
ABB INDUSTRIAL DRIVES

ACS880-01 drives for SynRM motors

Supplement



ACS880-01 drives for SynRM motors

Supplement

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1

Introduction to the manual

Contents of this chapter

This chapter describes this manual.

Applicability

This manual applies to ACS880-01 drives specially rated for ABB synchronous reluctance (SynRM) motors. It is a supplement to [ACS880-01 hardware manual \(3AUA0000078093 \[English\]\)](#).

Safety instructions

Obey the safety instructions given in [ACS880-01 hardware manual \(3AUA0000078093 \[English\]\)](#).

Target audience

This manual is intended for people who plan the installation, install, commission and do maintenance work on the drive, or create instructions for the end user of the drive concerning the installation and maintenance of the drive.

Read the manual before you work on the drive. You are expected to know the fundamentals of electricity, wiring, electrical components and electrical schematic symbols.

Related documents

You can find manuals and other product documents in PDF format on the Internet at www.abb.com/drives/documents.

The code and link below open an online listing of the manuals applicable to this product.



[ACS880-01 manuals](#)

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Technical data

Contents of this chapter

This chapter contains the ratings, fuses, cooling data and noise of the drive.

Ratings

The nominal ratings for the drives with 50 Hz and 60 Hz supply are given below. The symbols are described below the table.

IEC RATINGS											
ACS880-01-...	Frame size	Input rating	Output ratings								
			Nominal use				Light-duty use		Heavy-duty use		
			I_1	I_{max}	I_2	P_n	S_n	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}
			A	A	A	kW	kVA	A	kW	A	kW
$U_n = 400\text{ V}$											
03A0-3	R1	3.0	4.1	3.0	1.1	2.1	3.0	1.1	2.4	0.8	
03A9-3	R1	3.9	5.6	3.9	1.5	2.7	3.9	1.5	3.0	1.1	
05A8-3	R1	5.8	9.5	5.8	2.2	4.0	5.8	2.2	3.9	1.5	
07A5-3	R1	7.5	12.2	7.5	3	5.2	7.5	3	5.8	2.2	
09A8-3	R1	9.8	16	9.8	4	6.8	9.8	4	7.5	3	
14A3-3	R2	14.3	21	14.3	5.5	9.9	14.3	5.5	9.8	4	
17A7-3	R2	17.7	29	17.7	7.5	12	17.7	7.5	14.3	5.5	
25A5-3	R2	25	29	25	11	17	24	11	17	7.5	
035A-3	R3	35	54	35	15	24	35	15	25	11	
043A-3	R4	43	64	43	18.5	30	43	18.5	35	15	

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IEC RATINGS											
ACS880-01-...	Frame size	Input rating	Output ratings								
			Nominal use				Light-duty use		Heavy-duty use		
			I_1	I_{max}	I_2	P_n	S_n	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}
			A	A	A	kW	kVA	A	kW	A	kW
050A-3	R4	50	76	50	22	35	50	22	43	18.5	
069A-3	R5	69	104	69	30	48	69	30	50	22	
085A-3	R5	85	122	85	37	59	83	37	69	30	
103A-3	R6	103	148	103	45	71	103	45	85	37	
123A-3	R6	123	178	123	55	85	123	55	103	45	
173A-3	R7	173	287	173	75	120	173	75	123	55	
202A-3	R7	202	287	202	90	140	196	90	169	75	
245A-3	R8	245	350	245	110	170	245	110	202	90	
290A-3	R8	290	418	290	132	201	278	132	245*	110	
343A-3	R9	343	498	343	160	238	343	160	290	132	
427A-3	R9	427	545	427	200	296	400	200	343**	160	
$U_n = 690\text{ V}$											
010A-7	R5	10	29	10	7.5	12	10	7.5	9.8	5.5	
14A5-7	R5	14.5	29	14.5	11	17	14.5	11	10	7.5	
20A2-7	R5	20.2	54	20.2	15	24	20.2	15	14.5	11	
24A8-7	R5	24.8	64	24.8	18.5	30	24.8	18.5	20.2	15	
29A0-7	R5	29	64	29	22	35	29	22	24.8	18.5	
39A9-7	R5	39.9	70	39.9	30	48	39.9	30	29	22	
47A5-7	R5	47.5	71	47.5	37	57	47	37	39.9	30	
060A-7	R6	60	124	60	45	72	60	45	47.5	37	
071A-7	R6	71	124	71	55	85	71	55	60	45	
100A-7	R7	100	198	100	75	120	100	75	71	55	
117A-7	R7	117	198	117	90	140	113	90	98	75	
143A-7	R8	143	274	143	110	171	143	110	117	90	
168A-7	R8	168	274	168	132	201	165	132	142	110	
199A-7	R9	199	384	199	160	238	199	160	168	132	
248A-7	R9	248	411	248	200	296	248	200	199	160	

■ Definitions

U_n Nominal voltage of the drive. For the input voltage range, see section "Electrical power network specification" in the hardware manual.

