

Backup time calculation

We COMEX S.A., manufacturer of COVER UPS and 7Stars batteries, hereby declare that below configuration of batteries in quantity 40pcs x SHL 100 will ensure the backup time over 30 minutes for the MRI and chiller:

Single UPS COVER 120K parameters:

Max MRI and chiller Load: 60kW
Expected backup time: 30 min with 60kW
Batteries quantity 40 pcs
Batteries capacity 110 Ah
Efficiency on battery mode 96%
Group quantity 1
Cut off voltage 10,2 V/bat.

Single battery 110Ah load:

$$P = 60\,000W / (0,96 * 40\text{pcs}) = 1562\text{ W/bat.}$$

Single battery load from calculation 1562W, what means that to cut off voltage 10,2V batteries 110Ah will hold by over 35 minutes. From below discharge table we see that UPS with designed 40 x 110Ah will hold backup 1724W x 40pcs x 0,96 = 66 200W by 30minutes, so more as required 60kW.

Constant Power Discharge Characteristics (25°C) [Watt]

Cut Off	Time											
	5'	10'	15'	30'	1H	1.5H	2H	3H	4H	5H	10H	20H
11.1V	2 918	2 405	2 128	1 474	915	675	551	375	312	277	159	77,4
10.8V	3 420	2 678	2 318	1 596	969	706	572	380	317	282	165	80,3
10.5V	3 850	2 942	2 452	1 674	997	723	585	389	320	284	168	81,4
10.2V	4 148	3 170	2 567	1 724	1 012	730	590	393	323	286	170	81,5
10.0V	4 272	3 235	2 600	1 745	1 016	733	594	397	325	288	171	81,7
9.9V	4 371	3 345	2 645	1 755	1 020	735	596	399	326	288	171	81,8
9.6V	4 440	3 415	2 695	1 765	1 024	736	597	400	326	289	172	82,0

Mariusz Zielinski
Technical Support Manager
COMEX SA

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80-298 Gdańsk, ul. Jesienna 21, tel. +48 58 556 13 13, fax +48 58 556 13 35

NIP: 584 020 38 25, REGON: 001261671, Sąd Rejonowy Gdańsk-Północ VII Wydz. Gospodarczy KRS 0000334933, Kapitał zakładowy (wpłacony) 540 000 PLN

Biuro Regionalne: 01-106 Warszawa, ul. Nakielska 3, tel. +48 22 313 27 27, fax +48 22 313 27 25

www.comex.com.pl, info@comex.com.pl