher reliability
- easy to increase overall capacity
- modules hot-swappable (w/o any interruption)

SYSTEM ASSEMBLY

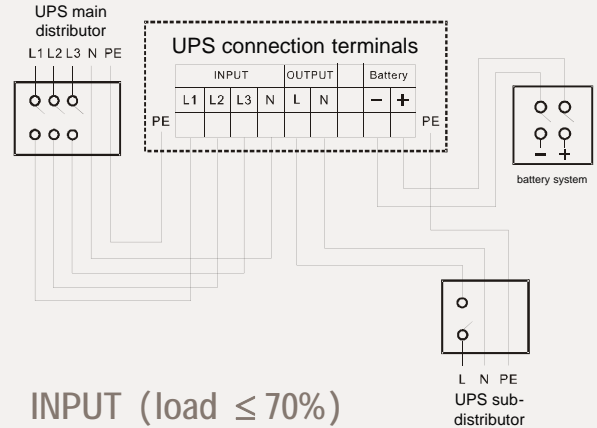
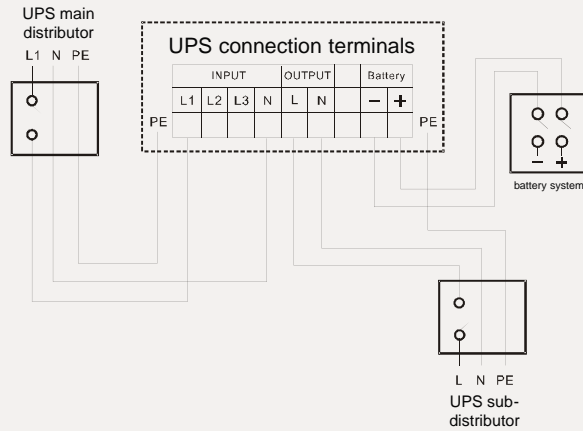


MAINS CONNECTION



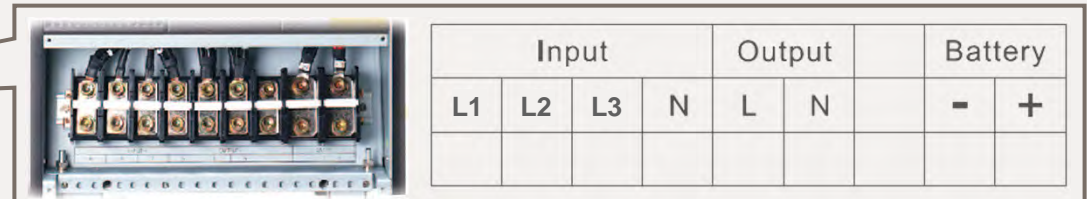
INPUT
single phase or three phase
with automatic recognition

OUTPUT single phase



INPUT (load $\leq 70\%$)
1ph~ 140 Vac – 300 Vac
3ph~ 242 Vac – 520 Vac

OUTPUT
1ph~ 230 Vac $\pm 2\%$

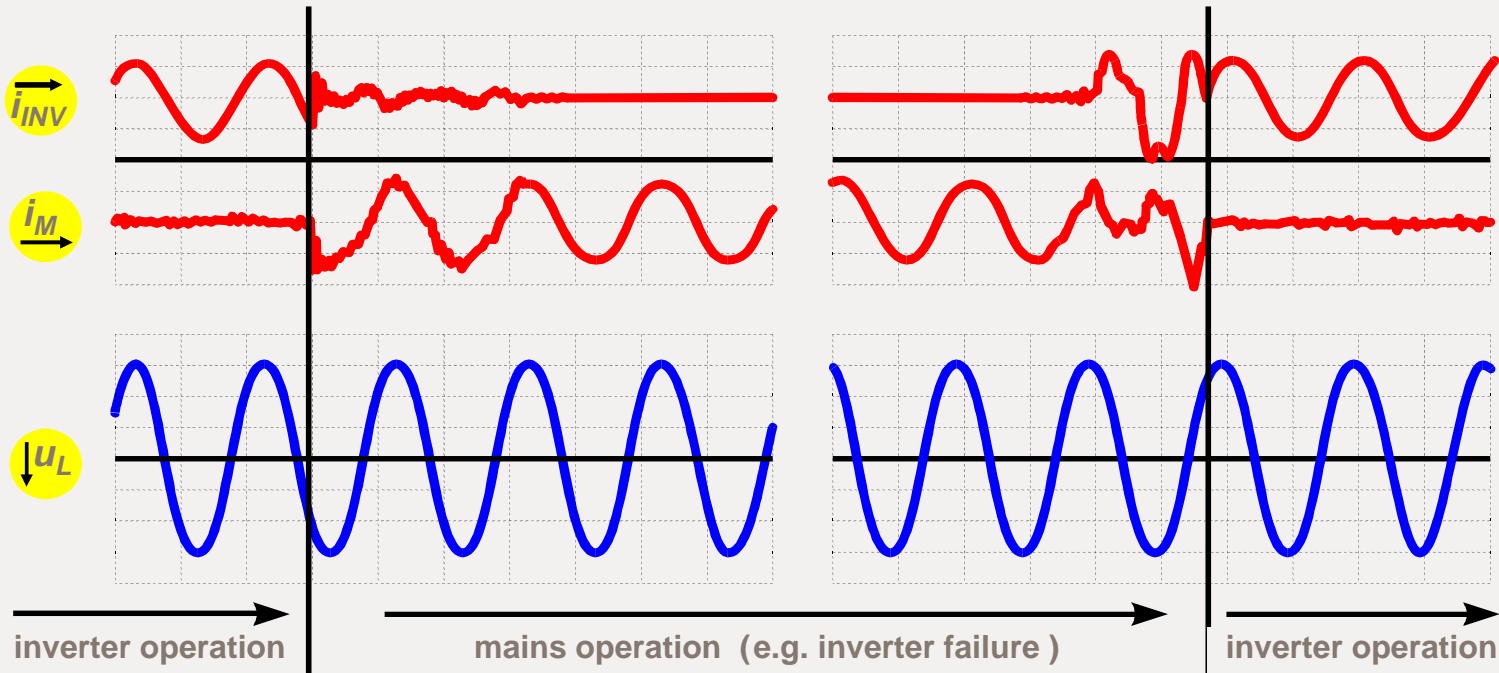


BYPASS TECHNOLOGY (SBS)