I_1 Nominal rms input current

I_2 Nominal output current (available continuously with no over-loading)

P_n Typical motor power in no-overload use

S_n	Apparent power
I_{Ld}	Continuous rms output current allowing 10% overload for 1 minute every 5 minutes
P_{Ld}	Typical motor power in light-overload use
I_{max}	Maximum output current. Available for 10 seconds at start, then as long as allowed by drive temperature.
I_{Hd}	Continuous rms output current allowing 50% overload for 1 minute every 5 minutes. * Continuous rms output current allowing 30% overload for 1 minute every 5 minutes. ** Continuous rms output current allowing 25% overload for 1 minute every 5 minutes.
P_{Hd}	Typical motor power in heavy-duty use

The ratings apply at an ambient temperature of 40 °C (104 °F).

To achieve the rated motor power given in the table, the rated current of the drive must be greater than or equal to the rated motor current.

Derating

■ Surrounding air temperature derating

See the hardware manual.

■ Altitude derating

See the hardware manual.

■ Deratings for special settings in the drive control program

Enabling special settings in the drive control program can require output current derating.

Ex motor, sine filter

The table below gives the deratings for these cases:

- drive is used with an ABB motor for explosive atmospheres (Ex) and "EX motor" in parameter 95.15 Special HW settings is enabled
- sine filter given in the selection table in the hardware manual is used and "ABB sine filter" in parameter 95.15 Special HW settings is enabled

With other than the recommended sine filters (see the hardware manual) and non-ABB Ex motors, contact ABB.

ACS880-01-...	Setting of parameter 95.15: Ex motor enabled				Setting of parameter 95.15: ABB sine filter enabled			
	Drive output ratings				Drive output ratings			
	Nominal use		Light-duty use	Heavy-duty use	Nominal use		Light-duty use	Heavy-duty use
	I_2	P_n	I_{Ld}	I_{Hd}	I_2	P_n	I_{Ld}	I_{Hd}
	A	kW	A	A	A	kW	A	A
$U_n = 400\text{ V}$								
03A0-3	3.3	1.1	3.1	2.4	3.1	0.75	2.9	2.3
03A9-3	4.0	1.5	3.8	3.3	3.8	1.1	3.6	3.1
05A8-3	8.0	3.0	7.6	5.6	7.2	2.2	6.8	5.3
07A5-3	10.0	4.0	9.5	8.0	9.2	3.0	8.7	7.2
09A8-3	12.9	5.5	12.0	10.0	12.1	4.0	11.5	9.2
14A3-3	17	7.5	16	12.6	16	5.5	15	12
17A7-3	25	11	24	17	23	7.5	22	16
25A5-3	25	11	24	17	23	7.5	22	16
035A-3	38	18.5	36	32	36	15	34	31
043A-3	45	22	43	38	43	18.5	41	36
050A-3	61	30	58	45	58	22	55	43
069A-3	72	37	68	61	64	30	61	58
085A-3	87	45	83	72	77	37	73	64

ACS880-01-...	Setting of parameter 95.15: Ex motor enabled				Setting of parameter 95.15: ABB sine filter enabled			
	Drive output ratings				Drive output ratings			
	Nominal use		Light-duty use	Heavy-duty use	Nominal use		Light-duty use	Heavy-duty use
	I_2	P_n	I_{Ld}	I_{Hd}	I_2	P_n	I_{Ld}	I_{Hd}
	A	kW	A	A	A	kW	A	A
103A-3	97	45	92	87	91	45	86	77
123A-3	134	55	127	97	126	55	120	91
173A-3	195	90	185	160	186	90	177	152
202A-3	195	90	185	160	186	90	177	152
245A-3	225	110	214	195	209	110	199	186
290A-3	269	132	256	225*	249	132	237	209*
343A-3	325	160	309	269	296	160	281	249
427A-3	385	200	366	325**	352	160	334	296**
$U_n = 690\text{ V}$								
010A-7	18	15	17	14	17	11	16	13.5
14A5-7	18	15	17	14	17	11	16	13.5
20A2-7	26	22	25	22	24	18.5	22.8	21
24A8-7	35	30	33	26	33	22	31	24
29A0-7	35	30	33	26	33	22	31	24
39A9-7	42	37	40	35	40	30	38	33
47A5-7	49	45	47	42	46	37	44	40
060A-7	84	75	80	61	68	55	65	49
071A-7	84	75	80	61	68	55	65	49
100A-7	119	110	113	98	101	90	96	83
117A-7	119	110	113	98	101	90	96	83
143A-7	154	132	146	126	137	110	130	112
168A-7	154	132	146	126	137	110	130	112
199A-7	184	160	175	154	161	132	153	137
248A-7	238	200	226	184	207	160	197	161

