



Low voltage AC drives

# ABB industrial drives

## ACS880, single drives

0.75 to 1700 hp (0.55 to 1300 kW)

### Catalog

Power and productivity  
for a better world™

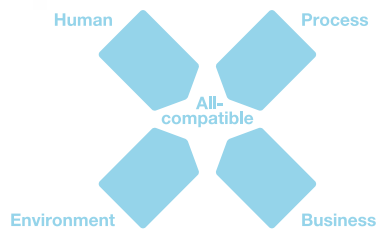


# What does all-compatible mean for you?

Being all-compatible means that drive choice should add value to your business. Drives should meet the unique demands of your processes, help you save energy and reduce operating costs. Also, all-compatible means that our drives are easy to select, use and maintain. These are the cornerstones making our industrial drive series the all-compatible choice.

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## The all-compatible ACS880 series drives

The ACS880 series drives are part of ABB's all-compatible drives portfolio. Compatible with virtually all types of processes, automation systems, users and business requirements they are designed to tackle any motor-driven application, in any industry, whatever the power range. The innovation behind all-compatibility is our new drives architecture that simplifies operation, optimizes energy efficiency and helps maximize process output. The ACS880 series consists of single drives, multidrives and drive modules.

# Simplifying your world without limiting your possibilities

## Wide range of safety features

Safe torque off is built-in as standard. An optional safety functions module provides extended safety functions, simplifying the configuration and reducing installation space.



## Direct torque control (DTC)

ABB's signature motor control technology provides precise speed and torque control for all applications and virtually any type of AC motor.



## Application control programs

A range of ready-made programs to optimize application productivity and usability.

## Removable memory unit

Stores all the software and parameter configurations in an easily replaceable and simple-to-install module.



## Energy efficiency

The drive provides features such as an energy optimizer and energy efficiency information that help you monitor and save energy used in the processes.



## Remote monitoring

With a built-in web server, NETA-21 enables worldwide access to drives.

## Drive application programming

Customizable to meet the precise application needs based on IEC 61131-3. The drive is also easy to integrate with other ABB components such as PLC and HMI.



## Drive-to-drive link

Allows fast communication between drives including master-follower configurations without any additional hardware.

## Single drives, ACS880

The all-compatible drives are designed to provide customers across industries and applications with unprecedented levels of compatibility and flexibility.

Our ACS880 single drives are stand alone drives. They are customized to meet the precise needs of industries such as oil and gas, mining, metals, chemicals, cement, power plants, material handling, pulp and paper, sawmills, marine, water and wastewater, food and beverage and automotive. They control a wide range of applications such as cranes, extruders, winches, winders, conveyors, mixers, compressors, centrifuges, test benches, elevators, extruders, pumps and fans.



### Intuitive human-machine interface

Intuitive, high-contrast and high-resolution display enabling easy navigation in multiple languages.



### Startup and maintenance tool

PC tool for drive startup, configuration and daily use and process tuning. PC tool is connected to the drive via Ethernet or USB interface.



### Communication with all major automation networks

Fieldbus adapters enable connectivity with all major automation networks.



### Extended connectivity

In addition to the standard interfaces, the drive has three built-in slots for additional input/output extension modules and speed feedback interfaces.

### Flexible product configurations

Drives are built to order with a wide range of options such as EMC filters, braking options and different enclosure variants.





## Human all-compatible

The new drives share easy-to-use interfaces saving you time during drive commissioning and maintenance. When you have learned it once, you can use it with all the drives in our all-compatible drives portfolio.

The new control panel supports over 20 languages. The new PC tool provides extensive drive monitoring capabilities and quick access to the drive settings. Integrated and certified safety features provide safety for machine operators.





## Process all-compatible

The drives are compatible with all kinds of processes. They control virtually any type of AC motor, provide extensive input/output connectivity and support all major fieldbus protocols. The drives cover a wide voltage and power range. Control performance is scalable from basic to demanding applications delivered by direct torque control (DTC). The flexibility and scalability of the drives enable one drive platform to control virtually any application or process, making your drive selection easy.





## Environment all-compatible



There is an increased demand for reducing industries' impact on the environment. Our drives can help you reduce energy consumption in a wide range of applications. The new drives have an energy optimizer feature that ensures maximum torque per ampere, reducing energy drawn from the supply. The built-in energy efficiency calculators help you to analyze and optimize processes. We can help you to investigate the energy saving potential of selected applications with our six-step energy appraisal. Our services expand through the life cycle of the drive and help you maintain energy efficiency from installation and commissioning to drive replacement.





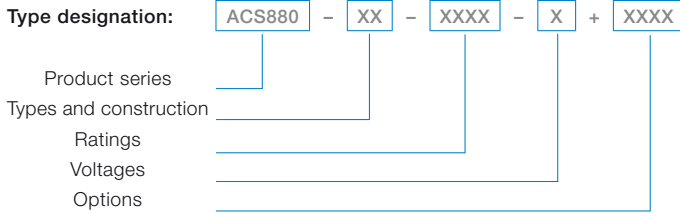


## Business all-compatible

The new all-compatible drives are not just equipment but part of your business strategy. Providing better control over your processes, the new drives equal lower energy consumption, improved productivity, flexibility and ease of use. In addition to drives we offer a wide range of products and services to support your business. With offices in over 90 countries and a global technical partner network, we are in a good position to offer technical advice and local support, worldwide.

# 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. The selected drive 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.



