ACS880-04 single drive module packages (560 to 2200 kW) energy efficiency data (EU ecodesign) supplement

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This data sheet is a supplement for *ACS880-04 single drive module packages (560 to 2200 kW) HW manual* (3AUA0000138495 [English]) and shows the energy efficiency data according to IEC 61800-9-2.

Part load losses (%)

ACS880-04-...	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	-	163	2.3	1.9	1.7	1.1	0.9	0.9	0.6	0.6
1250A-3	866	710	-	212	2.2	2.0	1.8	1.1	1.0	0.9	0.6	0.6
1480A-3	1025	800	-	212	2.2	2.0	1.7	1.1	1.0	0.9	0.6	0.6
1760A-3	1219	1000	-	212	2.4	2.1	1.9	1.1	1.0	0.9	0.6	0.6
2210A-3	1531	1200	-	317	2.3	2.0	1.8	1.0	1.0	0.9	0.6	0.6
2610A-3	1808	1400	-	317	2.4	2.1	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	-	212	2.3	1.9	1.7	1.2	1.0	1.0	0.7	0.6
1250A-3 +A004	866	710	-	212	2.3	2.0	1.8	1.1	1.0	0.9	0.6	0.6
1480A-3 +A004	1025	800	-	212	2.3	2.0	1.8	1.1	1.0	0.9	0.6	0.6
1760A-3 +A004	1219	1000	-	212	2.4	2.1	1.9	1.1	1.0	0.9	0.6	0.6
2210A-3 +A004	1531	1200	-	366	2.2	2.0	1.8	1.1	1.0	0.9	0.6	0.6
2610A-3 +A004	1808	1400	-	366	2.4	2.1	1.9	1.1	1.0	0.9	0.6	0.6
U_n = 3~500 V AC, 6-pulse												
1070A-5	927	710	-	163	1.8	1.6	1.4	0.9	0.8	0.7	0.5	0.5
1320A-5	1143	900	-	212	1.8	1.6	1.4	0.9	0.8	0.7	0.5	0.5
1450A-5	1256	1000	-	212	1.8	1.6	1.5	0.9	0.8	0.7	0.5	0.5
1580A-5	1368	1100	-	212	1.9	1.7	1.5	0.9	0.8	0.7	0.5	0.5
1800A-5	1559	1250	-	269	1.8	1.6	1.4	0.9	0.8	0.7	0.5	0.5

ACS880-04-...	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	1.8	1.6	1.4	0.8	0.8	0.7	0.5	0.5
U_n = 3~500 V AC, 12-pulse												
0990A-5 +A004	857	710	-	212	1.9	1.6	1.4	1.0	0.9	0.8	0.6	0.5
1320A-5 +A004	1143	900	-	212	1.8	1.6	1.4	0.9	0.8	0.7	0.5	0.5
1450A-5 +A004	1256	1000	-	212	1.8	1.6	1.5	0.9	0.8	0.7	0.5	0.5
1580A-5 +A004	1368	1100	-	212	1.9	1.7	1.5	0.9	0.8	0.7	0.5	0.5
1800A-5 +A004	1559	1250	-	269	1.8	1.6	1.4	0.9	0.8	0.7	0.5	0.5
1980A-5 +A004	1715	1400	-	269	1.8	1.6	1.4	0.8	0.8	0.7	0.5	0.5
U_n = 3~690 V AC, 6-pulse												
0800A-7	956	800	-	163	1.6	1.4	1.3	0.9	0.8	0.7	0.6	0.5
0900A-7	1076	900	-	163	1.6	1.4	1.2	0.8	0.8	0.7	0.5	0.5
1160A-7	1386	1100	-	212	1.6	1.4	1.3	0.8	0.8	0.7	0.5	0.5
1450A-7	1733	1400	-	269	1.6	1.4	1.2	0.8	0.7	0.7	0.5	0.5
1650A-7	1972	1600	-	269	1.6	1.4	1.2	0.8	0.7	0.7	0.5	0.5
2300A-7	2749	2200	-	375	1.6	1.4	1.3	0.8	0.7	0.7	0.5	0.5
U_n = 3~690 V AC, 12-pulse												
0800A-7 +A004	956	800	-	212	1.7	1.5	1.3	0.9	0.9	0.8	0.6	0.6
0950A-7 +A004	1135	900	-	212	1.6	1.4	1.3	0.9	0.8	0.8	0.6	0.5
1160A-7 +A004	1386	1100	-	212	1.6	1.4	1.3	0.8	0.8	0.7	0.5	0.5
1450A-7 +A004	1733	1400	-	269	1.6	1.4	1.2	0.8	0.7	0.7	0.5	0.5
1650A-7 +A004	1972	1600	-	269	1.6	1.4	1.2	0.8	0.7	0.7	0.5	0.5
2300A-7 +A004	2749	2200	-	423	1.6	1.4	1.3	0.8	0.8	0.7	0.5	0.5

1) Energy efficiency data is not provided for the drive module packages. The sub drive modules are not in the scope of the EU ecodesign requirements (Regulation EU/2019/1781).

