ACS880-04XT drive module packages energy efficiency data (EU ecodesign) supplement

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This data sheet is a supplement for *ACS880-04XT drive module packages HW manual* (3AXD50000025169 [English]) and shows the energy efficiency data according to IEC 61800-9-2.

Part load losses (%)

ACS880-04XT- ...	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												
1010A-3	700	560	-	783	1.6	1.3	1.1	0.8	0.7	0.6	0.5	0.5
1190A-3	824	630	-	783	1.7	1.4	1.2	0.8	0.7	0.7	0.5	0.5
1330A-3	921	710	-	845	1.6	1.3	1.1	0.8	0.7	0.6	0.5	0.4
1610A-3	1115	900	-	1143	1.7	1.4	1.2	0.8	0.7	0.7	0.5	0.5
U_n = 3~500 V AC, 6-pulse												
1010A-5	875	710	-	853	1.3	1.1	0.9	0.7	0.6	0.5	0.4	0.4
1160A-5	1005	800	-	853	1.4	1.1	1.0	0.7	0.6	0.6	0.4	0.4
1310A-5	1134	900	-	949	1.3	1.0	0.9	0.7	0.6	0.5	0.4	0.4
1610A-5	1394	1000	-	1248	1.4	1.1	1.0	0.7	0.6	0.6	0.4	0.4
U_n = 3~690 V AC, 6-pulse												
0810A-7	968	800	-	803	1.3	1.1	1.0	0.8	0.7	0.6	0.5	0.5
0960A-7	1147	900	-	875	1.1	1.0	0.8	0.7	0.6	0.5	0.4	0.4
1080A-7	1291	1000	-	875	1.2	1.0	0.9	0.7	0.6	0.6	0.4	0.4
1320A-7	1578	1200	-	1173	1.1	0.9	0.8	0.6	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)

ACS880-04XT- ...	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									
1010A-3	2×R10	10939	9006	7807	5553	4842	4394	3387	3155
1190A-3	2×R10	14052	11469	9891	6891	5973	5400	4083	3790
1330A-3	2×R11	14306	11533	9894	7220	6192	5563	4289	3969
1610A-3	2×R11	19154	15344	13167	9404	8086	7295	5565	5171
U_n = 3~500 V AC, 6-pulse									
1010A-5	2×R10	11103	9213	7996	5817	5083	4651	3616	3381
1160A-5	2×R10	13771	11320	9762	7008	6079	5544	4243	3957
1310A-5	2×R11	14291	11571	9937	7421	6383	5784	4507	4191
1610A-5	2×R11	19543	15675	13477	9820	8485	7720	5941	5545
U_n = 3~690 V AC, 6-pulse									
0810A-7	2×R10	13028	11077	9706	7404	6602	6053	4730	4398
0960A-7	2×R11	12987	11143	9709	7618	6751	6126	4840	4501
1080A-7	2×R11	15413	13205	11496	8922	7922	7171	5615	5209
1320A-7	2×R11	17045	14034	12159	10044	8938	8224	6603	6145

Efficiency (%)

ACS880-04XT- ...	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								
1010A-3	98.0	97.1	94.9	98.0	96.9	94.3	95.8	92.2
1190A-3	97.9	96.9	94.6	97.9	96.8	94.1	95.7	92.1
1330A-3	98.1	97.2	95.1	98.0	97.0	94.6	96.0	92.5
1610A-3	97.9	96.9	94.6	97.9	96.8	94.1	95.7	92.0
U_n = 3~500 V AC, 6-pulse								
1010A-5	98.4	97.6	95.8	98.3	97.4	95.2	96.4	93.2
1160A-5	98.3	97.5	95.6	98.3	97.3	95.0	96.3	93.1
1310A-5	98.4	97.7	96.0	98.4	97.5	95.4	96.5	93.5
1610A-5	98.2	97.5	95.6	98.2	97.3	95.0	96.3	93.1
U_n = 3~690 V AC, 6-pulse								
0810A-7	98.3	97.4	95.4	98.1	97.0	94.4	95.8	92.2
0960A-7	98.6	97.8	96.1	98.3	97.4	95.2	96.3	93.2
1080A-7	98.5	97.7	95.9	98.3	97.3	95.0	96.2	93.0
1320A-7	98.6	98.0	96.4	98.4	97.5	95.3	96.4	93.2

[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:

- two drive modules to be installed in an enclosure, IP00 (UL Typeopen) bookshelf mounting with pedestal
- built-in input choke
- busbars for input, motor and DC connection
- ACS-AP-W assistant control panel with Bluetooth interface

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).