## Technical data

Mains connection	
<b>Voltage and power range</b>	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) 60 to 3000 hp (45 to 2800 kW) (-07) 250 to 3300 hp (250 to 3200 kW) (-17,-37)
<b>Frequency</b>	50/60 Hz ±5%
<b>Power factor</b> (ACS880-01, -07)	$\cos\phi_p$ = 0.98 (fundamental) $\cos\phi$ = 0.93 to 0.95 (total)
<b>Power factor</b> (ACS880-17, -37)	$\cos\phi_p$ = 1 (fundamental)
<b>Efficiency (at nominal power)</b>	98%
Motor connection	
<b>Voltage</b>	3-phase output voltage 0 to $U_{N2}/U_{N3}/U_{N5}/U_{N7}$
<b>Frequency</b>	0 to ±500 Hz <sup>1)2)</sup>
<b>Motor control</b>	Direct torque control (DTC)
<b>Torque control:</b>	Torque step rise time: Open loop <5 ms with nominal torque Closed loop <5 ms with nominal torque Non-linearity: Open loop ± 4% with nominal torque Closed loop ± 3% with nominal torque
<b>Speed control:</b>	Static accuracy: Open loop 10% of motor slip Closed loop 0.01% of nominal speed Dynamic accuracy: Open loop 0.3 to 0.4% seconds with 100% torque step Closed loop 0.1 to 0.2% seconds with 100% torque step
Product compliance	
<ul style="list-style-type: none"> <li>- CE</li> <li>- Low Voltage Directive 2006/95/EC</li> <li>- Machinery Directive 2006/42/EC</li> <li>- EMC Directive 2004/108/EC</li> <li>- Quality assurance system ISO 9001 and Environmental system ISO 14001</li> <li>- RoHS</li> <li>- UL, cUL 508A or cUL 508C and CSA C22.2 NO.14-10, C-Tick, EAC <sup>4)</sup></li> <li>- Functional safety: STO TÜV Nord certificate</li> <li>- ATEX-certified Safe Disconnection Function, Ex II (2) GD <sup>5)</sup></li> <li>- Marine type approvals for -01</li> </ul>	
<b>EMC according to EN 61800-3:2004 + A1:2012</b>	
Categories C3 and C2 with internal option	

Environmental limits	
<b>Ambient temperature</b>	Transport -40 to +70 °C Storage -40 to +70 °C Operation (air-cooled) -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) <sup>3)</sup> +40 to 50 °C with derating of 1%/1 °C (-07,-17,-37)
<b>Cooling method</b>	Air-cooled Dry clean air
<b>Altitude</b>	0 to 1,000 m Without derating 1,000 to 4,000 m With derating of 1%/100 m <sup>6)</sup>
<b>Relative humidity</b>	5 to 95%, no condensation allowed
<b>Degree of protection</b>	IP20 Option (-01) IP21 Standard (-01) IP22 Standard (-07, -17, -37) IP42, IP54 Option (-07, -17, -37) IP55 Option (-01)
<b>Paint color</b>	RAL 9017/9002 (-01), RAL 9017/7035 (-07, -17, -37)
<b>Contamination levels</b>	No conductive dust allowed
<b>Storage</b>	IEC 60721-3-1, Class 1C2 (chemical gases), Class 1S2 (solid particles)
<b>Transportation</b>	IEC 60721-3-2, Class 2C2 (chemical gases), Class 2S2 (solid particles)
<b>Operation</b>	IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles)
<b>Functional safety</b>	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
<b>Fieldbus communication</b>	PROFIsafe over profinet, certified

C = Chemically active substances  
S = Mechanically active substances  
<sup>1)</sup> For higher operational output frequencies please contact your local ABB office  
<sup>2)</sup> Operation above 120 Hz might require type specific derating, please contact your local ABB office  
<sup>3)</sup> Please see pages 12 to 13 for further details  
<sup>4)</sup> EAC has replaced GOST R  
<sup>5)</sup> Codes +L513/+L514, +Q971 for -07, -17, -37  
<sup>6)</sup> Derating reduced by lower than 40 °C ambient temperature

# 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.

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 UL type open (IP20), UL type 1 (IP21), and UL type 12 (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)



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).

Light-duty use (110% overload for 1 min)			Heavy-duty use (150% overload for 1 min)			Noise level	Heat dissipation	Air flow	Type designation	Frame size
$I_{Ld}$	$P_{Ld}$		$I_{2Hd}$	$P_{Hd}$						
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 <sup>3)</sup>	R8

<sup>3)</sup> 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

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

Light-duty use			Heavy-duty use			Noise level	Heat dissipation	Air flow	Type designation	Frame size
$I_{Ld}$	$P_{Ld}$		$I_{2Hd}$	$P_{Hd}$						
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 <sup>4)</sup>	R8
302	250	187.5	260	200	132	68	4200	677	ACS880-01-302A-5 <sup>3)</sup>	R9
361	300	200	302	250	188	68	4800	677	ACS880-01-361A-5 <sup>6)</sup>	R9
414*	350	250	361**	300	200	68	6000	677	ACS880-01-414A-5 <sup>5)</sup>	R9

### Light-duty use

$I_{Ld}$  Continuous rms output current allowing 110% 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 150% 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.

\* 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 393 A

\*\* 125% overload for 1 minute, every 5 minutes.

<sup>3)</sup> 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.

<sup>4)</sup> 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.

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

<sup>6)</sup> 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

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

Light-duty use (110% overload for 1 min)			Heavy-duty use (150% overload for 1 min)			Noise level	Heat dissipation	Air flow	Type designation	Frame size
$I_{Ld}$	$P_{Ld}$		$I_{2Hd}$	$P_{Hd}$						
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 <sup>3)</sup>	R8
242	250	160	192	200	132	68	4200	677	ACS880-01-210A-7 <sup>7)</sup>	R9
271	250	200	242	250	160	68	4800	677	ACS880-01-271A-7 <sup>5)</sup>	R9

Frame size	Height (H1)		Height (H2)		Width		Depth		Weight	
	UL type 1	IP21	UL type 1	IP21	UL type 1	IP21	UL type 1	IP21	UL type 1	IP21
	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(lbs)	(kg)
R1	16	405	14.6	370	6.1	155	9	226	13.2	6
R2	16	405	14.6	370	6.1	155	10	249	17.6	8
R3	18.5	471	16.5	420	6.7	172	10	261	22.0	10
R4	22.9	580	18.19	462	8	203	11	274	40.8	18.5
R5	28.8	732	23.5	596	8	203	11	274	50.7	23
R6	28.6	727	21.6	548	9.9	252	14	357	99.2	70
R7	34.6	880	23.6	600	11.2	284	14.4	365	121.3	55
R8	38.01	965	26.8	680	11.8	300	15.2	386	154.3	70
R9	37.6	955	26.7	680	15	380	16.23	412	216.0	98