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Definitions

- U_n Nominal voltage of the drive
 I_2 Nominal output current (available continuously with no over-loading)
 P_n Typical motor power in no-overload use
 I_{Ld} Continuous rms output current allowing 10% overload for 1 minute every 5 minutes
 I_{Hd} Continuous rms output current allowing 50% overload for 1 minute every 5 minutes.
 * Continuous rms output current allowing 30% overload for 1 minute every 5 minutes.
 ** Continuous rms output current allowing 25% overload for 1 minute every 5 minutes.
 P_{Hd} Typical motor power in heavy-duty use
 The ratings apply at an ambient temperature of 40 °C (104 °F).

Low noise optimization

The table below gives the deratings when "Low noise optimization" is selected in Parameter 97.09 Switching freq mode.

ACS880-01-...	Output ratings when selection "Low noise optimization" in parameter 97.09 Switching freq mode is enabled		
	Nominal use	Light-duty use	Heavy-duty use
	I_2	I_{Ld}	I_{Hd}
	A	A	A
$U_n = 400\text{ V}$			
03A0-3	3.0	2.9	2.2
03A9-3	3.6	3.4	3.0
05A8-3	6.5	6.2	5.0
07A5-3	8.5	8.1	6.5
09A8-3	11.3	10.7	8.5
14A3-3	15	14.3	11.3
17A7-3	22	20.9	15.0
25A5-3	22	20.9	15.0
035A-3	35	33	30
043A-3	41	39	35
050A-3	56	53	41
069A-3	56	53	47
085A-3	67	64	56
103A-3	86	82	67

ACS880-01-...	Output ratings when selection "Low noise optimization" in parameter 97.09 Switching freq mode is enabled		
	Nominal use	Light-duty use	Heavy-duty use
	I_2	I_{Ld}	I_{Hd}
	A	A	A
123A-3	118	112	86
173A-3	178	169	146
202A-3	178	169	146
245A-3	194	184	178
290A-3	236	224	194*
343A-3	274	260	236
427A-3	325	309	274**
$U_n = 690 \text{ V}$			
010A-7	17	16.2	13.5
14A5-7	17	16.2	13.5
20A2-7	24	22.8	21.0
24A8-7	33	31	24
29A0-7	33	31	24
39A9-7	40	38	33
47A5-7	46	44	40
060A-7	68	65	49
071A-7	68	65	49
100A-7	101	96	83
117A-7	101	96	83
143A-7	122	116	101
168A-7	122	116	101
199A-7	138	131	122
248A-7	178	169	138

Definitions

U_n Nominal voltage of the drive. For the input voltage range, see section "Electrical power network specification" in the hardware manual.

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- I_2 Nominal output current (available continuously with no over-loading)
 P_n Typical motor power in no-overload use
 I_{Ld} Continuous rms output current allowing 10% overload for 1 minute every 5 minutes
 I_{Hd} Continuous rms output current allowing 50% overload for 1 minute every 5 minutes.
 * Continuous rms output current allowing 30% overload for 1 minute every 5 minutes.
 ** Continuous rms output current allowing 25% overload for 1 minute every 5 minutes.
 P_{Hd} Typical motor power in heavy-duty use
 The ratings apply at an ambient temperature of 40 °C (104 °F).

High speed mode

Selection "High speed mode" of parameter 95.15 Special HW settings improves control performance at high output frequencies. ABB recommends it to be selected with output frequency of 120 Hz and above.

This table gives the drive ratings for the maximum output frequency when "High speed mode" in parameter 95.15 Special HW settings is enabled. With smaller output frequencies, the current derating is less. Contact ABB for operation above the recommended maximum output frequency or for the output current derating with output frequencies above 120 Hz and below the maximum output frequency.

At the 120 Hz output frequency: no derating.

