

Wall-mounted single drives, ACS880-01

Our wall-mounted drives are designed on ABB's common drives architecture. They are customized to the precise needs of industries such as oil and gas, mining, metals, chemicals, cement, power plants, material handling, pulp and paper, sawmills and marine. They are designed to control a wide range of applications including cranes, extruders, winches, winders, conveyors, mixers, compressors, pumps and fans. The drive comes in nine different frame sizes (R1 to R9) for easy installation and commissioning.

At the heart of the drive is direct torque control (DTC), ABB's premier motor control technology. The extensive range of options include EMC filters, encoder and resolver interfaces, du/dt filters, sine filters, chokes and brake resistors, as well as application specific software. Built-in safety features reduce the need for external safety components. Multiple drives can be daisy-chained for synchronized drive-to-drive communication.

The drives offering includes enclosure classes IP20, IP21 and IP55 for dusty and wet environments. Our offering also covers an option for flange mounting with IP55 back side protection. In flange mounting the control electronics are separated from the cooling airflow for better thermal management.

ABB provides an extensive selection of support documentation for planning including dimension drawings in different formats, EPLAN P8 macros and line apparatus selection tool for selecting external components on the line side and motor side of the drive.

The type approved ACS880-01 marine drive, provides advanced reliability and availability at sea. The drive fulfills marine and offshore requirements and the design and operations have been tested according to marine type approval requirements. ACS880-01 comes with marine type approval from various key classification bodies.

Main features

- Enclosure classes IP20, IP21 and IP55 for different environments
- Compact design for easy installation, commissioning and maintenance
- Integrated safety including safe torque off (STO) as standard and the optional safety functions module, (TÜV Nord certified)
- Supports various motor types including synchronous reluctance motors
- Intuitive control panel with USB connection
- Removable memory unit for easy maintenance
- Drive composer PC tool for commissioning and configuration
- Primary control program - common software used throughout the ACS880 drive series
- Control unit supporting a wide range of fieldbuses, feedback devices and input/output options
- Coated boards as standard
- Controllable cooling fan
- Incoming air temperature measurement for protecting the drive from different temperature related failure mechanisms
- Built-in braking chopper, option for frame sizes R5 to R9
- EMC filter option
- du/dt filter option for motor protection
- Built-in choke
- Supporting optimized cabinet mounting with option (P940, +P944)
- Flange mounting option



ACS880-01,
frame sizes R1 to R9, IP21



ACS880-01,
frame sizes R1, R8 and R5, IP20



ACS880-01,
frame sizes R1, R8 and R5, IP55

Ratings, types and voltages

Wall-mounted drives, ACS880-01

$U_N = 230 \text{ V}$ (range 208 to 240 V). The power ratings are valid at nominal voltage 230 V (0.75 to 100 Hp).

Nominal ratings						Noise level	Heat dissipation	Air flow	Type designation	Frame size
Light-duty use (10% overload for 1 min)			Heavy-duty use (50% overload for 1 min)							
I_{Ld}	P_{Ld}		I_{2Hd}	P_{Hd}						
A	Hp	kW	A	Hp	kW	dB(A)	W	cfm		
4.4	1	0.75	3.7	0.75	0.55	46	73	26	ACS880-01-04A6-2	R1
6.3	1.5	1.1	4.6	1	0.75	46	94	26	ACS880-01-06A6-2	R1
7.1	2	1.5	6.6	1.5	1.1	46	122	26	ACS880-01-07A5-2	R1
10.1	3	2.2	7.5	2	1.5	46	172	26	ACS880-01-10A6-2	R1
16	5	4	10.6	3	3	51	232	52	ACS880-01-16A8-2	R2
23.1	7.5	5.5	16.8	5	4	51	337	52	ACS880-01-24A3-2	R2
29.3	10	7.5	24.3	7.5	5.5	57	457	79	ACS880-01-031A-2	R3
44	15	11	38	10	7.5	62	500	79	ACS880-01-046A-2	R4
58	20	15	45	15	11	62	630	165	ACS880-01-061A-2	R4
71	25	18.5	61	20	15	62	680	165	ACS880-01-075A-2	R5
83	30	22	72	25	18.5	62	730	165	ACS880-01-087A-2	R5
109	40	30	87	30	22	67	840	256	ACS880-01-115A-2	R6
138	50	37	105	40	30	67	940	256	ACS880-01-145A-2	R6
162	60	45	145	50	37	67	1260	265	ACS880-01-170A-2	R7
196	75	55	169	60	45	67	1500	265	ACS880-01-206A-2	R7
260	100	75	213	75	55	65	2100	324	ACS880-01-274A-2 ³	R8