H1 = Height with cable entry box

H2 = Height without cable entry box

Width and depth with cable entry box

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	17.55	450	6.32	162	12	295	13	6
R2	17.55	450	6.32	162	12	315	18	8
R3	20.48	525	7.02	180	13	327	22	10
R4	28.93	735	9.3	236	14	344	41	18.5
R5	34.89	886	9.3	236	14	344	51	23
R6	34.81	884	11.46	291	16	417	99	45
R7	40.87	1038	12.76	324	16.5	418	121	55
R8	44.23	1123	13.8	350	17.77	452	159	72
R9	46.75	1188	16.95	431	18.76	477	220	100

### Light-duty use

$I_{Ld}$  Continuous rms output current allowing 110% 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 150% 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.

<sup>1)</sup> 130% overload for 1 minute every 5 minutes

<sup>3)</sup> 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.

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

<sup>7)</sup> 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. Maximum ambient temperature is 45 °C (113°F)

# Cabinet-built single drives, ACS880-07

Our cabinet-built single drives are built to order, meeting customer needs despite any technical challenges. Designed on ABB's common drives architecture, this compact drive comes in different sizes for easy assembly and commissioning.

These single drives are customized to the precise needs of industries such as oil and gas, mining, metals, chemicals, cement, power plants, material handling, pulp and paper, woodworking and marine. Typical applications include cranes, extruders, winches, conveyors, mixers, compressors, pumps and fans. The drive configuration contains a rectifier, DC link, inverter, fuses and a main switch, all built into a compact cabinet. The features and options include extended inputs and outputs, fieldbus options, du/dt filtering, EMC filtering and a brake resistor.

Induction motors, synchronous motors and induction servo motors are all supported as standard without the need for additional software. The drive can control the motors in either open loop or closed loop, through its high precision motor control platform, direct torque control (DTC). Built-in safety features reduce the need for external safety components.

## Main features

- Compact design for easy cabinet assembly and maintenance
- Main switch and fuses
- Cabling solutions include bottom and top entry and exit
- Enclosure classes IP22, IP42 and IP54 for different environments, with option for air intake through bottom of the cabinet and channeled air outlet on the top of the cabinet
- Integrated safety including safe torque off (STO) as standard and the optional safety functions module, FSO-12 (TÜV Nord certified)
- Supports various motor types including synchronous reluctance motors
- Drive composer PC tool for commissioning and configuration
- Intuitive and easy to operate control panel with USB connection
- Device panel for optional switches and pilot lights
- 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
- Removable memory unit for easy maintenance
- Coated boards as standard
- Extensive, programmable digital and analog inputs and outputs
- Line choke
- Long lifetime capacitors
- Cooling fans with speed control or on-off control
- Braking option inside the module or cabinet
- EMC filter option
- du/dt and common mode filter options for motor protection
- Cabinet light and heater option



ACS880-07, frame sizes R6 to R8 and R11, IP22



ACS880-07, frame size 1xD8T+2xR8i, IP22



# Ratings, types and voltages

## Cabinet-built drives, ACS880-07

$U_N = 500$  V (range 380 to 500 V). The power ratings are valid at nominal voltage 480 V (60 to 1700 Hp).

Light-duty use (110% overload for 1 min)			Heavy-duty use (150% overload for 1 min)			Type designation	Frame size
$I_{Ld}$	$P_{Ld}$		$I_{2Hd}$	$P_{Hd}$			
A	Hp	kW	A	Hp	kW		

### 6-pulse diode

96	75	55	77	60	45	ACS880-07-0096A-5+C129	R6
124	100	75	96	75	55	ACS880-07-0124A-5+C129	R6
156	125	90	124	100	75	ACS880-07-0156A-5+C129	R7
180	150	110	156	125	90	ACS880-07-0180A-5+C129	R7
240	200	132	180	150	110	ACS880-07-0240A-5+C129	R8
302	250	200	260	200	132	ACS880-07-0302A-5+C129	R9
361	300	200	302	250	200	ACS880-07-0361A-5+C129	R9
414*	350	250	361**	300	200	ACS880-07-0414A-5+C129	R9
450	375	315	330	275	200	ACS880-07-0460A-5+C129	R10
483	400	315	361	300	250	ACS880-07-0503A-5+C129	R10
573	450	400	414	350	250	ACS880-07-0583A-5+C129	R10
623	500	450	477	400	315	ACS880-07-0635A-5+C129	R10
705	600	500	566	450	400	ACS880-07-0715A-5+C129	R11
807	700	560	625	500	450	ACS880-07-0820A-5+C129	R11
857	725	560	697****	600	500	ACS880-07-0880A-5+C129	R11
1027	900	710	800	700	560	ACS880-07-1070A-5+C129+H359 <sup>1)</sup>	D8T+2xR8i
1267	1100	900	987	850	710	ACS880-07-1320A-5+C129+F255+H359 <sup>2)</sup>	2xD8T+2xR8i
1392	1200	900	1085	900	710	ACS880-07-1450A-5+C129+F255+H359 <sup>2)</sup>	2xD8T+2xR8i
1517	1350	1000	1182	1000	800	ACS880-07-1580A-5+C129+F255+H359 <sup>2)</sup>	2xD8T+2xR8i
1728	1500	1200	1346	1200	900	ACS880-07-1800A-5+C129+F255+H359 <sup>2)</sup>	2xD8T+3xR8i
1901	1700	1300	1481	1300	1000	ACS880-07-1980A-5+C129+F255+H359 <sup>2)</sup>	2xD8T+3xR8i