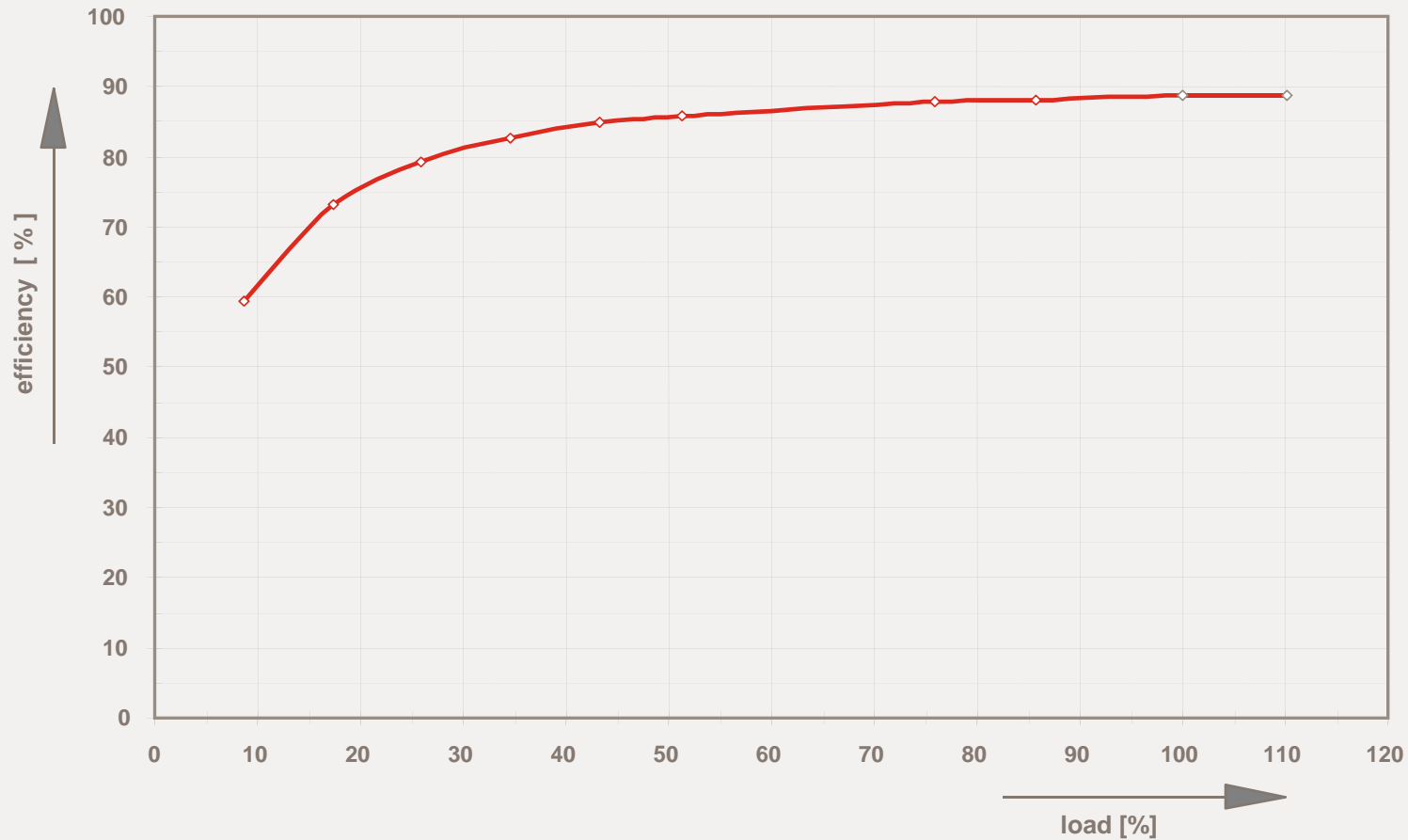


Electronical Static Bypass Switch (SBS)

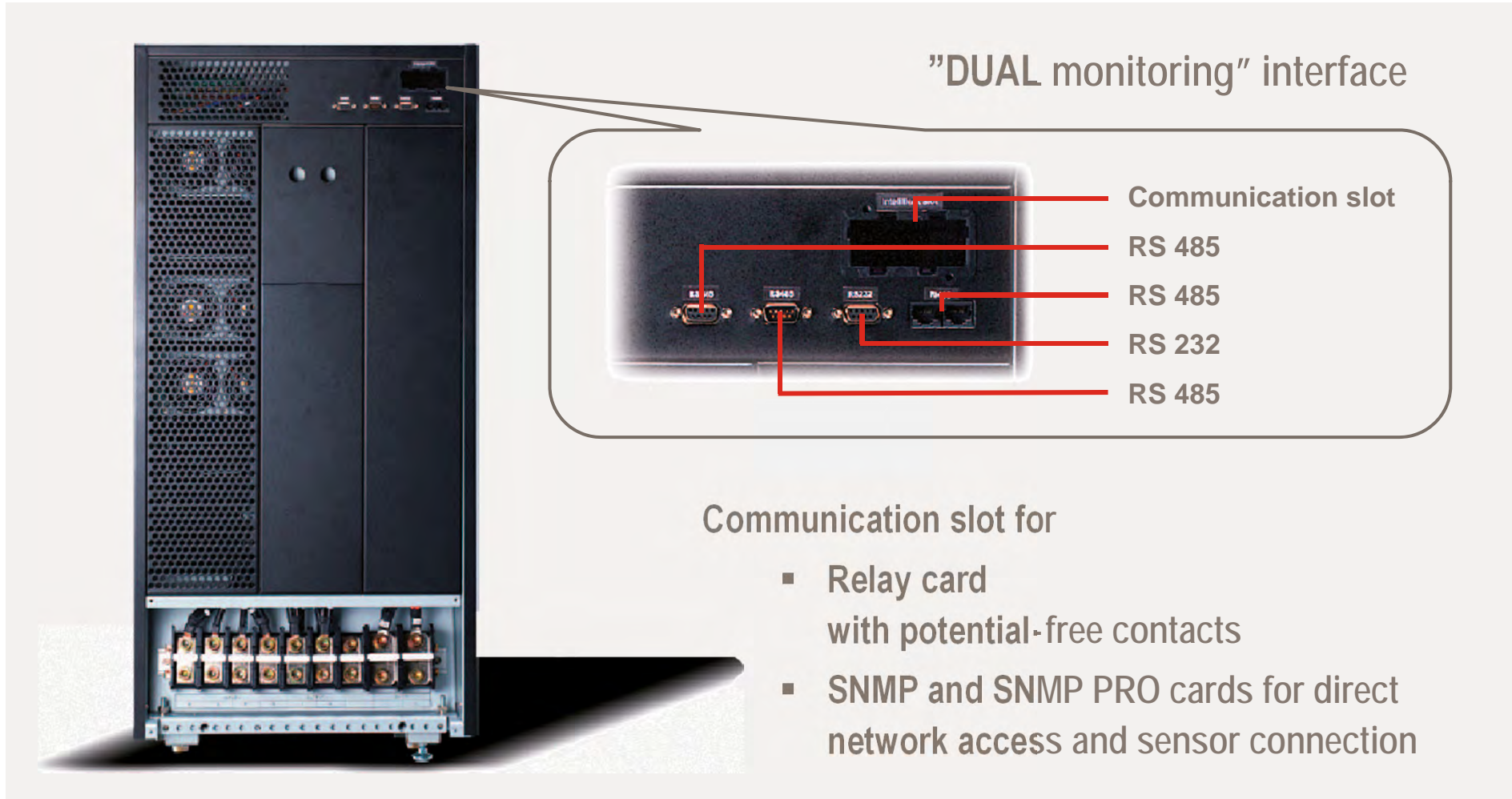
e.g. technical behaviour at overload or inverter fault