ACS880-01-...	Output ratings when "High-speed mode" in parameter 95.15 Special HW settings enabled			
	f_{max}	Nominal use	Light-duty use	Heavy-duty use
		I_2	I_{Ld}	I_{Hd}
	Hz	A	A	A
$U_n = 400\text{ V}$				
03A0-3	500	3.0	2.9	2.2
03A9-3	500	3.6	3.4	3.0
05A8-3	500	6.5	6.2	5.0
07A5-3	500	8.5	8.1	6.5
09A8-3	500	11.3	10.7	8.5
14A3-3	500	15	14.3	11.3
17A7-3	500	22	20.9	15.0
25A5-3	500	22	20.9	15.0
035A-3	500	35	33	30
043A-3	500	41	39	35
050A-3	500	56	53	41

ACS880-01-...	Output ratings when "High-speed mode" in parameter 95.15 Special HW settings enabled			
	f_{\max}	Nominal use	Light-duty use	Heavy-duty use
		I_2	I_{Ld}	I_{Hd}
	Hz	A	A	A
069A-3	500	56	53	47
085A-3	500	67	64	56
103A-3	500	77	73	67
123A-3	500	106	101	77
173A-3	500	165	157	135
202A-3	500	165	157	135
245A-3	500	170	162	143
290A-3	500	202	192	170*
343A-3	500	236	224	202
427A-3	500	280	266	236**
$U_n = 690 \text{ V}$				
010A-7	500	16	15	13
14A5-7	500	16	15	13
20A2-7	500	23	22	20
24A8-7	500	32	30	23
29A0-7	500	32	30	23
39A9-7	500	38	36	32
47A5-7	500	44	42	38
060A-7	500	53	50	44
071A-7	500	53	50	44
100A-7	500	83	79	68
117A-7	500	83	79	68
143A-7	500	96	91	83
168A-7	500	96	91	83
199A-7	500	101	96	83
248A-7	500	130	124	101

Definitions

f	Output frequency
f_{max}	Maximum output frequency with High speed mode
U_n	Nominal voltage of the drive. For the input voltage range, see section "Electrical power network specification" in the hardware manual.
I_2	Continuous rms output current. No overload capability at 40 °C (104 °F)
P_n	Typical motor power in no-overload use
I_{Ld}	Continuous rms output current allowing 10% overload for 1 minute every 5 minutes
I_{Hd}	Continuous rms output current allowing 50% overload for 1 minute every 5 minutes. * Continuous rms output current allowing 30% overload for 1 minute every 5 minutes. ** Continuous rms output current allowing 25% overload for 1 minute every 5 minutes.

Fuses (IEC)

gG and aR fuses for protection against short-circuit in the input power cable or drive are listed below. Either fuse type can be used for frames R1 to R6 if it operates rapidly enough. The operating time depends on the supply network impedance and the cross-sectional area and length of the supply cable. For frames R7 to R9 ultrarapid (aR) fuses must be used.

Note 1: See also section "Implementing short-circuit and thermal overload protection" in the hardware manual.

Note 2: Fuses with higher current rating than the recommended ones must not be used. Fuses with lower current rating can be used.

Note 3: Fuses from other manufacturers can be used if they meet the ratings and the melting curve of the fuse does not exceed the melting curve of the fuse given in the table.

■ aR fuses DIN 43653 stud-mount

ABB recommends stud-mount fuses for better cooling but blade style fuses can be used as well.

Ultrarapid (aR) fuses stud-mount (one fuse per phase)							
ACS880-01-...	Min. short-circuit current ¹⁾ (A)	Input current (A)	Fuse				
			A	A ² s	V	Bussmann type	Type DIN 43653
$U_n = 400 \text{ V}$							
03A0-3	65	3.0	25	130	690	170M1311	000
03A9-3	65	3.9	25	130	690	170M1311	000
05A8-3	65	5.8	25	130	690	170M1311	000

Ultrarapid (aR) fuses stud-mount (one fuse per phase)							
ACS880-01-...	Min. short-circuit current ¹⁾ (A)	Input current (A)	Fuse				
			A	A ² s	V	Bussmann type	Type DIN 43653
07A5-3	65	7.5	25	130	690	170M1311	000
09A8-3	65	9.8	25	130	690	170M1311	000
14A3-3	120	14.3	25	130	690	170M1311	000
17A7-3	120	17.7	40	460	690	170M1313	000
25A5-3	120	25	40	460	690	170M1313	000
035A-3	170	35	63	1450	690	170M1315	000
043A-3	280	43	63	1450	690	170M1315	000
050A-3	380	50	80	2250	690	170M1316	000
069A-3	480	69	125	8500	690	170M1318	000
085A-3	700	85	160	16000	690	170M1319	000
103A-3	700	103	200	15000	690	170M3015	1
123A-3	1000	123	250	28500	690	170M3016	1
173A-3	1520	173	315	46500	690	170M3017	1
202A-3	1520	202	350	68500	690	170M3018	1
245A-3	2050	245	450	105000	690	170M5009	2
290A-3	2200	290	500	145000	690	170M5010	2
343A-3	3100	343	630	275000	690	170M5012	2
427A-3	3600	427	700	405000	690	170M5013	2
$U_N = 690\text{ V}$							
010A-7	120	10	20	78	690	170M1310	000
14A5-7	120	14.5	20	78	690	170M1310	000
20A2-7	160	20.2	32	270	690	170M1312	000
24A8-7	170	24.8	40	460	690	170M1313	000
29A0-7	170	29	50	770	690	170M1314	000
39A9-7	280	39.9	63	1450	690	170M1315	000
47A5-7	280	47.5	80	2550	690	170M1316	000

