

ACS880-07 drives (45 to 710 kW, 50 to 700 hp) energy efficiency data (EU ecodesign) supplement

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This data sheet is a supplement for *ACS880-07 drives (45 to 710 kW, 50 to 700 hp) HW manual* (3AUA0000105718 [English]) and shows the energy efficiency data according to IEC 61800-9-2.

Part load losses (%)

ACS880-07- ...	Out- put power (kVA)	P _n , IEC (kW)	IE class ¹⁾	Stand- by losses (W) ²⁾	Part load losses (%) ³⁾							
					(90;100)	(50;100)	(0;100)	(90;50)	(50;50)	(0;50)	(50;25)	(0;25)
<i>U_n</i> = 3~400 V AC, 6-pulse												
0105A-3	73	55	-	102	1.8	1.4	1.2	1.0	0.9	0.8	0.7	0.6
0145A-3	100	75	-	102	2.1	1.6	1.3	1.0	0.9	0.8	0.6	0.6
0169A-3	117	90	-	102	1.8	1.4	1.2	1.0	0.8	0.7	0.6	0.6
0206A-3	143	110	-	102	2.1	1.6	1.3	1.0	0.9	0.8	0.6	0.6
0246A-3	170	132	-	112	1.9	1.4	1.2	0.9	0.8	0.7	0.6	0.5
0293A-3	203	160	-	112	1.9	1.4	1.1	0.9	0.8	0.7	0.6	0.5
0363A-3	251	200	-	143	1.9	1.5	1.3	0.9	0.8	0.7	0.6	0.5
0430A-3	298	250	-	143	2.0	1.6	1.3	1.0	0.8	0.8	0.6	0.5
0505A-3	350	250	-	392	1.9	1.5	1.3	0.9	0.8	0.7	0.6	0.5
0585A-3	405	315	-	392	1.7	1.4	1.2	0.9	0.7	0.7	0.5	0.5
0650A-3	450	355	-	392	1.8	1.5	1.3	0.9	0.8	0.7	0.5	0.5
0725A-3	502	400	-	423	1.7	1.3	1.1	0.8	0.7	0.6	0.5	0.4
0820A-3	568	450	-	423	1.8	1.4	1.2	0.9	0.7	0.6	0.5	0.5
0880A-3	610	500	-	572	1.8	1.5	1.2	0.9	0.8	0.7	0.5	0.5
<i>U_n</i> = 3~500 V AC, 6-pulse												
0096A-5	83	55	-	114	1.5	1.2	1.1	0.8	0.7	0.7	0.6	0.5
0124A-5	107	75	-	114	1.6	1.3	1.1	0.8	0.7	0.7	0.6	0.5
0156A-5	135	90	-	114	1.4	1.2	1.0	0.8	0.7	0.6	0.5	0.5
0180A-5	156	110	-	114	1.5	1.2	1.0	0.8	0.7	0.6	0.5	0.5
0240A-5	208	132	-	130	1.5	1.1	1.0	0.8	0.6	0.6	0.5	0.5
0260A-5	225	160	-	130	1.5	1.2	1.0	0.8	0.7	0.6	0.5	0.5
0361A-5	313	200	-	178	1.6	1.2	1.1	0.8	0.7	0.6	0.5	0.5
0414A-5	359	250	-	178	1.6	1.3	1.1	0.8	0.7	0.6	0.5	0.5
0460A-5	398	315	-	427	1.5	1.2	1.0	0.8	0.7	0.6	0.5	0.5