EFFICIENCY – PROTECT 1.M MODULE



COMMUNICATION INTERFACE



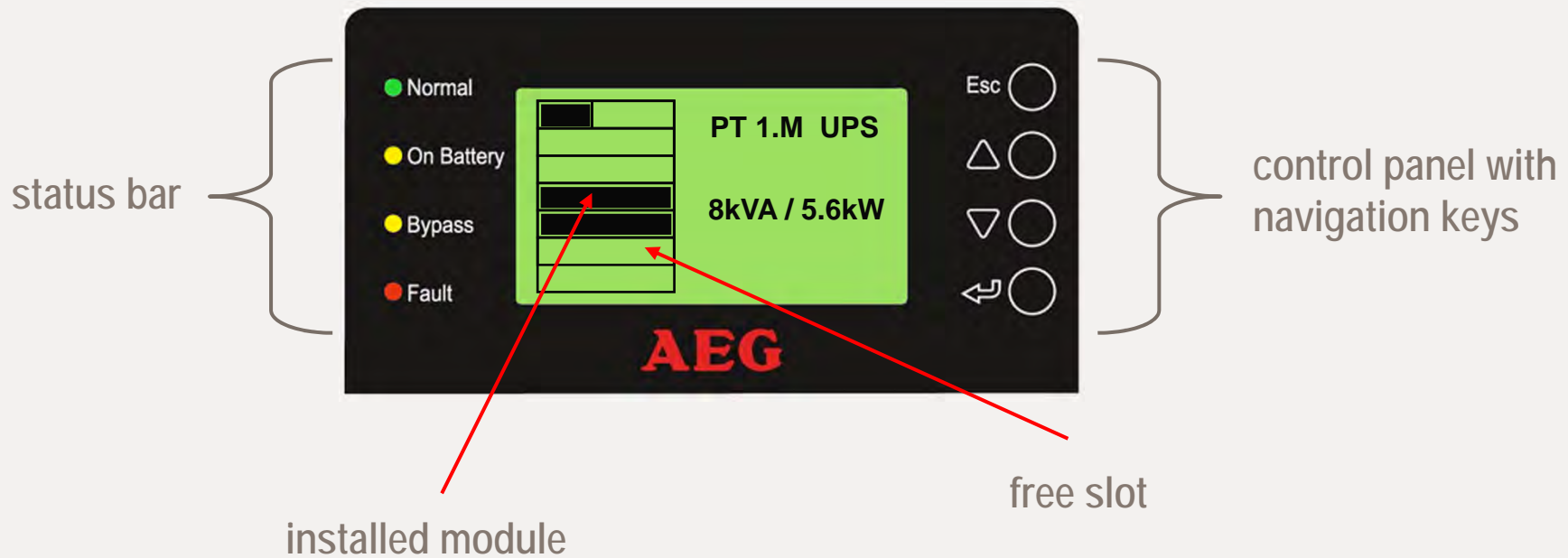
"DUAL monitoring" interface

- Communication slot
- RS 485
- RS 485
- RS 232
- RS 485

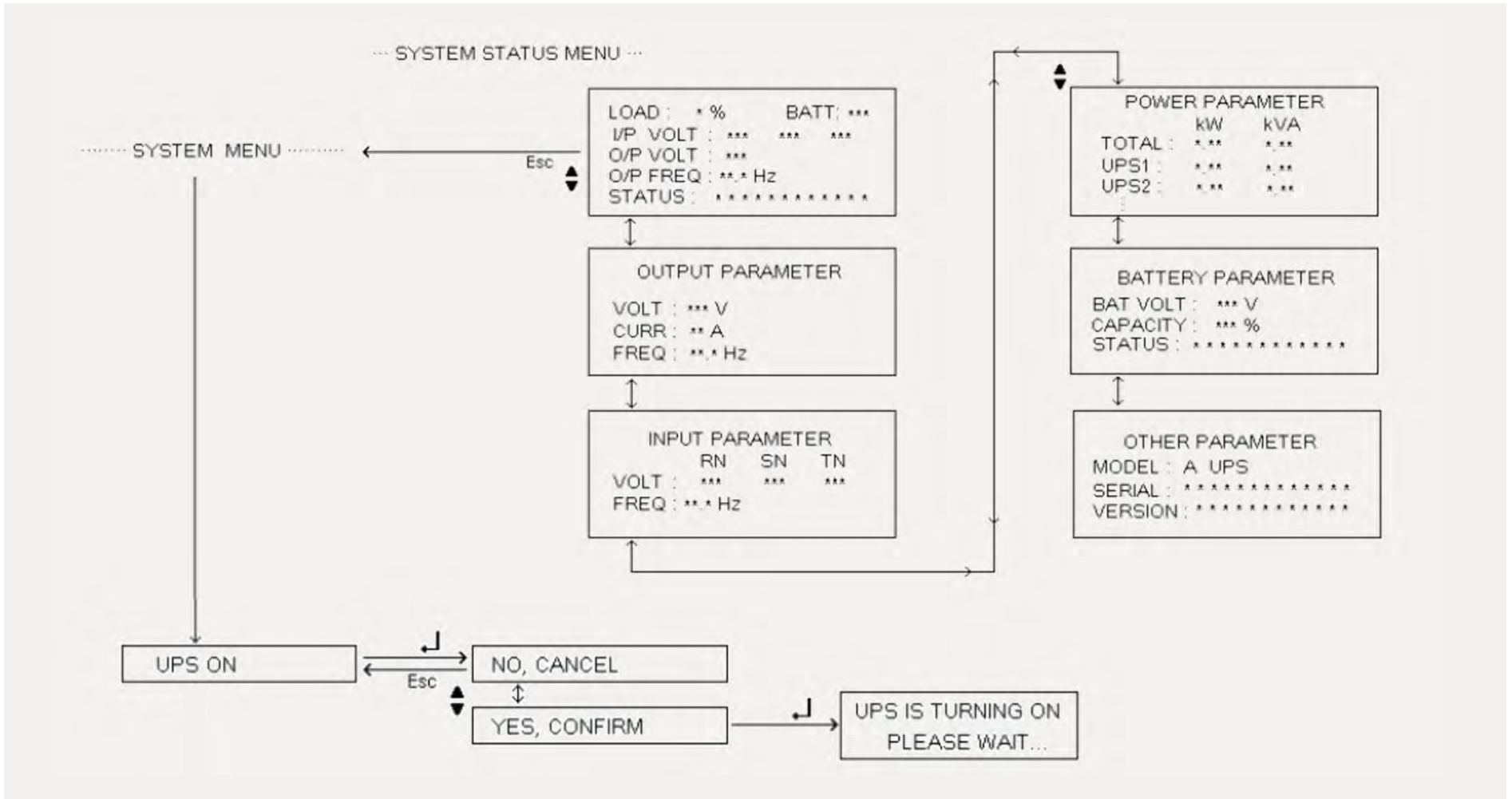
Communication slot for

- Relay card with potential-free contacts
- SNMP and SNMP PRO cards for direct network access and sensor connection