### 12-pulse diode<sup>3)</sup>

950	800	630	741	600	500	ACS880-07-0990A-5+A004+H359 <sup>1,3)</sup>	2xD7T+2xR8i
1267	1100	900	987	850	710	ACS880-07-1320A-5+A004+H359 <sup>1,3)</sup>	2xD8T+2xR8i
1392	1200	900	1085	900	710	ACS880-07-1450A-5+A004+H359 <sup>1,3)</sup>	2xD8T+2xR8i
1517	1300	1000	1182	1000	800	ACS880-07-1580A-5+A004+H359 <sup>1,3)</sup>	2xD8T+2xR8i
1728	1500	1200	1346	1200	900	ACS880-07-1800A-5+A004+H359 <sup>1,3)</sup>	2xD8T+3xR8i
1901	1700	1300	1481	1300	1000	ACS880-07-1980A-5+A004+H359 <sup>1,3)</sup>	2xD8T+3xR8i

#### Light-duty use

$I_{Ld}$  Continuous rms output current allowing 110% 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 150% 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.

\* Rating applies at 30 °C ambient. At 40 °C ambient, rating is 393 A

\*\* 125% OL 1 min/5 min

\*\*\*\* 144% OL 1 min/5 min

<sup>1)</sup> Type code and price include common motor terminal cubicle option (H359).

<sup>2)</sup> Air circuit breaker option (F255) is required with UL listed (C129) or CSA approved (C134) designs. Common motor terminal cabinet option (H359) is included as standard.

<sup>3)</sup> 12 pulse ratings as shown are not UL listed or CSA approved as standard. UL listed / CSA approved designs are available as specially engineered cabinets. Refer to ABB for pricing.

# Ratings, types and voltages

## Cabinet-built drives, ACS880-07

$U_N = 690$  V (range 525 to 690 V). The power ratings are valid at nominal voltage 575 V (60 to 3000 Hp).

Light-duty use			Heavy-duty use			Type designation	Frame size
$I_{Ld}$	$P_{Ld}$		$I_{2Hd}$	$P_{Hd}$			
A	Hp	kW	A	Hp	kW		

### 6-pulse diode

58	60	55	49	50	37	ACS880-07-0061A-7	R6
80	75	75	61	60	45	ACS880-07-0084A-7	R6
93	100	90	84	75	55	ACS880-07-0098A-7	R7
113	125	110	98	100	75	ACS880-07-0119A-7	R7
135	150	132	119	125	90	ACS880-07-0142A-7	R8
165	200	160	142	150	110	ACS880-07-0174A-7	R8
200	250	200	174	200	132	ACS880-07-0210A-7	R9
257	250	250	210	250	160	ACS880-07-0271A-7	R9
320	300	315	255	250	250	ACS880-07-0330A-7	R10
360	350	355	325	300	315	ACS880-07-0370A-7	R10
420	450	400	360****	350	355	ACS880-07-0430A-7	R10
455	450	450	415	450	400	ACS880-07-0470A-7	R11
505	500	500	455	450	450	ACS880-07-0522A-7	R11
571	600	560	505	500	500	ACS880-07-0590A-7	R11
630	700	630	571	600	560	ACS880-07-0650A-7	R11
705	750	630	571****	600	560	ACS880-07-0721A-7	R11
768	850	710	598	650	560	ACS880-07-0800A-7+H359 <sup>1)</sup>	1xD8T+2xR8i
864	1000	800	673	775	630	ACS880-07-0900A-7+H359 <sup>1)</sup>	1xD8T+2xR8i
1114	1200	1100	868	950	800	ACS880-07-1160A-7+H359 <sup>1)</sup>	2xD8T+2xR8i
1392	1500	1250	1085	1200	1000	ACS880-07-1450A-7+H359 <sup>1)</sup>	2xD8T+3xR8i
1584	1750	1500	1234	1350	1200	ACS880-07-1650A-7+H359 <sup>1)</sup>	2xD8T+3xR8i
1872	2000	1800	1459	1600	1400	ACS880-07-1950A-7+H359 <sup>1)</sup>	3xD8T+4xR8i
2208	2450	2000	1720	1900	1600	ACS880-07-2300A-7+H359 <sup>1)</sup>	3xD8T+4xR8i
2496	2750	2400	1945	2150	1900	ACS880-07-2600A-7+H359 <sup>1)</sup>	4xD8T+5xR8i
2746	3000	2600	2139	2350	2000	ACS880-07-2860A-7+H359 <sup>1)</sup>	4xD8T+5xR8i

### 12-pulse diode<sup>3)</sup>

768	850	710	598	650	560	ACS880-07-0800A-7+A004+H359 <sup>1)</sup>	2xD7T+2xR8i
912	1000	800	711	775	630	ACS880-07-0950A-7+A004+H359 <sup>1)</sup>	2xD8T+2xR8i
1114	1200	1100	868	950	800	ACS880-07-1160A-7+A004+H359 <sup>1)</sup>	2xD8T+2xR8i
1392	1500	1250	1085	1200	1000	ACS880-07-1450A-7+A004+H359 <sup>1)</sup>	2xD8T+3xR8i
1584	1750	1500	1234	1350	1200	ACS880-07-1650A-7+A004+H359 <sup>1)</sup>	2xD8T+3xR8i
1872	2000	1800	1459	1600	1400	ACS880-07-1950A-7+A004+H359 <sup>1)</sup>	4xD8T+4xR8i
2208	2450	2000	1720	1900	1600	ACS880-07-2300A-7+A004+H359 <sup>1)</sup>	4xD8T+4xR8i
2496	2750	2400	1945	2150	1900	ACS880-07-2600A-7+A004+H359 <sup>1)</sup>	4xD8T+5xR8i
2746	3000	2600	2139	2350	2000	ACS880-07-2860A-7+A004+H359 <sup>1)</sup>	4xD8T+5xR8i

#### Light-duty use

$I_{Ld}$	Continuous rms output current allowing 110% overload for 1 minute every 5 minutes.
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$P_{Ld}$	Typical motor power in light-overload use.
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#### Heavy-duty use

$I_{2Hd}$	Continuous rms output current allowing 150% overload for 1 minute every 5 minutes.
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$P_{Hd}$	Typical motor power in heavy-duty use.
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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.