ACS880-07- ...	Out- put power (kVA)	P _n , IEC (kW)	IE class ¹⁾	Stand- by losses (W) ²⁾	Part load losses (%) ³⁾							
					(90;100)	(50;100)	(0;100)	(90;50)	(50;50)	(0;50)	(50;25)	(0;25)
0503A-5	436	355	-	427	1.6	1.3	1.1	0.8	0.7	0.6	0.5	0.5
0583A-5	505	400	-	427	1.4	1.2	1.0	0.7	0.6	0.6	0.4	0.4
0635A-5	550	450	-	427	1.5	1.2	1.0	0.7	0.6	0.6	0.4	0.4
0715A-5	619	500	-	476	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.4
0820A-5	710	560	-	625	1.4	1.2	1.0	0.7	0.6	0.6	0.4	0.4
0880A-5	762	630	-	625	1.5	1.2	1.0	0.7	0.6	0.6	0.4	0.4
<i>U_n</i> = 3~690 V AC, 6-pulse												
0061A-7	73	55	-	136	1.3	1.1	0.9	0.8	0.8	0.7	0.6	0.6
0084A-7	100	75	-	136	1.4	1.1	1.0	0.8	0.7	0.7	0.6	0.6
0098A-7	117	90	-	136	1.3	1.1	0.9	0.8	0.7	0.7	0.6	0.5
0119A-7	142	110	-	136	1.4	1.1	1.0	0.8	0.7	0.7	0.6	0.5
0142A-7	170	132	-	143	1.2	1.0	0.8	0.7	0.6	0.6	0.5	0.5
0174A-7	208	160	-	143	1.3	1.0	0.9	0.8	0.7	0.6	0.5	0.5
0210A-7	251	200	-	205	1.2	1.0	0.8	0.7	0.6	0.6	0.5	0.5
0271A-7	324	250	-	205	1.3	1.0	0.9	0.7	0.7	0.6	0.5	0.5
0330A-7	394	315	-	402	1.3	1.1	0.9	0.7	0.7	0.6	0.5	0.4
0370A-7	442	355	-	402	1.3	1.1	1.0	0.8	0.7	0.6	0.5	0.5
0430A-7	514	400	-	402	1.4	1.2	1.1	0.8	0.7	0.7	0.5	0.5
0470A-7	562	450	-	438	1.2	1.0	0.9	0.7	0.6	0.5	0.4	0.4
0522A-7	624	500	-	438	1.2	1.0	0.9	0.7	0.6	0.6	0.4	0.4
0590A-7	705	560	-	438	1.3	1.1	0.9	0.7	0.7	0.6	0.5	0.4
0650A-7	777	630	-	587	1.1	0.9	0.8	0.7	0.6	0.5	0.4	0.4
0721A-7	862	710	-	587	1.2	0.9	0.8	0.7	0.6	0.5	0.4	0.4

¹⁾ Energy efficiency data is not provided for this cabinet-based drive. Cabinet built drives, with already conform modules, are excluded from the scope of the EU ecodesign requirements (Regulation EU/2019/1781, §2.3.e).

²⁾ Standby losses are generated when the drive is powered up, but not providing current to the load.

³⁾ Drive losses as a percentage of the rated apparent output power in 8 operating points (relative motor stator frequency; relative torque-producing current).

Part load losses (W)

ACS880-07- ...	Frame size	Part load losses (W)							
		(90;100)	(50;100)	(0;100)	(90;50)	(50;50)	(0;50)	(50;25)	(0;25)
$U_n = 3\sim 400$ V AC, 6-pulse									
0105A-3	R6	1315	1027	887	726	632	565	485	450
0145A-3	R6	2061	1560	1320	1039	881	781	646	592
0169A-3	R7	2154	1689	1431	1118	960	864	706	662
0206A-3	R7	2931	2278	1920	1455	1240	1122	894	838
0246A-3	R8	3178	2422	2073	1581	1346	1233	986	923
0293A-3	R8	3783	2767	2303	1885	1572	1447	1168	1090
0363A-3	R9	4853	3806	3318	2355	2031	1874	1443	1357
0430A-3	R9	6052	4647	4018	2866	2437	2281	1732	1632
0505A-3	R10	6681	5375	4598	3307	2863	2614	2011	1871
0585A-3	R10	7044	5715	4905	3487	3017	2717	2085	1931
0650A-3	R10	8299	6696	5729	4017	3464	3113	2357	2180
0725A-3	R11	8358	6662	5664	4164	3549	3168	2446	2255
0820A-3	R11	10020	7912	6714	4837	4114	3674	2793	2576
0880A-3	R11	11279	8916	7579	5447	4650	4165	3176	2937
$U_n = 3\sim 500$ V AC, 6-pulse									
0096A-5	R6	1246	1019	890	689	617	557	484	454
0124A-5	R6	1755	1408	1212	894	788	707	598	555
0156A-5	R7	1950	1562	1333	1063	925	836	693	654
0180A-5	R7	2383	1893	1605	1258	1086	982	801	754
0240A-5	R8	3052	2327	1987	1575	1343	1243	1008	948
0260A-5	R8	3473	2654	2274	1751	1494	1386	1109	1044
0361A-5	R9	4936	3865	3369	2442	2111	1963	1525	1439
0414A-5	R9	5809	4509	3926	2874	2474	2330	1796	1698
0460A-5	R10	6075	4867	4163	3136	2726	2486	1955	1824
0503A-5	R10	6948	5556	4741	3536	3063	2791	2172	2024
0583A-5	R10	7200	5833	4997	3652	3160	2866	2221	2064
0635A-5	R10	8269	6650	5670	4115	3542	3205	2459	2281
0715A-5	R11	8446	6710	5694	4301	3669	3297	2574	2381
0820A-5	R11	10275	8195	7002	5171	4449	4029	3122	2906
0880A-5	R11	11499	9102	7753	5685	4877	4409	3390	3151
$U_n = 3\sim 690$ V AC, 6-pulse									
0061A-7	R6	933	773	687	615	558	512	462	437
0084A-7	R6	1374	1098	959	836	749	676	595	555
0098A-7	R7	1490	1249	1071	931	834	770	662	634
0119A-7	R7	1940	1607	1364	1167	1039	956	808	772
0142A-7	R8	2065	1622	1415	1243	1102	1051	890	852
0174A-7	R8	2760	2129	1837	1602	1406	1351	1124	1076
0210A-7	R9	3021	2413	2132	1782	1591	1510	1253	1197