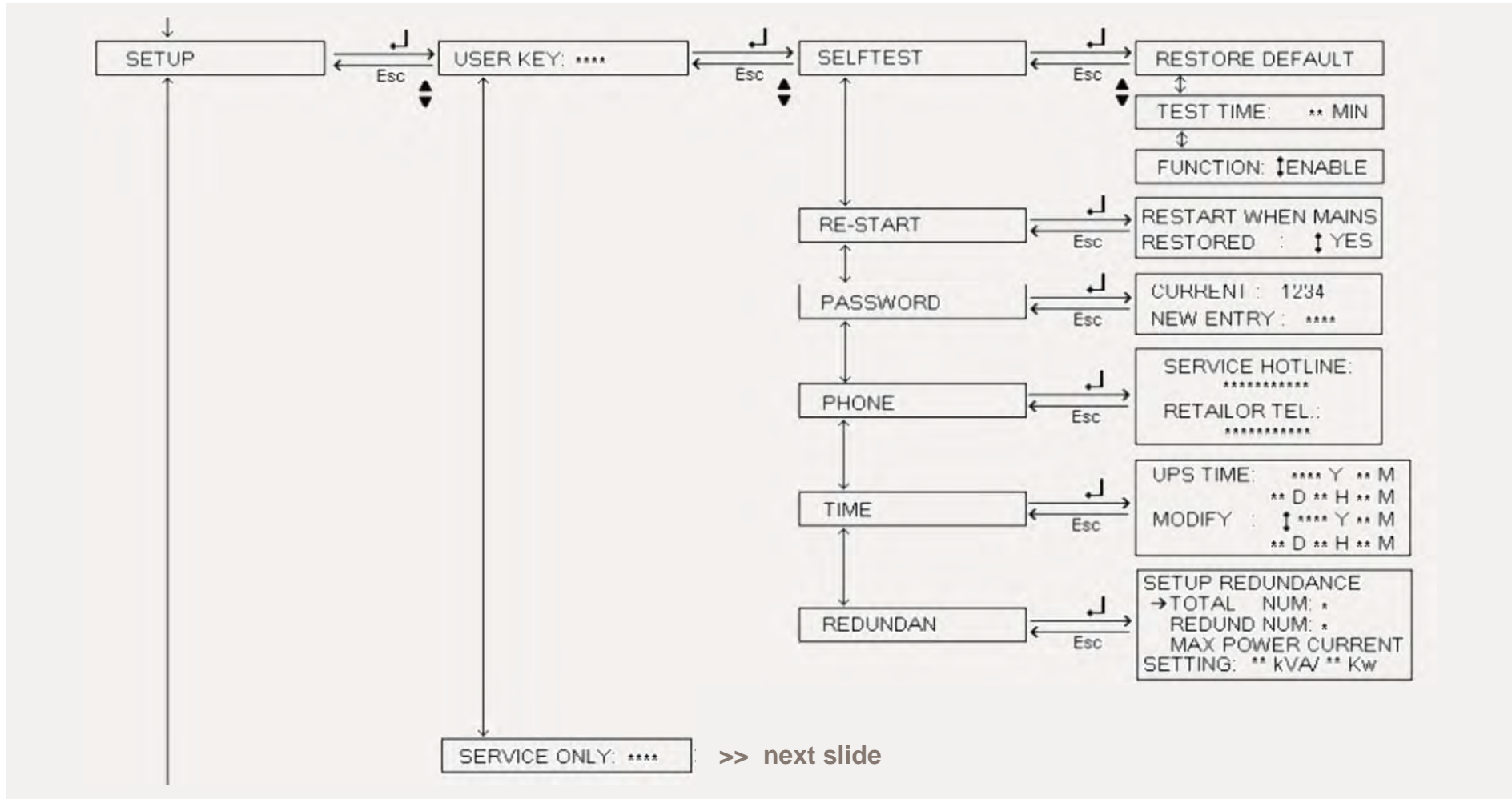
USER INTERFACE – LCD DISPLAY



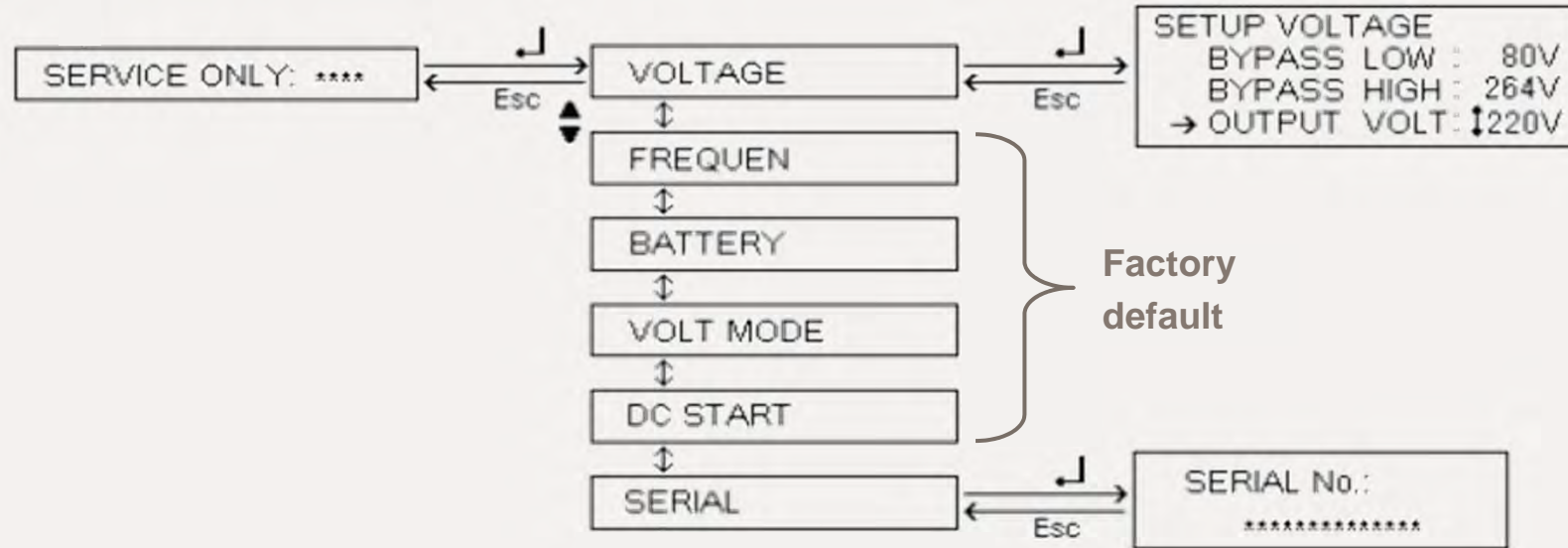
LCD DISPLAY IN DETAIL – SYSTEM STATUS MENU