$U_N = 500 \text{ V}$ (range 380 to 500 V). The power ratings are valid at nominal voltage 480 V (0.75 to 350 Hp).

Nominal ratings						Noise level	Heat dissipation	Air flow	Type designation	Frame size
Light-duty use (10% overload for 1 min)			Heavy-duty use (50% overload for 1 min)							
I_{Ld}	P_{Ld}		I_{2Hd}	P_{Hd}						
A	Hp	kW	A	Hp	kW	dB(A)	W	cfm		
2.1	1	0.75	1.7	0.75	0.55	46	30	26	ACS880-01-02A1-5	R1
3	1.5	1.1	2.1	1	0.75	46	40	26	ACS880-01-03A0-5	R1
3.4	2	1.5	3	1.5	1.1	46	52	26	ACS880-01-03A4-5	R1
4.8	3	2.2	3.4	2	1.5	46	73	26	ACS880-01-04A8-5	R1
7.6	5	4	5.2	3	3	46	122	26	ACS880-01-07A6-5	R1
11	7.5	5.5	7.6	5	4	46	172	26	ACS880-01-11A0-5	R1
14	10	7.5	11	7.5	5.5	51	232	52	ACS880-01-014A-5	R2
21	15	11	14	10	7.5	51	337	52	ACS880-01-021A-5	R2
27	20	15	21	15	11	57	457	79	ACS880-01-027A-5	R3
34	25	18.5	27	20	15	57	562	79	ACS880-01-034A-5	R3
40	30	22	34	25	18.5	62	667	79	ACS880-01-040A-5	R4
52	40	30	40	30	22	62	907	165	ACS880-01-052A-5	R4
65	50	37	52	40	30	62	1117	165	ACS880-01-065A-5	R5
77	60	45	65	50	37	62	1120	165	ACS880-01-077A-5	R5
96	75	55	77	60	45	67	1295	256	ACS880-01-096A-5	R6
124	100	75	96	75	55	67	1440	256	ACS880-01-124A-5	R6
156	125	90	124	100	75	67	1940	265	ACS880-01-156A-5	R7
180	150	110	156	125	90	67	2310	265	ACS880-01-180A-5	R7
240	200	132	180	150	110	65	3300	324	ACS880-01-240A-5 ⁴	R8
302	250	187.5	260	200	132	68	4200	677	ACS880-01-302A-5 ³	R9
361	300	200	302	250	188	68	4800	677	ACS880-01-361A-5 ⁶	R9
414 ¹⁾	350	250	361 ²⁾	300	200	68	6000	677	ACS880-01-414A-5 ⁵	R9

Light-duty use

I_{Ld} Continuous rms output current allowing 10% overload for 1 minute every 5 minutes.

P_{Ld} Typical motor power in light-overload use.

Heavy-duty use

I_{2Hd} Continuous rms output current allowing 50% overload for 1 minute every 5 minutes.

P_{Hd} Typical motor power in heavy-duty use.

Ratings apply at an ambient temperature of 40 °C (104 °F) unless otherwise noted.

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

¹⁾ For drives with enclosure class UL type 1 (IP21), the ratings apply at 30 °C (86 °F) ambient temperature. At ambient temperature 40 °C (104°F), rating is 393A

²⁾ 125% overload for 1 minute, every 5 minutes.

³⁾ For drives with enclosure class UL type 12 (IP55), the ratings apply at 40 °C ambient temperature. At higher temperature the derating is 1%/1°C from 40 to 45 °C and 2.5%/1 °C from 45 to 55 °C.