\*\*\* Units listed on this page are non-UL/CSA European (CE) designs, including bottom cable entry and exit and European cable glands as standard.

\*\*\*\* 144% OL 1 min/5 min

<sup>1)</sup> Type code and price include common motor terminal cubicle option (H359).

<sup>3)</sup> 12 pulse ratings as shown are not UL listed or CSA approved as standard.

UL listed/CSA approved designs are available as specially engineered cabinets. Refer to ABB for pricing

# Ratings, types and voltages

## Cabinet-built drives, ACS880-07

Frame size	Height		Width		Depth		Weight	
	UL type 1	IP21	UL type 1	IP21	UL type 1	IP21	UL type 1	IP21
	(in)	(mm)	(in)	(mm)	(in)	(mm)	(lbs)	(mm)
R6	84.5	2145	16,9	430*	26.5	673	528	240
R7	84.5	2145	16,9	430*	26.5	673	550	250
R8	84.5	2145	16,9	430*	26.5	673	583	265

\* Add 200 mm (7.9 in) if equipped with 1<sup>st</sup> environment (C2) filter option +E202  
 Add 400 mm (15.8 in) if equipped with circuit breaker option (+F289)

R9	84.5	2145	32.7	830	27.5	698	825	375
R10	84.5	2145	32.7	830	27.5	698	1170	530
R11	84.5	2145	32.7	830	27.5	698	1280	580
1xD8T+2xR8i	84.5	2145	83.9	2130	27.5	698	3590	1630

Add 400 mm (15.7 in) width if equipped with breaking chopper (D150) The number of brake choppers depends on required braking power

2xD8T+2xR8i	84.5	2145	107.5	2730	28.1	714	5020	2280
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Add 400 mm (15.7 in) width if equipped with breaking chopper (D150) The number of brake choppers depends on required braking power

Includes common motor terminal cabinet (H359)  
 Includes air circuit breaker (F255) as standard with UL listed (C129) option

2xD8T+3xR8i	84.5	2145	119.3	3030	28.1	714	5435	2470
3xD8T+4xR8i	84.5	2145	150.8	3830	28.1	714	7099	3220
4xD8T+5xR8i	84.5	2145	190.2	4830	28.1	714	8597	3900

Includes common motor terminal cabinet (H359)  
 Includes air circuit breaker (F255) as standard with UL listed (C129) option

Frame size	Height		Width		Depth		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)
R6	91.2	2315	16.9	430*	26.5	673	528	240
R7	91.2	2315	16.9	430*	26.5	673	550	250
R8	91.2	2315	16.9	430*	26.5	673	583	265

\* Add 200 mm (7.9 in) if equipped with 1<sup>st</sup> environment (C2) filter option +E202  
 Add 400 mm (15.8 in) if equipped with circuit breaker option (+F289)

R9	91.2	2315	32.7	830	27.5	698	825	375
R10	91.2	2315	32.7	830	27.5	698	1170	530
R11	91.2	2315	32.7	830	27.5	698	1280	580
1xD8T+2xR8i	91.2	2315	83.9	2130	27.5	698	3590	1630

Add 400 mm (15.7 in) width if equipped with breaking chopper (D150) The number of brake choppers depends on required braking power

2xD8T+2xR8i	91.2	2315	107.5	2730	28.1	714	5020	2280
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Add 400 mm (15.7 in) width if equipped with breaking chopper (D150) The number of brake choppers depends on required braking power

Includes common motor terminal cabinet (H359)  
 Includes air circuit breaker (F255) as standard with UL listed (C129) option

2xD8T+3xR8i	91.2	2315	119.3	3030	28.1	714	5435	2470
3xD8T+4xR8i	91.2	2315	150.8	3830	28.1	714	7099	3220
4xD8T+5xR8i	91.2	2315	190.2	4830	28.1	714	8597	3900

Includes common motor terminal cabinet (H359)  
 Includes air circuit breaker (F255) as standard with UL listed (C129) option



# Cabinet-built regenerative single drives, ACS880-17

This single drive is a compact and complete regenerative drive solutions, with everything needed for a regenerative operation. The ACS880-17 captures and utilizes energy which results in cost savings for the user. With regenerative functionality, the braking energy of the motor is returned back to the drive and distributed forward to the supply network. This way, the braking energy is not wasted as heat. In comparison with other braking methods, such as mechanical and resistor braking, the ACS880-17 brings much more energy savings.

The ACS880-17 is compatible with a broad range of industries including automotive, food and beverage, oil and gas, chemical, mining and metals. The drive is suitable for applications such as centrifuges, test benches conveyors, winches, elevators, pumps and fans.

## High performance drives

The drive features direct torque control (DTC) as standard, enabling fast transition between motoring and generating mode in applications such as test benches and elevators. The drives active supply unit is able to boost output voltage, which guarantees full motor voltage even when the supply voltage is below nominal. The ACS880-17 reaches unity power factor.

## Clear energy savings

Handling of waste heat may be a problem if the braking power is significant. The ACS880-17 does not need external braking devices, which makes drive installation simple as less need for cabinet space is required.

## Extensive range of features

In line with other ACS880 cabinet-built drives, the ACS880-17 adapts to a wide variety of standardized configurations and different application requirements. The ACS880-17 comes with a significant amount of features and accessories as built-in options.