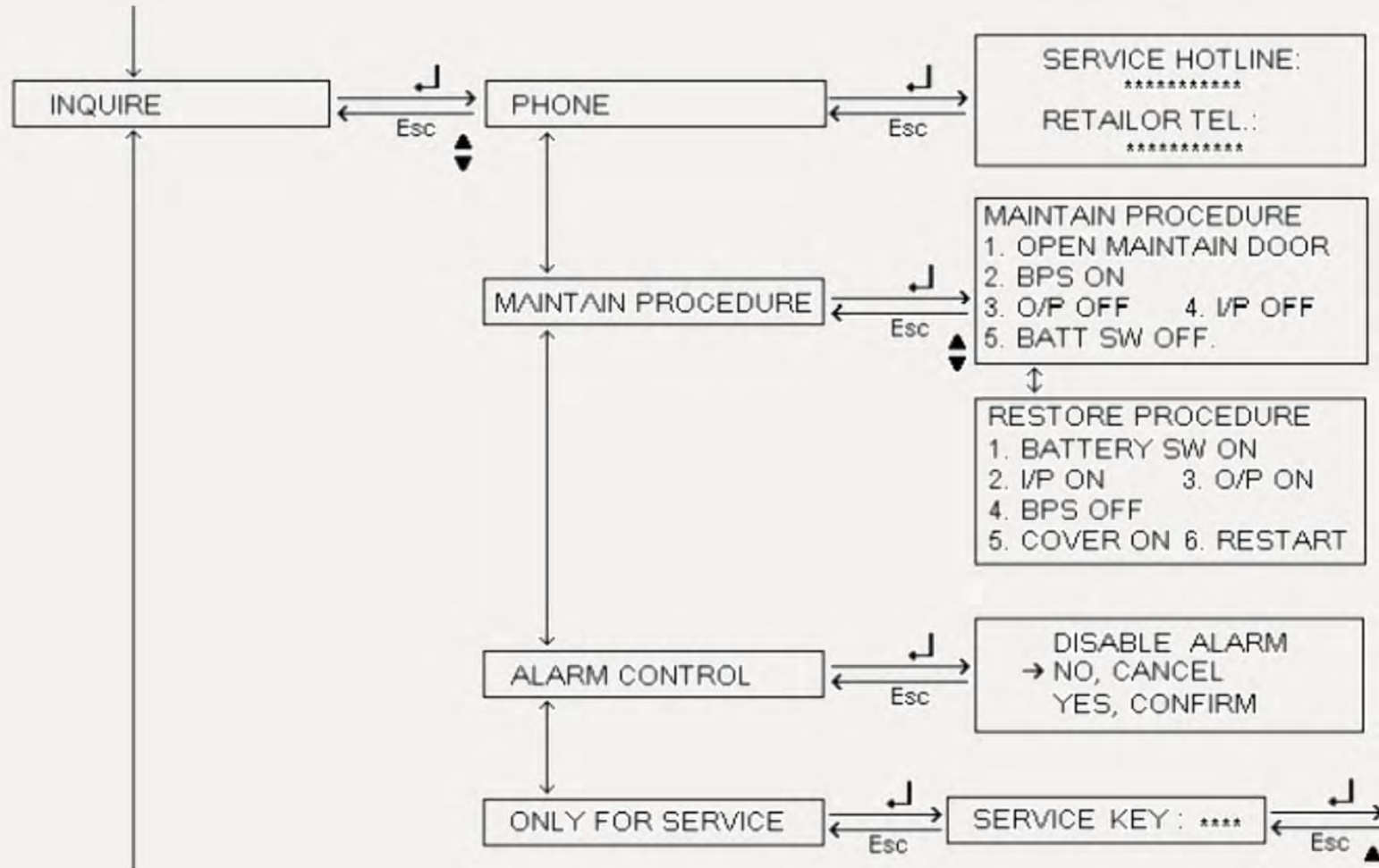
LCD DISPLAY IN DETAIL – SETUP



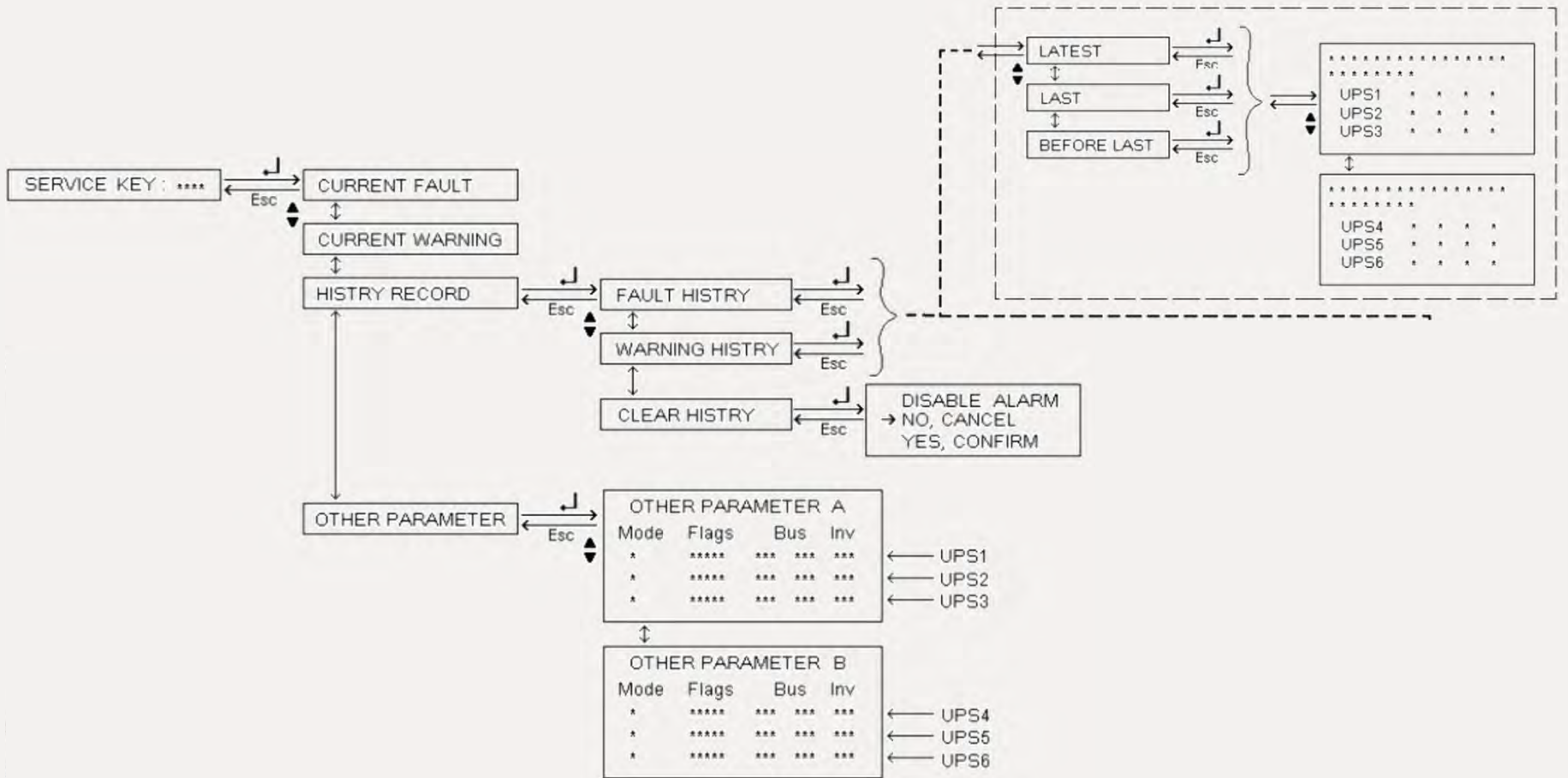
LCD DISPLAY IN DETAIL – SERVICE LEVEL



LCD DISPLAY IN DETAIL – INQUIRIES



LCD DISPLAY IN DETAIL – SERVICE ONLY



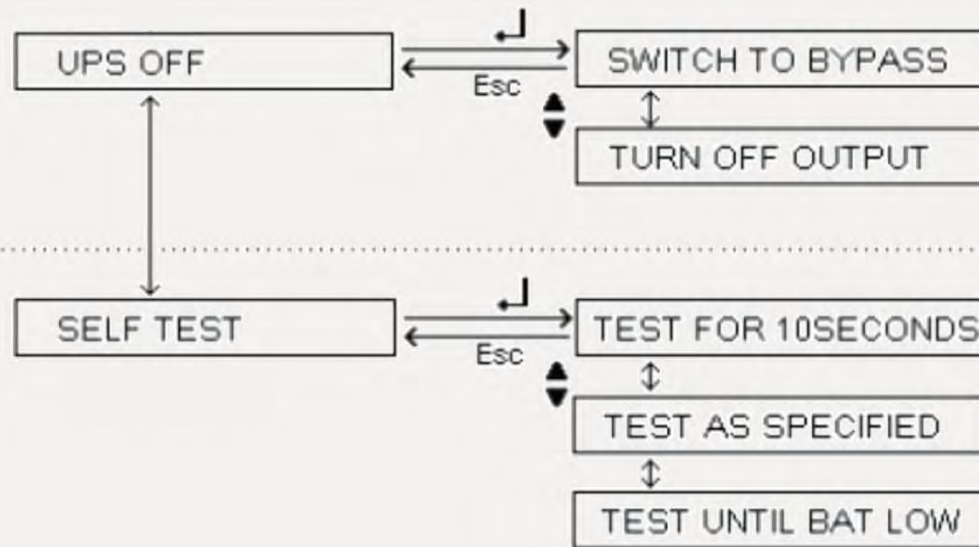
LCD DISPLAY IN DETAIL – ERROR CODES

NO.	FAULT TABLE
01	Over-temperature inverter
02	Bypass mains failure
03	Rectifier mains failure
04	Load too high(I2-t-Supervision)
05	Under-voltage intermediate circuit
06	Over load
07	Phase sequence incorrect in Bypass
08	Service bypass is on
09	Battery operation
10	Battery rest time exceeded
11	Battery under-voltage
12	Operating condition commissioning, converter
13	Battery switch not engaged
14	Ventilator lifetime exceeded
15	Connection to charger lost
16	Internal warning 16
17	Reserved
18	Reserved
19	Reserved
20	Reserved
21	Reserved
22	Reserved
23	Battery charger communicate failure
24	General battery charger failure
25	Reserved
26	Reserved
27	Reserved
28	Reserved
29	Reserved
30	Reserved
31	Load unbalance
32	Internal warning 32
33	Temperature in converter too high
34	Internal fault 34
35	Incorrect parameter(Inverter MLFB)

36	Inverter contactor defective
37	Multiple inverter cutoff as a result of over-current
38	Failure power supply electronic
39	Over-voltage in the intermediate circuit
40	External Quick Shutdown active
41	Electronic defective(Signal Processor defective)
42	Defect in the Power Electronic(Rectifier)
43	Defect in the Power Electronic(UCE-supervision)
44	Over-current cutoff
45	False parameter input during(H/W Init)
46	UPS output out of tolerance
47	Output overload(I2t-supervision)
48	Not used
49	Not used
50	Bypass defective
51	Bypass defective(during Transfer)
52	Bypass overload
53	Not used
54	Not used
55	Electronic defective(EEPROM Inverter)
56	Communication with Battery Manager defective