Ultrarapid (aR) fuses stud-mount (one fuse per phase)							
ACS880-01-...	Min. short-circuit current ¹⁾ (A)	Input current (A)	Fuse				
			A	A ² s	V	Bussmann type	Type DIN 43653
060A-7	700	60	100	4650	690	170M1317	000
071A-7	700	71	125	8500	690	170M1318	000
100A-7	700	100	125	8500	690	170M1318	000
117A-7	700	117	200	15000	690	170M1315	1
143A-7	1280	143	250	28500	690	170M3016	1
168A-7	1280	168	250	28500	690	170M3016	1
199A-7	1610	199	315	46500	690	170M3017	1
248A-7	2200	248	350	68500	690	170M3018	1

¹⁾ minimum short-circuit current of the installation

■ aR fuses DIN 43620 blade style

Ultrarapid (aR) fuses blade style (one fuse per phase)							
ACS880-01-...	Min. short-circuit current ¹⁾ (A)	Input current (A)	Fuse				
			A	A ² s	V	Bussmann type	Type DIN 43620
$U_n = 400 \text{ V}$							
03A0-3	65	3.0	25	130	690	170M1561	000
03A9-3	65	3.9	25	130	690	170M1561	000
05A8-3	65	5.8	25	130	690	170M1561	000
07A5-3	65	7.5	25	130	690	170M1561	000
09A8-3	65	9.8	25	130	690	170M1561	000
14A3-3	120	14.3	40	460	690	170M1563	000
17A7-3	120	17.7	40	460	690	170M1563	000
25A5-3	120	25	40	460	690	170M1563	000
035A-3	170	35	63	1450	690	170M1565	000
043A-3	280	43	80	2550	690	170M1566	000

Ultrarapid (aR) fuses blade style (one fuse per phase)							
ACS880-01-...	Min. short-circuit current ¹⁾ (A)	Input current (A)	Fuse				
			A	A ² s	V	Bussmann type	Type DIN 43620
050A-3	380	50	100	4650	690	170M1567	000
069A-3	480	69	125	8500	690	170M1568	000
085A-3	700	85	160	16000	690	170M1569	000
103A-3	700	103	315	46500	690	170M3817	1
123A-3	1000	123	315	46500	690	170M3817	1
173A-3	1520	173	450	105000	690	170M5809	1
202A-3	1520	202	500	145000	690	170M5810	1
245A-3	2050	245	630	275000	690	170M5812	2
290A-3	2200	290	800	490000	690	170M6812D	2
343A-3	3100	343	1000	985000	690	170M6814D	2
427A-3	3600	427	1250	2150000	690	170M8554D	2
$U_n = 690 \text{ V}$							
010A-7	120	10	40	460	690	170M1563	000
14A5-7	120	14.5	40	460	690	170M1563	000
20A2-7	160	20.2	50	770	690	170M1564	000
24A8-7	170	24.8	63	1450	690	170M1565	000
29A0-7	170	29	63	1460	690	170M1565	000
39A9-7	280	39.9	80	2550	690	170M1566	000
47A5-7	280	47.5	80	2550	690	170M1566	000
060A-7	700	60	160	16000	690	170M1569	000
071A-7	700	71	160	16000	690	170M1569	000
100A-7	700	100	400	74000	690	170M3816	2
117A-7	700	117	400	74000	690	170M3816	2
143A-7	1280	143	500	145000	690	170M5810	2
168A-7	1280	168	500	145000	690	170M5810	2
199A-7	1610	199	700	320000	690	170M6811D	3

Ultrarapid (aR) fuses blade style (one fuse per phase)							
ACS880-01-...	Min. short-circuit current ¹⁾ (A)	Input current (A)	Fuse				
			A	A ² s	V	Bussmann type	Type DIN 43620
248A-7	2200	248	700	320000	690	170M6811D	3