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)

ACS880-04- ...	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	1XD8T+2XR8i	17910	15184	13209	8328	7404	6753	4679	4380
1250A-3	2XD8T+2XR8i	19403	16948	15222	9477	8598	8003	5519	5241
1480A-3	2XD8T+2XR8i	22854	20015	17892	10863	9834	9105	6250	5907
1760A-3	2XD8T+2XR8i	29741	25930	23181	13333	11976	11053	7421	6996
2210A-3	3XD8T+3XR8i	34511	30548	27196	16058	14567	13427	9221	8682
2610A-3	3XD8T+3XR8i	43871	38581	34272	19436	17490	16054	10821	10157
U_n = 3~400 V AC, 12-pulse									
0990A-3 +A004	2XD7T+2XR8i	15692	13130	11621	7945	7100	6594	4645	4417
1250A-3 +A004	2XD8T+2XR8i	19551	17095	15370	9524	8645	8050	5542	5264
1480A-3 +A004	2XD8T+2XR8i	23126	20471	18466	10892	9914	9218	6250	5918
1760A-3 +A004	2XD8T+2XR8i	29595	26042	23462	13222	11939	11062	7357	6949
2210A-3 +A004	4XD8T+3XR8i	34252	30574	27771	16399	14987	14002	9557	9091
2610A-3 +A004	4XD8T+3XR8i	43833	38742	35039	19828	17936	16668	11152	10574
U_n = 3~500 V AC, 6-pulse									
1070A-5	1XD8T+2XR8i	17106	14591	12706	8159	7313	6691	4732	4445
1320A-5	2XD8T+2XR8i	20599	17939	16115	10129	9199	8569	6009	5713
1450A-5	2XD8T+2XR8i	23125	20390	18253	11116	10130	9397	6538	6190
1580A-5	2XD8T+2XR8i	26030	22876	20441	12185	11056	10231	7058	6670
1800A-5	2XD8T+3XR8i	28434	24500	21312	13343	11967	10913	7748	7259
1980A-5	2XD8T+3XR8i	31401	27183	23746	14517	13026	11889	8372	7843
U_n = 3~500 V AC, 12-pulse									
0990A-5 +A004	2XD7T+2XR8i	16229	13678	12101	8264	7432	6906	4933	4693
1320A-5 +A004	2XD8T+2XR8i	20599	17940	16115	10129	9199	8569	6009	5713
1450A-5 +A004	2XD8T+2XR8i	23125	20390	18253	11116	10130	9397	6538	6190
1580A-5 +A004	2XD8T+2XR8i	26030	22876	20441	12185	11056	10231	7058	6670
1800A-5 +A004	2XD8T+3XR8i	28434	24500	21312	13343	11967	10913	7748	7259
1980A-5 +A004	2XD8T+3XR8i	31401	27183	23746	14517	13026	11889	8372	7843
U_n = 3~690 V AC, 6-pulse									
0800A-7	1XD8T+2XR8i	15619	13620	12128	8262	7594	7088	5336	5098
0900A-7	1XD8T+2XR8i	17304	14814	13113	9044	8208	7620	5771	5494
1160A-7	2XD8T+2XR8i	22277	19557	17725	11739	10770	10112	7525	7210
1450A-7	2XD8T+3XR8i	27211	23868	21210	14194	12981	12053	9150	8705
1650A-7	2XD8T+3XR8i	31726	27697	24523	16047	14597	13504	10162	9645
2300A-7	3XD8T+4XR8i	44521	39368	34758	22315	20373	18797	14127	13377
U_n = 3~690 V AC, 12-pulse									
0800A-7 +A004	2XD7T+2XR8i	16208	14031	12673	8932	8221	7757	5829	5613
0950A-7 +A004	2XD8T+2XR8i	17738	15716	14323	9848	9123	8610	6481	6230
1160A-7 +A004	2XD8T+2XR8i	22277	19556	17725	11738	10770	10112	7525	7210

ACS880-04- ...	Frame size	Part load losses (W)							
		(90;100)	(50;100)	(0;100)	(90;50)	(50;50)	(0;50)	(50;25)	(0;25)
1450A-7 +A004	2XD8T+3XR8i	27211	23868	21210	14194	12981	12053	9150	8705
1650A-7 +A004	2XD8T+3XR8i	31726	27697	24523	16047	14597	13504	10162	9645
2300A-7 +A004	4XD8T+4XR8i	43764	39012	34986	22614	20787	19372	14537	13857