## Main features

- Compact design for easy cabinet assembly and maintenance. Enclosure classes IP22, IP42 and IP54 for different environments, with option for air intake through bottom of the cabinet and channeled air outlet on the top of the cabinet
- LCL line filter built inside
- Main switch and fuses
- Cabling solutions include bottom and top entry and exit
- Integrated safety including safe torque off (STO) as standard and the optional safety functions module (TÜV Nord certificate)
- Supports various motor types including synchronous reluctance motors
- Drive composer PC tool for commissioning and configuration
- Intuitive and easy to operate control panel with USB connection
- Device panel for optional switches and pilot lights
- 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
- Removable memory unit for easy maintenance
- Coated boards as standard
- Extensive, programmable digital and analog inputs and outputs
- Long lifetime capacitors
- Cooling fans with speed control or on-off control
- EMC filter as standard
- du/dt and common mode filter options for motor protection
- Cabinet light and heater option
- Marine construction option



ACS880-17 cabinet-built regenerative drive

# Ratings, types and voltages

## Cabinet-built drives, ACS880-17

$U_N = 500 \text{ V}$  (range 380 to 500 V). The power ratings are valid at nominal voltage 480 V (250 to 1950 Hp).

Light-duty use (110% overload for 1 min)			Heavy-duty use (150% overload for 1 min)			Type designation	Frame size
$I_{Ld}$	$P_{Ld}$		$I_{2Hd}$	$P_{Hd}$			
A	Hp	kW	A	Hp	kW		
403	350	250	314	250	200	ACS880-17-0420A-5+C129	1xR8i+1xR8i
547	500	355	426	350	250	ACS880-17-0570A-5+C129	1xR8i+1xR8i
749	650	500	583	500	400	ACS880-17-0780A-5+C129	1xR8i+1xR8i
970	850	630	755	650	500	ACS880-17-1010A-5+C129+H359	2xR8i+2xR8i
1066	950	710	830	700	560	ACS880-17-1110A-5+C129+H359	2xR8i+2xR8i
1469	1300	1000	1144	1000	800	ACS880-17-1530A-5+C129+H359	2xR8i+2xR8i
1901	1700	1300	1481	1350	1000	ACS880-17-1980A-5+C129+H359	3xR8i+3xR8i
2179	1950	1500	1698	1500	1200	ACS880-17-2270A-5+C129+H359	3xR8i+3xR8i

$U_N = 690 \text{ V}$  (range 525 to 690 V). The power ratings are valid at nominal voltage 575 V (250 to 3300 Hp).

Light-duty use			Heavy-duty use			Type designation	Frame size
$I_{Ld}$	$P_{Ld}$		$I_{2Hd}$	$P_{Hd}$			
A	Hp	kW	A	Hp	kW		
307	400	315	239	250	200	ACS880-17-0320A-7	1xR8i+1xR8i
374	475	355	292	300	250	ACS880-17-0390A-7	1xR8i+1xR8i
557	750	560	434	500	400	ACS880-17-0580A-7	1xR8i+1xR8i
634	800	630	494	600	450	ACS880-17-0660A-7+H359	2xR8i+2xR8i
739	950	710	576	750	560	ACS880-17-0770A-7+H359	2xR8i+2xR8i
912	1200	900	711	950	710	ACS880-17-0950A-7+H359	2xR8i+2xR8i
1085	1450	1100	845	1000	800	ACS880-17-1130A-7+H359	2xR8i+2xR8i
1392	1850	1400	1085	1300	1000	ACS880-17-1450A-7+H359	3xR8i+3xR8i
1613	2100	1600	1257	1600	1200	ACS880-17-1680A-7+H359	3xR8i+3xR8i
1872	2500	1900	1459	1850	1400	ACS880-17-1950A-7+H359	4xR8i+4xR8i
2141	2900	2200	1668	2100	1600	ACS880-17-2230A-7+H359	4xR8i+4xR8i
2659	3600	2700	2072	2650	2000	ACS880-17-2770A-7+H359	6xR8i+5xR8i
3178	4250	3200	2476	3200	2400	ACS880-17-3310A-7+H359	6xR8i+6xR8i

Frame size	Height (H1)		Width		Depth		Weight	
	UL type 1	IP21	UL type 1	IP21	UL type 1	IP21	UL type 1	IP21
	(in)	(mm)	(in)	(mm)	(in)	(mm)	(lbs)	(kg)
1xR8i+1xR8i	84.5	2145	48.5	1230	27.5	698	2602	1180
2xR8i+2xR8i	84.5	2145	115.4	2930	28.1	714	5732	2600
3xR8i+3xR8i	84.5	2145	150.8	3830	28.1	714	7231	3280
4xR8i+4xR8i	84.5	2145	174.4	4430	28.1	714	8930	4050
6xR8i+5xR8	84.5	2145	245.3	6230	28.1	714	11729	5320
6xR8i+6xR8i	84.5	2145	253.2	6430	28.1	714	12060	5470

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)
1xR8i+1xR8i	91.2	2315	48.5	1230	27.4	698	2602	1180
2xR8i+2xR8i	91.2	2315	115.4	2930	28.1	714	5732	2600
3xR8i+3xR8i	91.2	2315	146.9	3730	28.1	714	7143	3240
4xR8i+4xR8i	91.2	2315	174.4	4430	28.1	714	8930	4050
6xR8i+5xR8	91.2	2315	245.3	6230	28.1	714	11729	5320
6xR8i+6xR8i	91.2	2315	253.2	6430	28.1	714	12060	5470

### Light-duty use

$I_{Ld}$  Continuous rms output current allowing 110% 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 150% 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.

# Cabinet-built low harmonic single drives, ACS880-37

This single drive creates less harmonics compared to drives that offer standard diode supply solutions. The ACS880-37 produces exceptionally low harmonic content in the drives input. This is achieved without external filters or multi-pulse transformers. By managing and controlling harmonics, the ACS880-37 reaches unity power factor. The active supply unit in the drive is able to boost output voltage, which guarantees full motor voltage even when the supply voltage is below nominal.

The ACS880-37 is compatible with a broad range of industries including oil and gas, chemical, mining, water and wastewater, cement and metals. The drive is suitable for applications such as pumps and fans, extruders, conveyors and compressors.

## Improved harmonic performance

When compared to multi-pulse transformer solutions, the ACS880-37 does not require a dedicated transformer. For this reason, the cabinet-built low harmonic drive is simpler in terms of cabling arrangements and requires less floor space. Harmonic performance is also better compared with 12- and 18-pulse solutions, handling online imbalance or other shortcomings in the supply network. Passive or active external filtering devices are avoided with the ACS880-37, making the solution compact and simple.