ACS880-07- ...	Frame size	Part load losses (W)							
		(90;100)	(50;100)	(0;100)	(90;50)	(50;50)	(0;50)	(50;25)	(0;25)
0271A-7	R9	4251	3365	2952	2407	2126	2041	1645	1572
0330A-7	R10	4997	4252	3699	2949	2613	2372	1906	1774
0370A-7	R10	5936	5014	4353	3431	3039	2749	2187	2029
0430A-7	R10	7333	6191	5397	4149	3689	3369	2642	2451
0470A-7	R11	6531	5576	4805	3863	3388	3061	2446	2269
0522A-7	R11	7578	6431	5560	4402	3883	3503	2774	2569
0590A-7	R11	9068	7688	6643	5198	4594	4135	3244	2998
0650A-7	R11	8655	7060	6078	5105	4528	4110	3327	3089
0721A-7	R11	9989	8143	6999	5827	5160	4725	3795	3519

Efficiency (%)

ACS880-07- ...	Efficiency (%) ¹⁾							
	(90;100)	(50;100)	(0;100)	(90;50)	(50;50)	(0;50)	(50;25)	(0;25)
<i>U_n</i> = 3~400 V AC, 6-pulse								
0105A-3	97.7	96.8	94.4	97.5	96.2	93.1	94.4	89.8
0145A-3	97.4	96.5	94.0	97.4	96.1	93.1	94.6	90.2
0169A-3	97.7	96.8	94.4	97.6	96.4	93.4	94.9	90.6
0206A-3	97.4	96.4	93.9	97.5	96.2	93.0	94.8	90.3
0246A-3	97.6	96.8	94.4	97.7	96.5	93.5	95.1	90.9
0293A-3	97.6	96.9	94.8	97.7	96.6	93.6	95.2	91.0
0363A-3	97.6	96.6	94.1	97.7	96.4	93.4	95.1	90.8
0430A-3	97.5	96.5	93.9	97.6	96.4	93.2	95.0	90.7
0505A-3	97.6	96.6	94.1	97.7	96.4	93.3	95.1	90.9
0585A-3	97.8	96.9	94.5	97.9	96.7	94.0	95.6	91.8
0650A-3	97.7	96.7	94.3	97.8	96.6	93.8	95.5	91.7
0725A-3	97.9	97.0	94.9	97.9	96.9	94.3	95.8	92.2
0820A-3	97.8	96.9	94.6	97.9	96.8	94.2	95.8	92.2
0880A-3	97.7	96.7	94.4	97.8	96.6	93.9	95.5	91.7
<i>U_n</i> = 3~500 V AC, 6-pulse								
0096A-5	98.1	97.2	95.1	97.9	96.7	94.0	95.1	90.9
0124A-5	97.9	97.0	94.8	97.9	96.7	94.1	95.3	91.3
0156A-5	98.2	97.4	95.4	98.0	96.9	94.4	95.7	91.8
0180A-5	98.1	97.3	95.2	98.0	96.9	94.3	95.7	91.8
0240A-5	98.1	97.5	95.6	98.1	97.1	94.6	95.9	92.3
0260A-5	98.0	97.3	95.3	98.1	97.0	94.4	95.8	92.1
0361A-5	98.0	97.2	95.1	98.1	97.0	94.3	95.8	92.1
0414A-5	98.0	97.2	95.0	98.0	96.9	94.2	95.7	91.8
0460A-5	98.1	97.3	95.2	98.0	97.0	94.4	95.8	92.1
0503A-5	98.0	97.2	95.0	98.0	96.9	94.2	95.7	92.0
0583A-5	98.2	97.4	95.5	98.2	97.2	94.9	96.2	92.9
0635A-5	98.1	97.3	95.3	98.1	97.1	94.7	96.1	92.8
0715A-5	98.3	97.6	95.8	98.3	97.4	95.2	96.4	93.3
0820A-5	98.2	97.4	95.5	98.2	97.2	94.9	96.2	92.9
0880A-5	98.1	97.3	95.4	98.1	97.2	94.8	96.2	92.8
<i>U_n</i> = 3~690 V AC, 6-pulse								
0061A-7	98.4	97.6	95.6	97.9	96.6	93.7	94.7	90.1
0084A-7	98.3	97.5	95.6	97.9	96.7	93.9	95.0	90.8
0098A-7	98.4	97.6	95.8	98.0	96.8	94.1	95.3	90.9
0119A-7	98.3	97.4	95.6	97.9	96.7	94.0	95.2	90.9
0142A-7	98.5	97.8	96.1	98.2	97.1	94.4	95.6	91.6
0174A-7	98.3	97.7	95.9	98.1	97.0	94.1	95.4	91.3
0210A-7	98.5	97.8	96.1	98.2	97.2	94.6	95.7	91.8