57	Electronic defective(Check-sum EPROM)
58	Environment temperature smaller than 0 grad or measurement defective
59	Optional module failed or not put in
60	Parallel Bypass failed
61	Signal fault in the Parallel Module
62	Battery over charged
63	Bus over fault
64	PFC Fail
65	E2PROM Fail
66	Inverter Fail
67	Reactive Power Fail
68	Site Fault
69	Negative power Fail
70	Communication line fail
71	Line Neutral loss
72	ParDetWarnig

73	Not used
74	Not used
75	Not used
76	Not used
77	Not used
78	Not used
79	Not used
80	Not used
81	Not used
82	Not used
83	Not used
84	Not used
85	Not used
86	Not used
87	Not used
88	Reserved for led test(no fault)
89	Not used
90	Not used
91	Load unbalance over 50%
92	Not used
93	Not used
94	Profibus fault
95	System frequency out of tolerance
96	System voltage out of tolerance
97	Not used
98	Not used
99	Not used

LCD DISPLAY IN DETAIL – TEST PROCEDURES



BATTERY CABINET CHARACTERISTICS



- Battery cabinet design identically with UPS itself
- Scalable battery design for free selectable autonomy time
- Flexible battery equipment:
 - 28 Ah (1 or 2 strings)
 - 42 Ah (1 or 2 strings)
 - 65 Ah (1 string)
- Use of batteries with a design life of 10-12 years acc. to EUROBAT
- Available as well w/o integrated batteries



AUTONOMY TIME DATA – OVERVIEW

	15 min.	20 min.	30 min.	40 min.	60 min.	75 min.	90 min.
4 kVA	---	---	---	1x 1.MBP28	1x 1.MBP42	---	1x 1.MBP56
8 kVA	1x 1.MBP28	---	1x 1.MBP42	1x 1.MBP56	1x 1.MBP84	2x 1.MBP65	1xBP84 1xBP42
12 kVA	1x 1.MBP42	1x 1.MBP65	---	1x 1.MBP84	2x 1.MBP65	---	3x 1.MBP65
16 kVA	1x 1.MBP56	---	1x 1.MBP84	1xBP84 1xBP42	2x 1.MBP84	3x 1.MBP65	4x 1.MBP65
20 kVA	---	1x 1.MBP84	1xBP84 1xBP42	3x 1.MBP65	2xBP84 1xBP42	4x 1.MBP65	5x 1.MBP65
24 kVA	1x 1.MBP84	2x 1.MBP65	1xBP84 1xBP42	2x 1.MBP84	4x 1.MBP65	5x 1.MBP65	6x 1.MBP65

AUTONOMY TIME DATA AT PART LOAD (2 MODULES)