## Extensive range of features

In line with other ACS880 cabinet-built drives, the ACS880-37 adapts to a wide variety of standardized configurations and different application requirements. The ACS880-37 comes with a significant amount of features and accessories as built-in options.

## Main features

- Compact design for easy cabinet assembly and maintenance. Enclosure classes IP22, IP42 and IP54 for different environments, with option for air intake through bottom of the cabinet and channeled air outlet on the top of the cabinet
- LCL line filter built inside
- Main switch and fuses
- Cabling solutions include bottom and top entry and exit
- Integrated safety including safe torque off (STO) as standard and the optional safety functions module (TÜV Nord certificate)
- Supports various motor types including synchronous reluctance motors
- Drive composer PC tool for commissioning and configuration
- Intuitive and easy to operate control panel with USB connection
- Device panel for optional switches and pilot lights
- 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
- Removable memory unit for easy maintenance
- Coated boards as standard
- Extensive, programmable digital and analog inputs and outputs
- Long lifetime capacitors
- Cooling fans with speed control or on-off control
- EMC filter as standard
- du/dt and common mode filter options for motor protection
- Cabinet light and heater option
- Marine construction option



ACS880-37 cabinet-built low harmonic drive

# Ratings, types and voltages

## Cabinet-built drives, ACS880-37

$U_N = 500 \text{ V}$  (range 380 to 500 V). The power ratings are valid at nominal voltage 480 V (250 to 1950 Hp).

Light-duty use (110% overload for 1 min)			Heavy-duty use (150% overload for 1 min)			Type designation	Frame size
$I_{Ld}$	$P_{Ld}$		$I_{2Hd}$	$P_{Hd}$			
A	Hp	kW	A	Hp	kW		
403	350	250	314	250	200	ACS880-17-0420A-5+C129	1xR8i+1xR8i
547	500	355	426	350	250	ACS880-17-0570A-5+C129	1xR8i+1xR8i
749	650	500	583	500	400	ACS880-17-0780A-5+C129	1xR8i+1xR8i
970	850	630	755	650	500	ACS880-17-1010A-5+C129+H359	2xR8i+2xR8i
1066	950	710	830	700	560	ACS880-17-1110A-5+C129+H359	2xR8i+2xR8i
1469	1300	1000	1144	1000	800	ACS880-17-1530A-5+C129+H359	2xR8i+2xR8i
1901	1700	1300	1481	1350	1000	ACS880-17-1980A-5+C129+H359	3xR8i+3xR8i
2179	1950	1500	1698	1500	1200	ACS880-17-2270A-5+C129+H359	3xR8i+3xR8i

$U_N = 690 \text{ V}$  (range 525 to 690 V). The power ratings are valid at nominal voltage 575 V (250 to 3300 Hp).

Light-duty use			Heavy-duty use			Type designation	Frame size
$I_{Ld}$	$P_{Ld}$		$I_{2Hd}$	$P_{Hd}$			
A	Hp	kW	A	Hp	kW		
307	400	315	239	250	200	ACS880-17-0320A-7	1xR8i+1xR8i
374	475	355	292	300	250	ACS880-17-0390A-7	1xR8i+1xR8i
557	750	560	434	500	400	ACS880-17-0580A-7	1xR8i+1xR8i
634	800	630	494	600	450	ACS880-17-0660A-7+H359	2xR8i+2xR8i
739	950	710	576	750	560	ACS880-17-0770A-7+H359	2xR8i+2xR8i
912	1200	900	711	950	710	ACS880-17-0950A-7+H359	2xR8i+2xR8i
1085	1450	1100	845	1000	800	ACS880-17-1130A-7+H359	2xR8i+2xR8i
1392	1850	1400	1085	1300	1000	ACS880-17-1450A-7+H359	3xR8i+3xR8i
1613	2100	1600	1257	1600	1200	ACS880-17-1680A-7+H359	3xR8i+3xR8i
1872	2500	1900	1459	1850	1400	ACS880-17-1950A-7+H359	4xR8i+4xR8i
2141	2900	2200	1668	2100	1600	ACS880-17-2230A-7+H359	4xR8i+4xR8i
2659	3600	2700	2072	2650	2000	ACS880-17-2770A-7+H359	6xR8i+5xR8i
3178	4250	3200	2476	3200	2400	ACS880-17-3310A-7+H359	6xR8i+6xR8i

Frame size	Height (H1)		Width		Depth		Weight	
	UL type 1	IP21	UL type 1	IP21	UL type 1	IP21	UL type 1	IP21
	(in)	(mm)	(in)	(mm)	(in)	(mm)	(lbs)	(kg)
1xR8i+1xR8i	84.5	2145	48.5	1230	27.5	698	2602	1180
2xR8i+2xR8i	84.5	2145	115.4	2930	28.1	714	5732	2600
3xR8i+3xR8i	84.5	2145	150.8	3830	28.1	714	7231	3280
4xR8i+4xR8i	84.5	2145	174.4	4430	28.1	714	8930	4050
6xR8i+5xR8	84.5	2145	245.3	6230	28.1	714	11729	5320
6xR8i+6xR8i	84.5	2145	253.2	6430	28.1	714	12060	5470

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)
1xR8i+1xR8i	91.2	2315	48.5	1230	27.4	698	2602	1180
2xR8i+2xR8i	91.2	2315	115.4	2930	28.1	714	5732	2600
3xR8i+3xR8i	91.2	2315	146.9	3730	28.1	714	7143	3240
4xR8i+4xR8i	91.2	2315	174.4	4430	28.1	714	8930	4050
6xR8i+5xR8	91.2	2315	245.3	6230	28.1	714	11729	5320
6xR8i+6xR8i	91.2	2315	253.2	6430	28.1	714	12060	5470

### Light-duty use

$I_{Ld}$  Continuous rms output current allowing 110% 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 150% 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)

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.