ACS880-07- ...	Efficiency (%) ¹⁾							
	(90;100)	(50;100)	(0;100)	(90;50)	(50;50)	(0;50)	(50;25)	(0;25)
0271A-7	98.4	97.7	95.8	98.1	97.1	94.3	95.6	91.7
0330A-7	98.4	97.6	95.7	98.1	97.1	94.6	95.8	92.2
0370A-7	98.3	97.5	95.5	98.1	96.9	94.4	95.7	92.1
0430A-7	98.2	97.3	95.2	98.0	96.8	94.1	95.6	91.8
0470A-7	98.5	97.8	96.1	98.3	97.3	95.1	96.2	93.0
0522A-7	98.5	97.7	95.9	98.2	97.2	94.9	96.2	92.8
0590A-7	98.4	97.6	95.7	98.2	97.1	94.7	96.0	92.6
0650A-7	98.6	98.0	96.4	98.4	97.4	95.2	96.3	93.1
0721A-7	98.5	97.9	96.3	98.3	97.3	95.0	96.2	92.9

¹⁾ Efficiency of the drive is defined as $\text{Eff} [\%] = P_{\text{output, drive}} / (P_{\text{output, drive}} + P_{\text{losses, drive}})$. $P_{\text{output, drive}}$ is output power of the drive and $P_{\text{losses, drive}}$ is power losses of the drive at operating point.

Loss determination

The losses and the IE class of a drive have been determined using the single loss determination method. All calculations have been performed according to requirements in IEC 61800-9-2. The given energy efficiency data is determined based on factory settings of the drive.

The following conditions apply in loss calculations:

1. Losses have been calculated with the following values:

Input voltage U_n	400 V / 500 V / 690 V ¹⁾
Input frequency f_n	50 Hz
Rated output frequency f_{out}	50 Hz
Fundamental rated drive output voltage $U_{1,\text{out}}$	400 V / 500 V / 690 V ¹⁾
Maximum output voltage at operating point 1 $U_{1,\text{out}(90;100)}$	360 V / 450 V / 621 V

¹⁾ U_n , see the data tables.

2. The rated apparent drive output power has been calculated based on nominal output current and fundamental rated output voltage of the drive. $S_n = \sqrt{3} \times I_n \times U_{1,\text{out}}$
3. Losses for 0% drive output frequency points have been calculated at 12 Hz.
4. The default factory setting has been used for switching frequency.
5. The stated loss values include uncertainty of used loss determination method.
6. The losses of integrated features (line filters, EMC filters, etc. - see full list below) have been included in the calculations.
7. Standby losses are determined when the drive is not supplying current to the motor but is powered up.

The loss calculation is based on basic drive configuration with no options installed. The following built-in drive components/auxiliaries/features are included in the calculations:

- cabinet-installed drive, IP22 (UL Type 1)
- main switch-disconnector (switch fuse with aR fuses)
- ACS-AP-W assistant control panel with Bluetooth interface
- no EMC filter
- built-in input DC choke (frames R6 to R9)
- built-in input AC choke (frames R10 and R11)

There is a tool available for advanced ecodesign calculations. You can, for example, define part-load losses in user-defined operating points. See <https://ecodesign.drivesmotors.abb.com> (Energy efficiency data according to IEC-61800-9-2).