⁴⁾ For drives with enclosure class UL type 12 (IP55), the ratings apply at 40 °C ambient temperature. At higher temperature the derating is 1%/1°C from 40 to 50 °C and 2.5%/1 °C from 50 to 55 °C.

⁵⁾ For drives with enclosure class UL type 12 (IP55), the maximum ambient temperature is 35 °C (95 °F).

⁶⁾ For drives with enclosure class UL type 12 (IP55), the ratings apply at 40 °C ambient temperature. At higher temperature the derating is 1%/1 °C from 40 to 45 °C, 2.5%/1 °C from 45 to 50 °C, and 5%/1 °C from 50 to 55 °C.

Ratings, types and voltages

Wall-mounted drives, ACS880-01

$U_N = 690 \text{ V}$ (range 525 to 690 V). The power ratings are valid at nominal voltage 575 V (5 to 250 Hp)

Nominal ratings						Noise level	Heat dissipation	Air flow	Type designation	Frame size
Light-duty use (10% overload for 1 min)			Heavy-duty use (50% overload for 1 min)							
I_{Ld}	P_{Ld}		I_{2Hd}	P_{Hd}						
A	Hp	kW	A	Hp	kW	dB(A)	W	cfm		
9	7.5	5.5	6.1	5	4	62	217	165	ACS880-01-07A3-7	R5
11	10	7.5	9	7.5	5.5	62	284	165	ACS880-01-09A8-7	R5
17	15	11	11	10	7.5	62	399	165	ACS880-01-14A2-7	R5
22	20	15	17	15	11	62	490	165	ACS880-01-018A-7	R5
27	25	18.5	22	20	15	62	578	165	ACS880-01-022A-7	R5
32	30	22	27	25	18.5	62	660	165	ACS880-01-026A-7	R5
41	40	30	32	30	22	62	864	165	ACS880-01-035A-7	R5
52	50	37	41	40	30	62	998	165	ACS880-01-042A-7	R5
52	50	37	41	40	30	62	1120	165	ACS880-01-049A-7	R5
62	60	45	52	50	37	67	1295	256	ACS880-01-061A-7	R6
77	75	55	62	60	45	67	1440	256	ACS880-01-084A-7	R6
99	100	75	77	75	55	67	1940	265	ACS880-01-098A-7	R7
125	125	90	99	100	75	67	2310	265	ACS880-01-119A-7	R7
144	150	110	125	125	90	65	3300	324	ACS880-01-142A-7	R8
180	200	132	144	150	110	65	3900	324	ACS880-01-174A-7 ³	R8
242	250	160	192	200	132	68	4200	677	ACS880-01-210A-7 ⁷	R9
271	250	200	2421	250	160	68	4800	677	ACS880-01-271A-7 ⁵	R9

Frame size	Height (H1)		Height (H2)		Width		Depth (+P940)		Depth (+P944)		Weight	
	UL type 1	IP21	UL type 1 open	IP20	UL type 1	IP21	UL type 1 open	IP20	UL type open	IP21	UL type 1	IP21
	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(lbs)	(kg)	(lbs)	(kg)
R1	16	405	14.6	370 ⁸⁾	6.1	155	8.9	226	8.9	226	13	6
R2	16	405	14.6	370 ⁸⁾	6.1	155	9.8	249	10.0	249	18	8
R3	18.5	471	16.5	420 ⁸⁾	6.7	172	10.1	256	10.3	261	22	10
R4	22.9	580	18.2	462 ⁸⁾	8.2	203	13.1	333	10.8	274	41	18.5
R5	28.8	732	23.5	596 ⁸⁾	8.2	203	13.1	333	10.8	274	51	23
R6	28.6	727	21.6	548	9.9	252	14.1	357	14.1	357	99	70
R7	34.6	880	23.6	600	11.2	284	14.4	365	14.4	365	121	55
R8	38.0	965	26.8	680	11.8	300	15.2	386	15.2	386	155	70
R9	37.6	955	26.7	680	15.0	380	16.3	413	16.3	413	216	98

H1 = Height with cable entry box

H2 = Height without cable entry box

⁸⁾ Comes with main power clamp (Note: IP20 variant only)