¹⁾ minimum short-circuit current of the installation

■ gG fuses (frames R1 to R6)

Check on the fuse time-current curve to make sure that the operating time of the fuse is below 0.5 seconds. Obey the local regulations.

gG fuses (one fuse per phase)							
ACS880-01-...	Min. short-circuit current ¹⁾ (A)	Input current (A)	Fuse				
			A	A ² s	V	ABB type	Type IEC 60269
$U_n = 400 \text{ V}$							
03A0-3	40	3.0	6	110	500	OFAF000H6	000
03A9-3	40	3.9	6	110	500	OFAF000H6	000
05A8-3	80	5.8	10	355	500	OFAF000H10	000
07A5-3	120	7.5	16	700	500	OFAF000H16	000
09A8-3	120	9.8	16	700	500	OFAF000H16	000
14A3-3	200	14.3	25	2500	500	OFAF000H25	000
17A7-3	250	17.7	32	4500	500	OFAF000H32	000
25A5-3	250	25	32	4500	500	OFAF000H32	000
035A-3	400	35	50	15400	500	OFAF000H50	000
043A-3	500	43	63	21300	500	OFAF000H63	000
050A-3	800	50	80	37000	500	OFAF000H80	000
069A-3	1000	69	100	63600	500	OFAF000H100	000
085A-3	1000	85	100	63600	500	OFAF000H100	000
103A-3	1300	103	125	103000	500	OFAF000H125	00

gG fuses (one fuse per phase)							
ACS880-01-...	Min. short-circuit current ¹⁾ (A)	Input current (A)	Fuse				
			A	A ² _s	V	ABB type	Type IEC 60269
123A-3	1700	123	160	185000	500	OFAF00H160	00
$U_n = 690 \text{ V}$							
010A-7	280	10	35	12000	690	OFAA000GG35	000
14A5-7	280	14.5	35	12000	690	OFAA000GG35	000
20A2-7	450	20.2	50	24000	690	OFAA000GG50	000
24A8-7	520	24.8	63	30000	690	OFAA000GG63	000
29A0-7	520	29	63	30000	690	OFAA000GG63	000
39A9-7	800	39.9	80	51000	690	OFAA0GG80	0
47A5-7	800	47.5	80	51000	690	OFAA0GG80	0
060A-7	1700	60	160	240000	690	OFAA1GG160	1
071A-7	1700	71	160	240000	690	OFAA1GG160	1

1) minimum short-circuit current of the installation

■ Quick guide for selecting between gG and aR fuses

The combinations (cable size, cable length, transformer size and fuse type) in this table fulfil the minimum requirements for the correct operation of the fuse. Use this table to select between gG and aR fuses or calculate the short-circuit current of the installation as described in section "Calculating the short-circuit current of the installation" in the hardware manual.

ACS880-01-...	Cable type		Supply transformer minimum apparent power S_n (kVA)					
	Copper	Aluminum	Maximum cable length with gG fuses			Maximum cable length with aR fuses		
	mm ²	mm ²	10 m	50 m	100 m	10 m	100 m	200 m
$U_n = 400 \text{ V}$								
03A0-3	3×1.5	-	1.9	1.9	2.0	3.1	3.4	5.0
03A9-3	3×1.5	-	1.9	1.9	2.0	3.1	3.4	5.0
05A8-3	3×1.5	-	3.8	4.0	4.4	3.1	3.4	5.0
07A5-3	3×1.5	-	5.8	6.2	8.4	3.1	3.4	5.0

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ACS880-01-...	Cable type		Supply transformer minimum apparent power S_n (kVA)					
	Copper	Aluminum	Maximum cable length with gG fuses			Maximum cable length with aR fuses		
	mm ²	mm ²	10 m	50 m	100 m	10 m	100 m	200 m
09A8-3	3×1.5	-	5.8	6.2	8.4	3.1	3.4	5.0
14A3-3	3×6	-	9.6	9.8	10	5.8	5.9	6.2
17A7-3	3×6	-	12	12	13	5.8	5.9	6.2
25A5-3	3×6	-	12	12	13	5.8	5.9	6.2
035A-3	3×10	-	19	20	21	8.2	8.3	8.7
043A-3	3×16	3×25	24	24	26	13	14	15
050A-3	3×25	3×25	39	39	42	18	19	20
069A-3	3×35	3×35	48	49	52	23	24	25
085A-3	3×35	3×50	48	49	52	34	35	38
103A-3	3×50	3×70	63	65	68	34	35	37
123A-3	3×95	3×95	82	85	88	48	50	53
173A-3	3×150	3×185	269	298	357	73	78	84
202A-3	3×150	3×185	269	298	357	73	78	84
245A-3	2x(3x70)	2x(3x95)	311	335	393	99	103	111
290A-3	2x(3x95)	2x(3x120)	380	411	478	106	111	118
343A-3	2x(3x120)	2x(3x185)	459	502	591	150	159	173
427A-3	2x(3x150)	2x(3x240)	459	547	641	174	186	205
$U_n = 690$ V								
010A-7	3×4	-	23	23	23	9.9	10	10
14A5-7	3×4	-	23	23	23	9.9	10	10
20A2-7	3×10	3×25	37	37	38	13	13	13
24A8-7	3×10	3×25	43	43	44	14	14	14
29A0-7	3×10	3×25	43	43	44	14	14	14
39A9-7	3×16	3×25	66	67	68	23	23	24
47A5-7	3×16	3×25	66	67	68	23	23	24
060A-7	3×35	3×50	141	144	149	58	59	61
071A-7	3×35	3×50	141	144	149	58	59	61

