ACS880-07 drives (560 to 2800 kW) energy efficiency data (EU ecodesign) supplement

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This data sheet is a supplement for *ACS880-07 drives (560 to 2800 kW) HW manual* (3AUA0000143261 [English]) and shows the energy efficiency data according to IEC 61800-9-2.

Part load losses (%)

ACS880-07-...	Output power (kVA)	Pn, 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)
U_n = 3~400 V AC, 6-pulse												
1140A-3	790	630	IE2	163	2.4	2.0	1.7	1.1	1.0	0.9	0.6	0.6
1250A-3	866	710	IE2	212	2.3	2.0	1.8	1.1	1.0	0.9	0.7	0.6
1480A-3	1025	800	IE2	212	2.3	2.0	1.8	1.1	1.0	0.9	0.6	0.6
1760A-3	1219	1000	IE2	212	2.6	2.2	1.9	1.1	1.0	0.9	0.6	0.6
2210A-3	1531	1200	-	317	2.4	2.0	1.8	1.1	1.0	0.9	0.6	0.6
2610A-3	1808	1400	-	317	2.6	2.2	1.9	1.1	1.0	0.9	0.6	0.6
U_n = 3~400 V AC, 12-pulse												
0990A-3 +A004	686	560	IE2	212	2.4	2.0	1.7	1.2	1.1	1.0	0.7	0.7
1140A-3 +A004	790	630	IE2	212	2.3	2.0	1.7	1.1	1.0	1.0	0.7	0.6
1250A-3 +A004	866	710	IE2	212	2.4	2.0	1.8	1.1	1.0	0.9	0.7	0.6
1480A-3 +A004	1025	800	IE2	212	2.4	2.0	1.8	1.1	1.0	0.9	0.6	0.6
1760A-3 +A004	1219	1000	IE2	212	2.5	2.2	1.9	1.1	1.0	0.9	0.6	0.6
2210A-3 +A004	1531	1200	-	366	2.4	2.0	1.8	1.1	1.0	0.9	0.6	0.6
2610A-3 +A004	1808	1400	-	366	2.6	2.2	1.9	1.1	1.0	0.9	0.6	0.6
U_n = 3~500 V AC, 6-pulse												
1070A-5	927	710	IE2	163	1.9	1.6	1.4	0.9	0.8	0.7	0.5	0.5
1320A-5	1143	900	IE2	212	1.9	1.6	1.4	0.9	0.8	0.8	0.5	0.5
1450A-5	1256	1000	IE2	212	1.9	1.7	1.5	0.9	0.8	0.8	0.5	0.5
1580A-5	1368	1100	-	212	2.0	1.7	1.5	0.9	0.8	0.8	0.5	0.5
1800A-5	1559	1250	-	269	1.9	1.6	1.4	0.9	0.8	0.7	0.5	0.5