Frame size	Height (H)		Width (W)		Depth (D)		Weight	
	UL type 12	IP55	UL type 12	IP55	UL type 12	IP55	UL type 12	IP55
	(in)	(mm)	(in)	(mm)	(in)	(mm)	(lbs)	(kg)
R1	17.6	450	6.3	162	12.0	295	13	6
R2	17.6	450	6.3	162	12.0	315	18	8
R3	20.5	525	7.0	180	13.0	327	22	10
R4	29.0	735	9.3	236	14.0	344	41	18.5
R5	34.9	886	9.3	236	14.0	344	51	23
R6	34.8	884	11.5	291	16.0	417	99	45
R7	40.9	1038	12.8	324	16.5	418	121	55
R8	44.3	1123	13.8	350	17.8	452	159	72
R9	46.8	1188	17.0	431	18.8	477	220	100

Light-overload use

I_{Ld}	Continuous current allowing 10% I_{Ld} for 1 min/5 min at 40 °C.
P_{Ld}	Typical motor power in light-overload use.

Heavy-duty use

I_{Hd}	Continuous current allowing 50% I_{Hd} for 1 min/5 min at 40 °C.
P_{Hd}	Typical motor power in heavy-duty use.

The ratings apply at 40 °C ambient temperature. At higher temperatures (up to 55 °C) the derating is 1%/1 °C.

³⁾ For drives with enclosure class IP55 the ratings apply at 40 °C ambient temperature. At higher temperature the derating is from 40 to 45 °C 1%/1 °C and 45 to 55 °C 2.5%/1 °C.

⁴⁾ For drives with enclosure class IP55 the ratings apply at 40 °C ambient temperature. At higher temperature the derating is from 40 to 50 °C 1%/1 °C and 50 to 55 °C 2.5%/1 °C.

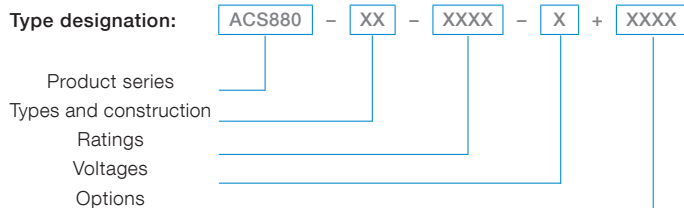
⁵⁾ For drives with enclosure class IP55 the maximum ambient temperature is 35 °C.

⁶⁾ For drives with enclosure class IP55 the ratings apply at 40 °C ambient temperature. At higher temperatures the derating is from 40 to 45 °C 1%/1 °C and 45 to 50 °C 2.5%/1 °C and 50 to 55 °C 5%/1 °C.

⁷⁾ For drives with IP55 enclosure class the ratings apply at 40 °C ambient temperature. At higher temperatures the derating is from 40 to 45 °C 3.5%/1 °C. Note: Maximum ambient temperature is 45 °C.

How to select a drive

Many of the features for the ACS880 single drives are built-in as standard, making selection easy. A wide range of options are available to optimize the drive for different requirements. To choose the right drive for your application, please refer to the rating tables or use ABB's DriveSize dimensioning tool (page 47). The selected drive



Technical data

Mains connection

Voltage and power range	3-phase, $U_{N2} = 208$ to 240 V, +10/-15% (-01) 3-phase, $U_{N5} = 380$ to 500 V, +10/-15% (-01), ±10% (-07, -17, -37) 3-phase, $U_{N7} = 525$ to 690 V, +10/-15% (-01), ±10% (-07, -17, -37) 0.75 to 350 hp (0.55 to 250 kW) (-01) 50 to 3000 hp (45 to 2800 kW) (-07) 250 to 4250 hp (250 to 3200 kW) (-17, -37)
Frequency	50/60 Hz ±5%
Power factor (ACS880-01, -07)	$\cos\phi_1 = 0.98$ (fundamental) $\cos\phi = 0.93$ to 0.95 (total)
Power factor (ACS880-17, -37)	$\cos\phi_1 = 1$ (fundamental)
Efficiency (at nominal power)	98% (-01, -07) 97% (-17, -37)