ACS880-01-...	Cable type		Supply transformer minimum apparent power S_n (kVA)					
	Copper	Aluminum	Maximum cable length with gG fuses			Maximum cable length with aR fuses		
	mm ²	mm ²	10 m	50 m	100 m	10 m	100 m	200 m
100A-7	3x70	3x95	183	187	192	58	59	60
117A-7	3x70	3x95	183	187	192	58	59	60
143A-7	3x120	3x185	452	476	515	106	109	112
168A-7	3x120	3x185	452	476	515	106	109	112
199A-7	3x185	2x(3x95)	584	608	654	134	136	139
248A-7	3x240	2x(3x120)	584	605	640	183	187	193

Fuses (UL)

The UL Listed fuses in this manual are required for branch circuit protection and required per NEC. The drives are suitable for use on a circuit capable of delivering not more than 100 kA symmetrical amperes (rms) at 240 V, 480 V, and 600 V maximum when protected by the fuses described below.

Class T fuses are recommended below. Also allowed are UL Listed 248-8 Class J fast acting, time delay, and high speed fuses, 248-4 Class CC fast acting fuses and 248-17 Class CF fast acting and time delay fuses of the same nominal voltage and current rating.

Refer to notes below the tables.

ACS880-01-...	Input current	Fuse (one fuse per phase)			
	A	A	V	Bussmann type	UL class
$U_n = 575$ V					
010A-7	10	40	600	JJS-40	T
14A5-7	14.5	40	600	JJS-40	T
20A2-7	20.2	50	600	JJS-50	T
24A8-7	24.8	60	600	JJS-60	T
29A0-7	29	60	600	JJS-60	T
39A9-7	39.9	80	600	JJS-80	T
47A5-7	47.5	80	600	JJS-80	T
060A-7	60	150	600	JJS-150	T
071A-7	71	150	600	JJS-150	T
100A-7	100	200	600	JJS-200	T
117A-7	117	200	600	JJS-200	T
143A-7	143	300	600	JJS-300	T

ACS880-01-...	Input current	Fuse (one fuse per phase)			
	A	A	V	Bussmann type	UL class
168A-7	168	300	600	JJS-300	T
199A-7	199	400	600	JJS-400	T
248A-7	248	400	600	JJS-400	T

- Fuses are required as part of the installation, are not included in the base drive configuration and must be provided by others.
- Fuses with a higher current rating than specified must not be used.
- The UL listed fuses recommended by ABB are the required branch circuit protection per NEC. Circuit breakers listed in section Circuit breakers (UL) are also acceptable as branch circuit protection.
- The recommended size or smaller UL listed 248 fast acting, time delay, or high speed fuses must be used to maintain the UL listing of the drive. Additional protection can be used. Refer to local codes and regulations.
- A fuse of a different class can be used at the high fault rating where the I_{peak} and I^2t of the new fuse is not greater than that of the specified fuse.
- UL listed 248 fast acting, time delay, or high speed fuses from other manufacturers can be used if they meet the same class and rating requirements specified in the rules above.
- When installing a drive, always follow ABB installation instructions, NEC requirements and local codes.
- Only 480 V R9 drives with serial numbers beginning 1204205581 when built in Finland and beginning 22106xxxxx when built in the U.S. may be protected with fuses other than Class T fuses.
- Alternative fuses can be used if they meet certain characteristics. For acceptable fuses, see the manual supplement ([3AXD50000645015](#)).

In multicable installations, install only one fuse per phase (not one fuse per conductor). See also section "Implementing short-circuit and thermal overload protection" in the hardware manual.