ACS880-07-...	Output power (kVA)	Pn, 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)
1980A-5	1715	1400	-	269	1.9	1.6	1.4	0.9	0.8	0.7	0.5	0.5
U_n = 3~500 V AC, 12-pulse												
0990A-5 +A004	857	710	IE2	212	2.0	1.6	1.4	1.0	0.9	0.8	0.6	0.6
1320A-5 +A004	1143	900	IE2	212	1.9	1.6	1.4	0.9	0.8	0.8	0.5	0.5
1450A-5 +A004	1256	1000	IE2	212	1.9	1.7	1.5	0.9	0.8	0.8	0.5	0.5
1580A-5 +A004	1368	1100	-	212	2.0	1.7	1.5	0.9	0.8	0.8	0.5	0.5
1800A-5 +A004	1559	1250	-	269	1.9	1.6	1.4	0.9	0.8	0.7	0.5	0.5
1980A-5 +A004	1715	1400	-	269	1.9	1.6	1.4	0.9	0.8	0.7	0.5	0.5
U_n = 3~690 V AC, 6-pulse												
0800A-7	956	800	IE2	163	1.7	1.5	1.3	0.9	0.8	0.8	0.6	0.5
0900A-7	1076	900	IE2	163	1.7	1.4	1.2	0.9	0.8	0.7	0.5	0.5
1160A-7	1386	1100	-	212	1.7	1.4	1.3	0.9	0.8	0.7	0.6	0.5
1450A-7	1733	1400	-	269	1.6	1.4	1.2	0.8	0.8	0.7	0.5	0.5
1650A-7	1972	1600	-	269	1.7	1.4	1.3	0.8	0.8	0.7	0.5	0.5
1950A-7	2330	1900	-	375	1.6	1.4	1.2	0.8	0.8	0.7	0.5	0.5
2300A-7	2749	2200	-	375	1.7	1.5	1.3	0.8	0.8	0.7	0.5	0.5
2600A-7	3107	2500	-	481	1.7	1.5	1.3	0.8	0.8	0.7	0.5	0.5
2860A-7	3418	2800	-	481	1.7	1.5	1.3	0.8	0.8	0.7	0.5	0.5
U_n = 3~690 V AC, 12-pulse												
0800A-7 +A004	956	800	IE2	212	1.8	1.5	1.3	1.0	0.9	0.8	0.6	0.6
0950A-7 +A004	1135	900	IE2	212	1.6	1.4	1.3	0.9	0.8	0.8	0.6	0.6
1160A-7 +A004	1386	1100	-	212	1.7	1.4	1.3	0.9	0.8	0.7	0.6	0.5
1450A-7 +A004	1733	1400	-	269	1.6	1.4	1.2	0.8	0.8	0.7	0.5	0.5
1650A-7 +A004	1972	1600	-	269	1.7	1.4	1.3	0.8	0.8	0.7	0.5	0.5
1950A-7 +A004	2330	1900	-	423	1.6	1.4	1.3	0.9	0.8	0.7	0.6	0.5
2300A-7 +A004	2749	2200	-	423	1.7	1.5	1.3	0.8	0.8	0.7	0.5	0.5
2600A-7 +A004	3107	2500	-	481	1.7	1.5	1.3	0.8	0.8	0.7	0.5	0.5
2860A-7 +A004	3418	2800	-	481	1.7	1.5	1.3	0.8	0.8	0.7	0.5	0.5

[1] The drives rated for operating a motor with the rated output power higher than 1000 kW are not in the scope of the EU ecodesign requirements (Regulation EU/2019/1781). In these cases, energy efficiency data/class is not provided.

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 = 3~400 V AC, 6-pulse									
1140A-3	1×D8T + 2×R8i	18751	15498	13336	8611	7576	6865	4807	4482
1250A-3	2×D8T + 2×R8i	20218	17222	15316	9752	8755	8103	5637	5336
1480A-3	2×D8T + 2×R8i	23917	20354	17979	11190	10006	9201	6372	5999
1760A-3	2×D8T + 2×R8i	31105	26303	23236	13713	12156	11139	7543	7082
2210A-3	3×D8T + 3×R8i	36468	31186	27354	16620	14841	13565	9396	8806
2610A-3	3×D8T + 3×R8i	46360	39307	34397	20102	17783	16179	10998	10272
U_n = 3~400 V AC, 12-pulse									
0990A-3 +A004	2×D7T + 2×R8i	16344	13391	11746	8199	7263	6708	4771	4521
1140A-3 +A004	2×D8T + 2×R8i	18095	15469	13758	8981	8095	7503	5265	4988
1250A-3 +A004	2×D8T + 2×R8i	20451	17414	15488	9833	8823	8161	5671	5365
1480A-3 +A004	2×D8T + 2×R8i	24270	20857	18579	11255	10109	9327	6384	6017
1760A-3 +A004	2×D8T + 2×R8i	31067	26471	23547	13647	12145	11163	7493	7043
2210A-3 +A004	4×D8T + 3×R8i	36322	31211	27928	16995	15266	14142	9734	9216
2610A-3 +A004	4×D8T + 3×R8i	46646	39527	35177	20586	18250	16800	11336	10692
U_n = 3~500 V AC, 6-pulse									
1070A-5	1×D8T + 2×R8i	17883	14899	12837	8432	7485	6805	4859	4547
1320A-5	2×D8T + 2×R8i	21491	18240	16210	10421	9362	8670	6130	5808
1450A-5	2×D8T + 2×R8i	24164	20739	18348	11439	10305	9496	6662	6283
1580A-5	2×D8T + 2×R8i	27245	23255	20528	12540	11240	10327	7183	6762
1800A-5	2×D8T + 3×R8i	29899	25063	21501	13811	12226	11063	7922	7391
1980A-5	2×D8T + 3×R8i	33138	27812	23937	15042	13303	12039	8552	7974
U_n = 3~500 V AC, 12-pulse									
0990A-5 +A004	2×D7T + 2×R8i	16901	13951	12232	8522	7598	7023	5061	4798
1320A-5 +A004	2×D8T + 2×R8i	21590	18288	16237	10459	9385	8683	6142	5815
1450A-5 +A004	2×D8T + 2×R8i	24243	20787	18374	11476	10327	9508	6674	6290
1580A-5 +A004	2×D8T + 2×R8i	27336	23307	20556	12580	11264	10341	7197	6769
1800A-5 +A004	2×D8T + 3×R8i	30016	25125	21534	13858	12255	11079	7938	7399
1980A-5 +A004	2×D8T + 3×R8i	33285	27881	23974	15093	13335	12056	8569	7983
U_n = 3~690 V AC, 6-pulse									
0800A-7	1×D8T + 2×R8i	16481	13978	12255	8881	7879	7207	5645	5212
0900A-7	1×D8T + 2×R8i	17928	15086	13247	9286	8370	7735	5896	5598
1160A-7	2×D8T + 2×R8i	23027	19824	17829	11999	10927	10216	7644	7307
1450A-7	2×D8T + 3×R8i	28317	24329	21401	14583	13216	12206	9319	8841
1650A-7	2×D8T + 3×R8i	33044	28206	24711	16480	14845	13655	10335	9779
1950A-7	3×D8T + 4×R8i	38039	33016	28953	19544	17765	16374	12529	11870
2300A-7	3×D8T + 4×R8i	46764	40214	35042	22996	20733	18996	14356	13546
2600A-7	4×D8T + 5×R8i	51707	45069	39260	26049	23660	21703	16550	15628