Efficiency (%)

ACS880-04- ...	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	97.2	95.8	92.6	97.4	95.9	92.5	94.9	90.6
1250A-3	97.2	95.7	92.2	97.3	95.7	91.9	94.6	89.8
1480A-3	97.2	95.7	92.3	97.4	95.8	92.2	94.8	90.3
1760A-3	97.0	95.3	91.7	97.3	95.7	92.0	94.8	90.3
2210A-3	97.2	95.6	92.2	97.4	95.8	92.3	94.9	90.4
2610A-3	97.0	95.3	91.7	97.3	95.8	92.2	94.9	90.5
U_n = 3~400 V AC, 12-pulse								
0990A-3 +A004	97.2	95.8	92.5	97.1	95.5	91.6	94.3	89.2
1250A-3 +A004	97.2	95.7	92.2	97.3	95.6	91.9	94.6	89.8
1480A-3 +A004	97.2	95.6	92.1	97.4	95.8	92.1	94.8	90.2
1760A-3 +A004	97.0	95.3	91.6	97.3	95.7	92.0	94.9	90.3
2210A-3 +A004	97.2	95.6	92.0	97.3	95.7	92.0	94.7	90.0
2610A-3 +A004	97.0	95.3	91.5	97.3	95.7	91.9	94.7	90.1
U_n = 3~500 V AC, 6-pulse								
1070A-5	97.7	96.5	93.8	97.8	96.5	93.6	95.6	91.8
1320A-5	97.8	96.5	93.7	97.8	96.4	93.3	95.5	91.4
1450A-5	97.7	96.4	93.5	97.8	96.4	93.3	95.5	91.5
1580A-5	97.6	96.3	93.3	97.8	96.4	93.3	95.6	91.6
1800A-5	97.7	96.5	93.9	97.9	96.6	93.7	95.7	92.0
1980A-5	97.7	96.5	93.8	97.9	96.6	93.8	95.8	92.1
U_n = 3~500 V AC, 12-pulse								
0990A-5 +A004	97.6	96.5	93.7	97.6	96.2	92.9	95.1	90.7
1320A-5 +A004	97.8	96.5	93.7	97.8	96.4	93.3	95.5	91.4
1450A-5 +A004	97.7	96.4	93.5	97.8	96.4	93.3	95.5	91.5
1580A-5 +A004	97.6	96.3	93.3	97.8	96.4	93.3	95.6	91.6
1800A-5 +A004	97.7	96.5	93.9	97.9	96.6	93.7	95.7	92.0
1980A-5 +A004	97.7	96.5	93.8	97.9	96.6	93.8	95.8	92.1
U_n = 3~690 V AC, 6-pulse								
0800A-7	98.0	96.8	94.3	97.8	96.5	93.4	95.2	90.9
0900A-7	98.0	96.9	94.5	97.9	96.6	93.7	95.4	91.3
1160A-7	98.0	96.9	94.2	97.9	96.6	93.5	95.3	91.1
1450A-7	98.0	96.9	94.5	98.0	96.7	93.8	95.5	91.4
1650A-7	98.0	96.9	94.4	98.0	96.7	93.9	95.6	91.6
2300A-7	98.0	96.8	94.3	98.0	96.7	93.9	95.6	91.6
U_n = 3~690 V AC, 12-pulse								
0800A-7 +A004	97.9	96.7	94.0	97.7	96.2	92.8	94.8	90.1
0950A-7 +A004	98.0	96.9	94.3	97.8	96.5	93.3	95.1	90.7
1160A-7 +A004	98.0	96.9	94.2	97.9	96.6	93.5	95.3	91.1

ACS880-04- ...	Efficiency (%) [1]							
	(90;100)	(50;100)	(0;100)	(90;50)	(50;50)	(0;50)	(50;25)	(0;25)
1450A-7 +A004	98.0	96.9	94.5	98.0	96.7	93.8	95.5	91.4
1650A-7 +A004	98.0	96.9	94.4	98.0	96.7	93.9	95.6	91.6
2300A-7 +A004	98.0	96.8	94.3	98.0	96.7	93.7	95.5	91.4

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:

- ACS880-04 single drive module package
- Built-in AC input choke
- speed controlled cooling fans
- du/dt filters (option +E205)

Typical losses of an equivalent cabinet-installed drive can be found in *ACS880-07 drives (560 to 2800 kW) energy efficiency data (EU ecodesign) supplement* (3AXD50000788231 [English]).

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).