Motor connection

Voltage	3-phase output voltage 0 to $U_{N2}/U_{N3}/U_{N5}/U_{N7}$
Frequency	0 to ±500 Hz ^{1) 2)}
Motor control	Direct torque control (DTC)
Torque control: Open loop Closed loop	Torque step rise time: <5 ms with nominal torque <5 ms with nominal torque Non-linearity: Open loop Closed loop
Speed control: Open loop Closed loop	Static accuracy: 10% of motor slip 0.01% of nominal speed Dynamic accuracy: 0.3 to 0.4% seconds with 100% torque step 0.1 to 0.2% seconds with 100% torque step

Product compliance

- CE
- Low Voltage Directive 2006/95/EC
- Machinery Directive 2006/42/EC
- EMC Directive 2004/108/EC
- Quality assurance system ISO 9001 and Environmental system ISO 14001
- RoHS
- UL, cUL 508A or cUL 508C and CSA C22.2 NO.14-10, C-Tick, EAC ⁴⁾
- Functional safety: STO TÜV Nord certificate
- ATEX-certified Safe Disconnection Function, Ex II (2) GD ⁵⁾
- Marine type approvals for -01

EMC according to EN 61800-3:2004 + A1:2012

Categories C3 and C2 with internal option

has a unique type designation, which identifies the drive by construction, power and voltage range. The options are added to the type designation with a “plus” code. Build up your own ordering code using the type designation key or contact your local ABB drives sales office and let them know your needs/requirements.



Environmental limits

Ambient temperature Transport Storage Operation (air-cooled)	-40 to +70 °C -40 to +70 °C -15 to +55 °C, no frost allowed (-01) 0 to +50 °C, no frost allowed (-07, -17, -37) +40 to 55 °C with derating (-01) ³⁾ +40 to 50 °C with derating of 1%/1 °C (-07, -17, -37)
Cooling method Air-cooled	Dry clean air
Altitude 0 to 1,000 m 1,000 to 4,000 m	Without derating With derating of 1%/100 m ⁶⁾
Relative humidity	5 to 95%, no condensation allowed
Degree of protection IP20 IP21 IP22 IP42, IP54 IP55	Option (-01) Standard (-01) Standard (-07, -17, -37) Option (-07, -17, -37) Option (-01)
Paint color	RAL 9017/9002 (-01), RAL 9017/7035 (-07, -17, -37)
Contamination levels	No conductive dust allowed
Storage	IEC 60721-3-1, Class 1C2 (chemical gases), Class 1S2 (solid particles)
Transportation	IEC 60721-3-2, Class 2C2 (chemical gases), Class 2S2 (solid particles)
Operation	IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles)
Functional safety Standard	Safe torque off (STO according EN/IEC 61800-5-2) IEC 61508 ed2: SIL 3, IEC 61511: SIL 3, EN/IEC 62061: SIL CL 3, EN ISO 13849-1: PL e
With internal safety option safety functions module	Safe stop 1 (SS1), safely-limited speed (SLS), safe stop emergency (SSE), safe brake control, (SBC) and safe maximum speed (SMS), prevention of unexpected startup (POUS), Safe direction (SDI), Safe speed monitor (SSM), EN/IEC 61800-5-2, IEC 61508 ed2: SIL 3, IEC 61511: SIL 3, EN/IEC 62061: SIL CL 3, EN ISO 13849-1: PL e TÜV Nord certified
Fieldbus communication	PROFIsafe over profinet, certified

C = Chemically active substances

S = Mechanically active substances

¹⁾ For higher operational output frequencies please contact your local ABB office

²⁾ Operation above 120 Hz might require type specific derating, please contact your local ABB office

³⁾ Please see pages 12 to 13 for further details

⁴⁾ EAC has replaced GOST R

⁵⁾ Codes +L513/+L514, +Q971 for -07, -17, -37

⁶⁾ Derating reduced by lower than 40 °C ambient temperature

Contact us

For more information please contact your
local ABB representative or visit:

www.abb.com/drives

© Copyright 2016 ABB. All rights reserved.
Specifications subject to change without notice.



ACS880 single
drives web page

Power and productivity
for a better world™