ACS880-07- ...	Frame size	Part load losses (W)							
		(90;100)	(50;100)	(0;100)	(90;50)	(50;50)	(0;50)	(50;25)	(0;25)
2860A-7	4×D8T + 5×R8i	58497	50670	43948	28698	25934	23697	17934	16890
U_n = 3~690 V AC, 12-pulse									
0800A-7 +A004	2×D7T + 2×R8i	17035	14359	12803	9521	8484	7879	6103	5730
0950A-7 +A004	2×D8T + 2×R8i	18363	15991	14457	10102	9288	8726	6608	6335
1160A-7 +A004	2×D8T + 2×R8i	23128	19874	17855	12038	10949	10229	7656	7314
1450A-7 +A004	2×D8T + 3×R8i	28412	24383	21431	14623	13242	12220	9333	8848
1650A-7 +A004	2×D8T + 3×R8i	33165	28267	24744	16526	14873	13672	10350	9787
1950A-7 +A004	4×D8T + 4×R8i	38198	33241	29492	20105	18348	17043	13009	12388
2300A-7 +A004	4×D8T + 4×R8i	46187	39898	35289	23349	21164	19580	14775	14030
2600A-7 +A004	4×D8T + 5×R8i	51923	45175	39305	26120	23698	21721	16567	15636
2860A-7 +A004	4×D8T + 5×R8i	58755	50791	44000	28780	25976	23717	17953	16899

Efficiency (%)