PROTECT 1.M at part load level		< < < < < AUTONOMY TIME > > > >					
		25% load 2 kVA = 1400 W	50% load 4 kVA = 2800 W	75% load 6 kVA = 4200 W	100% load 8 kVA = 5600 W		
PROTECT 1.M 8 kVA	Components of the system cabinet with 2 modules PROTECT 1.040	with 1 x PROTECT 1.M BP28	84,0 min.	40,0 min.	24,5 min.	15,5 min.	
		with 1 x PROTECT 1.M BP56	186,0 min.	87,0 min.	62,0 min.	41,5 min.	
		with 1 x PROTECT 1.M BP42	129,5 min.	56,5 min.	38,5 min.	28,0 min.	
		with 1 x PROTECT 1.M BP84	306,5 min.	140,5 min.	81,0 min.	58,5 min.	
		with 1 x M BP84 + 1 x M BP42	517,0 min.	234,5 min.	142,5 min.	94,5 min.	
		with 2 x PROTECT 1.M BP84	712,0 min.	335,5 min.	195,5 min.	146,0 min.	
		with 2 x M BP84 + 1 x M BP42	942,0 min.	456,5 min.	272,0 min.	179,5 min.	
		with 3 x PROTECT 1.M BP84	1095,5 min.	544,5 min.	340,5 min.	246,0 min.	
		with 1 x PROTECT 1.M BP65	211,5 min.	86,0 min.	58,0 min.	36,5 min.	
		with 2 x PROTECT 1.M BP65	504,5 min.	227,0 min.	146,0 min.	77,0 min.	
		with 3 x PROTECT 1.M BP65	826,0 min.	383,0 min.	230,0 min.	168,5 min.	
		with 4 x PROTECT 1.M BP65	1108,0 min.	532,5 min.	319,5 min.	235,5 min.	
		with 5 x PROTECT 1.M BP65	1337,0 min.	679,5 min.	449,0 min.	297,5 min.	
		with 6 x PROTECT 1.M BP65	1540,0 min.	892,0 min.	538,0 min.	403,5 min.	
		Explanation: (basics of battery calculation)	PROTECT 1.M BP28 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1228"				
			PROTECT 1.M BP56 loaded with 2 x 10 battery blocks; Type: Panasonic "LC-X1228"				
	PROTECT 1.M BP42 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1242"						
	PROTECT 1.M BP84 loaded with 2 x 10 battery blocks; Type: Panasonic "LC-X1242"						
	PROTECT 1.M BP65 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1265"						

AUTONOMY TIME DATA AT PART LOAD (3 MODULES)

PROTECT 1.M at part load level		< < < < < AUTONOMY TIME > > > >				
		25% load 3 kVA = 2100 W	50% load 6 kVA = 4200 W	75% load 9 kVA = 6300 W	100% load 12 kVA = 8400 W	
PROTECT 1.M 12 kVA	Components of the system cabinet with 3 modules PROTECT 1.040	with 1 x PROTECT 1.M BP28	-----	-----	-----	-----
		with 1 x PROTECT 1.M BP56	115,5 min.	61,0 min.	34,5 min.	25,5 min.
		with 1 x PROTECT 1.M BP42	75,0 min.	35,5 min.	23,5 min.	15,0 min.
		with 1 x PROTECT 1.M BP84	175,5 min.	80,0 min.	51,0 min.	39,5 min.
		with 1 x M BP84 + 1 x M BP42	306,5 min.	140,5 min.	81,0 min.	58,5 min.
		with 2 x PROTECT 1.M BP84	458,5 min.	191,0 min.	121,0 min.	83,0 min.
		with 2 x M BP84 + 1 x M BP42	564,0 min.	268,5 min.	159,5 min.	113,5 min.
		with 3 x PROTECT 1.M BP84	712,0 min.	335,5 min.	195,5 min.	146,0 min.
		with 1 x PROTECT 1.M BP65	133,0 min.	55,0 min.	29,5 min.	19,5 min.
		with 2 x PROTECT 1.M BP65	289,5 min.	144,0 min.	80,0 min.	63,5 min.
		with 3 x PROTECT 1.M BP65	504,5 min.	222,5 min.	146,0 min.	88,0 min.
		with 4 x PROTECT 1.M BP65	684,5 min.	312,5 min.	199,5 min.	150,0 min.
		with 5 x PROTECT 1.M BP65	938,5 min.	443,0 min.	259,0 min.	187,5 min.
		with 6 x PROTECT 1.M BP65	1108,0 min.	532,5 min.	319,5 min.	235,5 min.
Explanation: (basics of battery calculation)		PROTECT 1.M BP28 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1228"				
		PROTECT 1.M BP56 loaded with 2 x 10 battery blocks; Type: Panasonic "LC-X1228"				
		PROTECT 1.M BP42 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1242"				
		PROTECT 1.M BP84 loaded with 2 x 10 battery blocks; Type: Panasonic "LC-X1242"				
		PROTECT 1.M BP65 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1265"				

AUTONOMY TIME DATA AT PART LOAD (4 MODULES)

PROTECT 1.M at part load level		< < < < AUTONOMY TIME > > > >				
		25% load 4 kVA = 2800 W	50% load 8 kVA = 5600 W	75% load 12 kVA = 8400 W	100% load 16 kVA = 11200 W	
PROTECT 1.M 16 kVA	Components of the system cabinet with 4 modules PROTECT 1.040	with 1 x PROTECT 1.M BP28	-----	-----	-----	-----
		with 1 x PROTECT 1.M BP56	84,0 min.	40,0 min.	24,5 min.	15,5 min.
		with 1 x PROTECT 1.M BP42	-----	-----	-----	-----
		with 1 x PROTECT 1.M BP84	129,5 min.	56,5 min.	38,5 min.	28,0 min.
		with 1 x M BP84 + 1 x M BP42	212,5 min.	89,0 min.	57,0 min.	43,5 min.
		with 2 x PROTECT 1.M BP84	306,5 min.	140,5 min.	81,0 min.	58,5 min.
		with 2 x M BP84 + 1 x M BP42	423,5 min.	175,0 min.	109,5 min.	77,5 min.
		with 3 x PROTECT 1.M BP84	517,0 min.	234,5 min.	142,5 min.	94,5 min.
		with 1 x PROTECT 1.M BP65	-----	-----	-----	-----
		with 2 x PROTECT 1.M BP65	211,5 min.	86,0 min.	58,0 min.	36,5 min.
		with 3 x PROTECT 1.M BP65	346,5 min.	163,5 min.	87,0 min.	70,0 min.
		with 4 x PROTECT 1.M BP65	504,5 min.	227,0 min.	146,0 min.	88,0 min.
		with 5 x PROTECT 1.M BP65	600,0 min.	288,5 min.	181,0 min.	138,5 min.
		with 6 x PROTECT 1.M BP65	826,0 min.	383,0 min.	230,0 min.	168,5 min.
Explanation: (basics of battery calculation)		PROTECT 1.M BP28 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1228"		PROTECT 1.M BP56 loaded with 2 x 10 battery blocks; Type: Panasonic "LC-X1228"		
		PROTECT 1.M BP42 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1242"		PROTECT 1.M BP84 loaded with 2 x 10 battery blocks; Type: Panasonic "LC-X1242"		
		PROTECT 1.M BP65 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1265"				