Losses, cooling data and noise

ACS880-01-...	Frame size	Air flow		Typical power loss ¹⁾ W	Noise dB (A)
		m ³ /h	ft ³ /min		
$U_n = 400 \text{ V}$					
03A0-3	R1	44	26	43	50
03A9-3	R1	44	26	58	50

ACS880-01-...	Frame size	Air flow		Typical power loss ¹⁾ W	Noise dB (A)
		m ³ /h	ft ³ /min		
05A8-3	R1	44	26	82	50
07A5-3	R1	44	26	109	50
09A8-3	R1	44	26	151	50
14A3-3	R2	88	52	198	59
17A7-3	R2	88	52	260	59
25A5-3	R2	88	52	427	59
035A-3	R3	134	79	478	60
043A-3	R4	134	79	543	64
050A-3	R4	280	165	666	64
069A-3	R5	280	165	885	64
085A-3	R5	280	165	1207	64
103A-3	R6	435	256	1256	68
123A-3	R6	435	256	1609	68
173A-3	R7	450	265	2244	67
202A-3	R7	450	265	2873	67
245A-3	R8	550	324	3218	68
290A-3	R8	550	324	3811	68
343A-3	R9	1150	677	4531	70
427A-3	R9	1150	677	6068	70
$U_n = 690$ V					
010A-7	R5	280	165	148	64
14A5-7	R5	280	165	199	64
20A2-7	R5	280	165	269	64
24A8-7	R5	280	165	338	64
29A0-7	R5	280	165	408	64
39A9-7	R5	280	165	538	64
47A5-7	R5	280	165	677	64
060A-7	R6	435	256	909	68
071A-7	R6	435	256	1132	68
100A-7	R7	450	265	1568	67
117A-7	R7	450	265	1963	67
143A-7	R8	550	324	2163	68
168A-7	R8	550	324	2767	68
199A-7	R9	1150	677	2927	70
248A-7	R9	1150	677	3988	70

¹⁾ Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the motor nominal current.

■ Cooling air flow and heat dissipation for flange mounting (option +C135)

ACS880-01-...	Frame size	Air flow (option +C135)		Heat dissipation (option +C135)	
		Heatsink	Front	Heatsink	Front
		m ³ /h	m ³ /h	W	W
$U_n = 400 \text{ V}$					
03A0-3	R1	44	9	23	25
03A9-3	R1	44	9	33	25
05A8-3	R1	44	9	57	26
07A5-3	R1	44	9	83	26
09A8-3	R1	44	9	124	27
14A3-3	R2	88	16	159	39
17A7-3	R2	88	16	220	41
25A5-3	R2	88	16	381	46
035A-3	R3	134	22	415	63
043A-3	R4	134	32	446	96
050A-3	R4	280	32	558	108
069A-3	R5	280	42	764	121
085A-3	R5	280	42	1052	154
103A-3	R6	435	52	1113	143
123A-3	R6	435	52	1454	154
173A-3	R7	450	75	2045	199
202A-3	R7	450	75	2646	227
245A-3	R8	550	120	2947	271
290A-3	R8	550	120	3489	322
343A-3	R9	1150	170	4131	400
427A-3	R9	1150	170	5580	488
$U_n = 690 \text{ V}$					
010A-7	R5	280	42	80	68
14A5-7	R5	280	42	128	70

ACS880-01-...	Frame size	Air flow (option +C135)		Heat dissipation (option +C135)	
		Heatsink	Front	Heatsink	Front
		m ³ /h	m ³ /h	W	W
20A2-7	R5	280	42	194	75
24A8-7	R5	280	42	258	79
29A0-7	R5	280	42	324	84
39A9-7	R5	280	42	453	85
47A5-7	R5	280	42	584	93
060A-7	R6	435	52	786	123
071A-7	R6	435	52	1005	127
100A-7	R7	450	75	1423	145
117A-7	R7	450	75	1808	155
143A-7	R8	550	120	1984	179
168A-7	R8	550	120	2570	198
199A-7	R9	1150	170	2632	295
248A-7	R9	1150	170	3659	329

Motor connection data

See the hardware manual.

Energy efficiency data (ecodesign)

Energy efficiency data according to IEC-61800-9-2 is available from the ecodesign tool (<https://ecodesign.drivesmotors.abb.com>).



Further information

Product and service inquiries

Address any inquiries about the product to your local ABB representative, quoting the type designation and serial number of the unit in question. A listing of ABB sales, support and service contacts can be found by navigating to www.abb.com/searchchannels.

Product training

For information on ABB product training, navigate to new.abb.com/service/training.

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Your comments on our manuals are welcome. Navigate to new.abb.com/drives/manuals-feedback-form.

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