ACS880-07- ...	Efficiency (%) [1)]							
	(90;100)	(50;100)	(0;100)	(90;50)	(50;50)	(0;50)	(50;25)	(0;25)
U_n = 3~400 V AC, 6-pulse								
1140A-3	97.1	95.7	92.5	97.3	95.8	92.3	94.8	90.4
1250A-3	97.1	95.6	92.2	97.2	95.6	91.8	94.5	89.6
1480A-3	97.1	95.6	92.3	97.3	95.7	92.1	94.7	90.1
1760A-3	96.8	95.3	91.6	97.2	95.6	92.0	94.7	90.2
2210A-3	97.0	95.5	92.1	97.3	95.8	92.2	94.8	90.3
2610A-3	96.8	95.2	91.7	97.2	95.7	92.1	94.8	90.4
U_n = 3~400 V AC, 12-pulse								
0990A-3 +A004	97.0	95.7	92.4	97.0	95.4	91.5	94.1	89.0
1140A-3 +A004	97.2	95.7	92.3	97.2	95.5	91.7	94.3	89.4
1250A-3 +A004	97.1	95.6	92.1	97.2	95.5	91.8	94.4	89.6
1480A-3 +A004	97.1	95.5	92.0	97.3	95.7	92.0	94.7	90.1
1760A-3 +A004	96.8	95.2	91.5	97.2	95.6	92.0	94.8	90.2
2210A-3 +A004	97.1	95.5	92.0	97.3	95.6	91.9	94.6	89.9
2610A-3 +A004	96.8	95.2	91.5	97.2	95.6	91.9	94.7	90.0
U_n = 3~500 V AC, 6-pulse								
1070A-5	97.6	96.4	93.8	97.7	96.4	93.5	95.5	91.6
1320A-5	97.7	96.5	93.6	97.7	96.4	93.3	95.4	91.3
1450A-5	97.6	96.3	93.5	97.7	96.4	93.3	95.4	91.4
1580A-5	97.5	96.2	93.3	97.7	96.4	93.3	95.5	91.5
1800A-5	97.6	96.4	93.8	97.8	96.5	93.7	95.6	91.8
1980A-5	97.6	96.4	93.7	97.8	96.6	93.7	95.7	92.0
U_n = 3~500 V AC, 12-pulse								
0990A-5 +A004	97.5	96.4	93.6	97.5	96.1	92.8	95.0	90.5
1320A-5 +A004	97.6	96.5	93.6	97.7	96.4	93.2	95.4	91.3
1450A-5 +A004	97.6	96.3	93.5	97.7	96.4	93.3	95.4	91.4
1580A-5 +A004	97.5	96.2	93.3	97.7	96.4	93.3	95.5	91.5
1800A-5 +A004	97.6	96.4	93.8	97.8	96.5	93.7	95.6	91.8
1980A-5 +A004	97.6	96.4	93.7	97.8	96.6	93.7	95.7	92.0
U_n = 3~690 V AC, 6-pulse								
0800A-7	97.8	96.7	94.2	97.7	96.4	93.3	95.0	90.7
0900A-7	97.9	96.9	94.4	97.9	96.6	93.6	95.3	91.1
1160A-7	97.9	96.8	94.2	97.8	96.5	93.4	95.3	91.0
1450A-7	98.0	96.9	94.4	97.9	96.6	93.7	95.4	91.3
1650A-7	97.9	96.8	94.3	97.9	96.7	93.8	95.5	91.5
1950A-7	98.0	96.8	94.4	97.9	96.6	93.7	95.4	91.3
2300A-7	97.9	96.7	94.2	97.9	96.7	93.8	95.5	91.5
2600A-7	97.9	96.8	94.3	97.9	96.6	93.8	95.4	91.4

ACS880-07- ...	Efficiency (%) [1]							
	(90;100)	(50;100)	(0;100)	(90;50)	(50;50)	(0;50)	(50;25)	(0;25)
2860A-7	97.9	96.7	94.2	97.9	96.6	93.8	95.5	91.5
U_n = 3~690 V AC, 12-pulse								
0800A-7 +A004	97.8	96.7	94.0	97.5	96.1	92.7	94.6	89.9
0950A-7 +A004	98.0	96.9	94.3	97.8	96.4	93.2	95.0	90.5
1160A-7 +A004	97.9	96.8	94.2	97.8	96.5	93.4	95.3	91.0
1450A-7 +A004	97.9	96.9	94.4	97.9	96.6	93.7	95.4	91.3
1650A-7 +A004	97.9	96.8	94.3	97.9	96.7	93.8	95.5	91.5
1950A-7 +A004	97.9	96.8	94.3	97.9	96.5	93.5	95.2	90.9
2300A-7 +A004	97.9	96.8	94.2	97.9	96.6	93.6	95.4	91.3
2600A-7 +A004	97.9	96.8	94.3	97.9	96.6	93.7	95.4	91.4
2860A-7 +A004	97.9	96.7	94.2	97.9	96.6	93.8	95.5	91.5

[1] Efficiency of the drive is defined as Eff [%] = $P_{output, drive}$ / ($P_{output, drive}$ + $P_{losses, drive}$). $P_{output, drive}$ is output power of the drive and $P_{losses, drive}$ 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 $U_{1,out}$	400 V / 500 V / 690 V [1]
Maximum output voltage at operating point 1 $U_{1,out(90;100)}$	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. Sn = sqrt(3)×I_n×$U_{1,out}$
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
- aR fuses
- Built-in AC input choke
- EMC filter (category 3, 2nd Environment)
- du/dt filters
- common mode filtering
- ACS-AP-W assistant control panel

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).