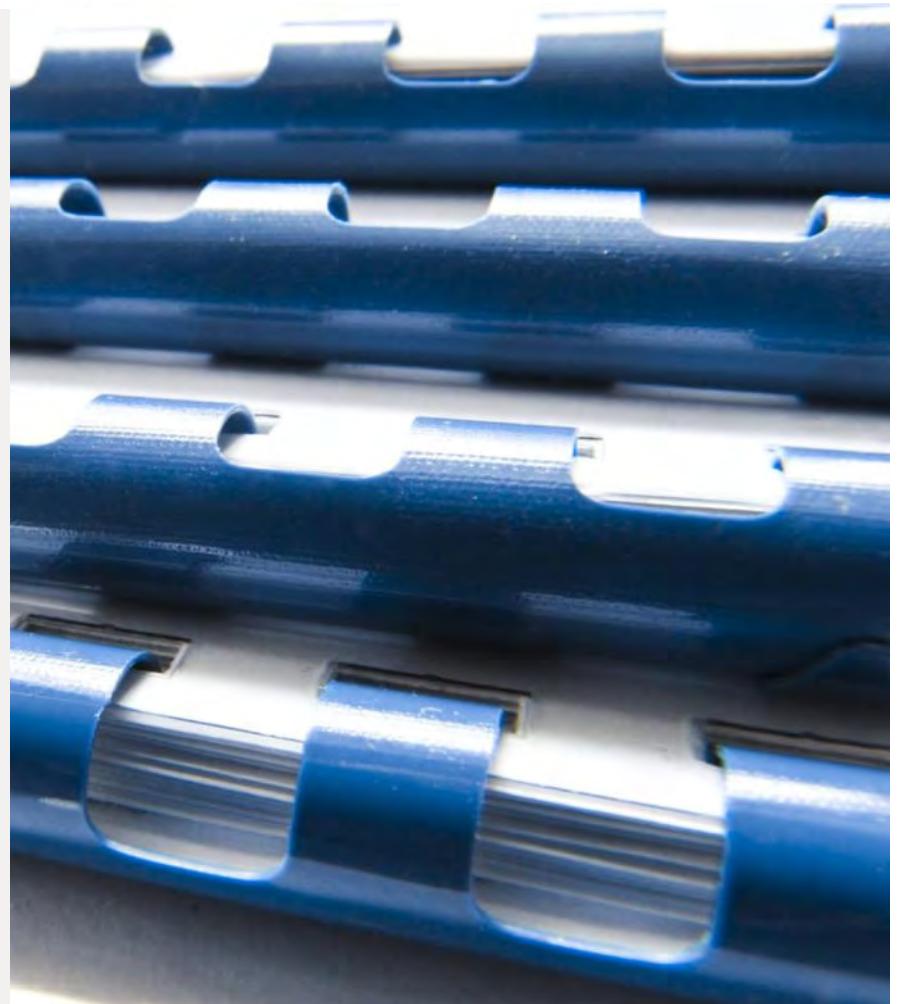
AUTONOMY TIME DATA AT PART LOAD (5 MODULES)

PROTECT 1.M at part load level		< < < < < AUTONOMY TIME > > > >				
		25% load 5 kVA = 3500 W	50% load 10 kVA = 7000 W	75% load 15 kVA = 10500 W	100% load 20 kVA = 14000 W	
PROTECT 1.M 20 kVA	Components of the system cabinet with 5 modules PROTECT 1.040	with 1 x PROTECT 1.M BP28	-----	-----	-----	-----
		with 1 x PROTECT 1.M BP56	-----	-----	-----	-----
		with 1 x PROTECT 1.M BP42	-----	-----	-----	-----
		with 1 x PROTECT 1.M BP84	89,5 min.	44,5 min.	29,5 min.	21,0 min.
		with 1 x M BP84 + 1 x M BP42	160,0 min.	71,0 min.	45,0 min.	35,0 min.
		with 2 x PROTECT 1.M BP84	235,5 min.	100,0 min.	60,5 min.	46,5 min.
		with 2 x M BP84 + 1 x M BP42	306,5 min.	140,5 min.	81,0 min.	58,5 min.
		with 3 x PROTECT 1.M BP84	599,0 min.	169,0 min.	102,5 min.	74,0 min.
		with 1 x PROTECT 1.M BP65	-----	-----	-----	-----
		with 2 x PROTECT 1.M BP65	164,0 min.	72,0 min.	38,0 min.	26,5 min.
		with 3 x PROTECT 1.M BP65	260,5 min.	124,5 min.	73,0 min.	44,0 min.
		with 4 x PROTECT 1.M BP65	385,0 min.	173,0 min.	92,0 min.	74,5 min.
		with 5 x PROTECT 1.M BP65	504,5 min.	227,0 min.	146,0 min.	88,0 min.
		with 6 x PROTECT 1.M BP65	584,0 min.	277,5 min.	174,5 min.	131,0 min.
Explanation: (basics of battery calculation)		PROTECT 1.M BP28 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1228"				
		PROTECT 1.M BP56 loaded with 2 x 10 battery blocks; Type: Panasonic "LC-X1228"				
		PROTECT 1.M BP42 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1242"				
		PROTECT 1.M BP84 loaded with 2 x 10 battery blocks; Type: Panasonic "LC-X1242"				
		PROTECT 1.M BP65 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1265"				

AUTONOMY TIME DATA AT PART LOAD (6 MODULES)

PROTECT 1.M at part load level		< < < < < AUTONOMY TIME > > > >				
		25% load 6 kVA = 4200 W	50% load 12 kVA = 8400 W	75% load 18 kVA = 12600 W	100% load 24 kVA = 16800 W	
PROTECT 1.M 24 kVA	Components of the system cabinet with 6 modules PROTECT 1.040	with 1 x PROTECT 1.M BP28	-----	-----	-----	-----
		with 1 x PROTECT 1.M BP56	-----	-----	-----	-----
		with 1 x PROTECT 1.M BP42	-----	-----	-----	-----
		with 1 x PROTECT 1.M BP84	75,0 min.	38,0 min.	23,5 min.	15,0 min.
		with 1 x M BP84 + 1 x M BP42	129,5 min.	56,5 min.	38,5 min.	28,0 min.
		with 2 x PROTECT 1.M BP84	166,5 min.	80,0 min.	51,0 min.	39,5 min.
		with 2 x M BP84 + 1 x M BP42	249,5 min.	107,5 min.	64,5 min.	48,5 min.
		with 3 x PROTECT 1.M BP84	306,5 min.	140,5 min.	81,0 min.	58,5 min.
		with 1 x PROTECT 1.M BP65	-----	-----	-----	-----
		with 2 x PROTECT 1.M BP65	133,0 min.	55,0 min.	29,5 min.	19,5 min.
		with 3 x PROTECT 1.M BP65	213,0 min.	86,0 min.	58,0 min.	36,5 min.
		with 4 x PROTECT 1.M BP65	289,5 min.	144,0 min.	80,0 min.	61,0 min.
		with 5 x PROTECT 1.M BP65	409,0 min.	179,0 min.	106,0 min.	77,5 min.
		with 6 x PROTECT 1.M BP65	504,5 min.	227,0 min.	146,0 min.	88,0 min.
		Explanation: (basics of battery calculation)	PROTECT 1.M BP28 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1228"			
	PROTECT 1.M BP56 loaded with 2 x 10 battery blocks; Type: Panasonic "LC-X1228"					
	PROTECT 1.M BP42 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1242"					
	PROTECT 1.M BP84 loaded with 2 x 10 battery blocks; Type: Panasonic "LC-X1242"					
	PROTECT 1.M BP65 loaded with 1 x 10 battery blocks; Type: Panasonic "LC-X1265"					

C- CONCLUSION





- **Compact module structure, wide security margins through n+x technology**
- **High power reserves through a total performance of max. 24 kVA**
- **Flexible mains connection with an automated detector 3- or 1-phase connection of the entire installation, 1-phase output**
- **Electronical decentral static bypass switch (SBS) incl. integrated foolproof central maintenance bypass switch**
- **Long autonomy periods available in case of power failure**
- **36 months warranty (UPS & battery) with advanced replacement service (registration required)**