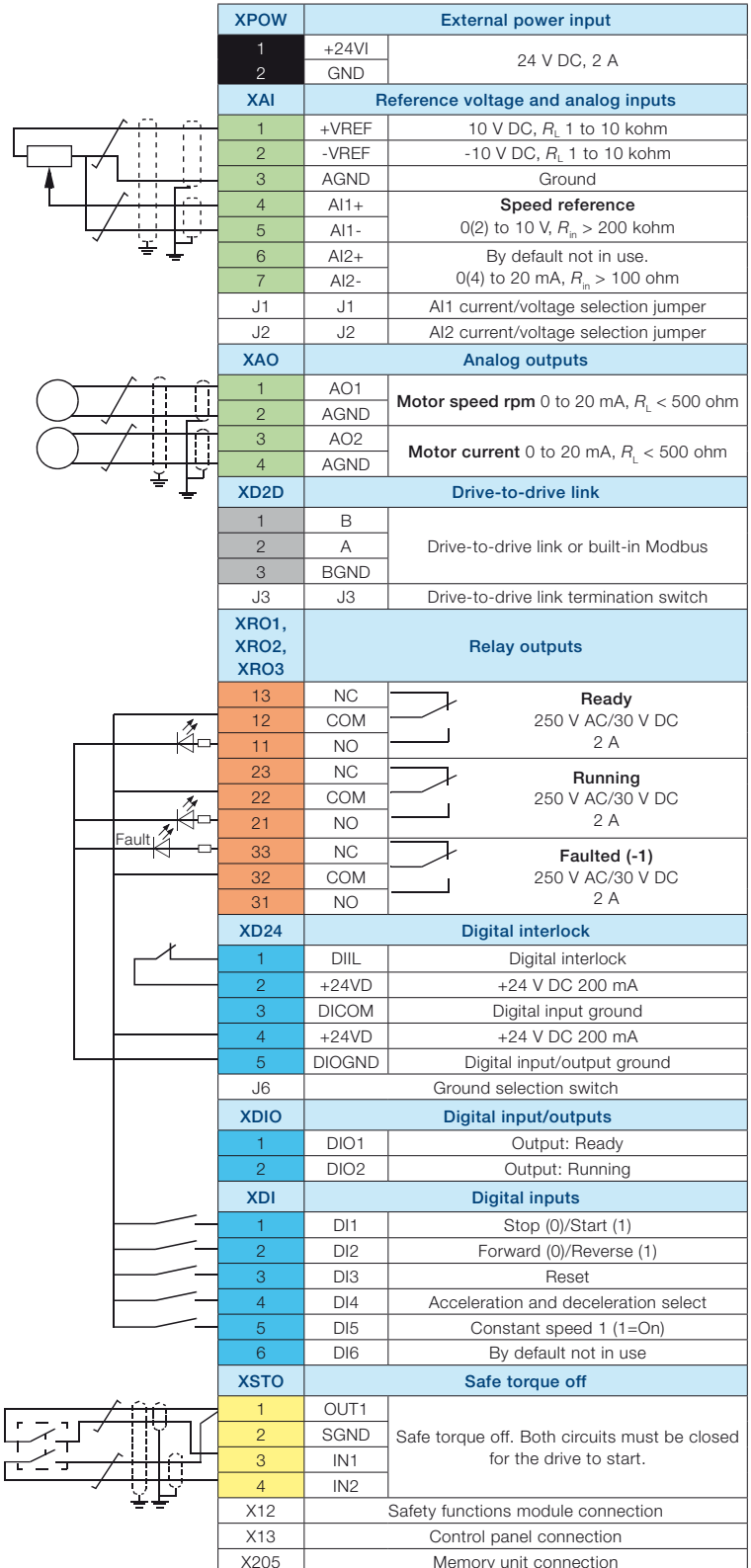
# Standard interface and extensions for comprehensive connectivity

The ACS880 single drives offers a wide range of standard interfaces. In addition the drive has three option slots that can be used for extensions including fieldbus adapter modules,

input/output extension modules, feedback modules and a safety functions module.

Control connections	Description
2 analog inputs (XAI)	Current input: -20 to 20 mA, $R_{in}$ : 100 ohm Voltage input: -10 to 10 V, $R_{in}$ > 200 kohm Resolution: 11 bit + sign bit
2 analog outputs (XAO)	0 to 20 mA, $R_{load}$ < 500 ohm Frequency range: 0 to 300 Hz Resolution: 11 bit + sign bit
6 digital inputs (XDI)	Input type: NPN/PNP (DI1 to DI5), NPN (DI6) DI6 (XDI:6) can alternatively be used as an input for a PTC thermistor.
Digital input interlock (DIIL)	Input type: NPN/PNP
2 digital inputs/outputs (XDIO)	As input: 24 V logic levels: "0" < 5 V, "1" > 15 V $R_{in}$ : 2.0 kohm Filtering: 0.25 ms As output: Total output current from 24 V DC is limited to 200 mA Can be set as pulse train input and output
3 relay outputs (XRO1, XRO2, XRO3)	250 V AC/30 V DC, 2 A
Safe torque off (XSTO)	For the drive to start, both connections must be closed
Drive-to-drive link (XD2D)	Physical layer: EIA-485
Built-in Modbus	EIA-485
Assistant control panel/ PC tool connection	Connector: RJ-45

Example of a typical single drives input/output connection diagram. Variations maybe possible (please see HW manual for more information).



Control unit ZCU

# Standard software for scalable control and functionality

The same software, the primary control program, is used across the whole ACS880 series. Features such as built-in pre-programmed application macros save time during configuration and drive commissioning. The application macros help set parameters for various functions including:

- Basic setup for input/output control and fieldbus control
- Hand/auto control for local and remote operation
- PID control for closed loop processes
- Sequential control for repetitive cycles
- Torque control
- Four user sets, for saving multiple drive configurations

## Direct torque control (DTC)

The drives are equipped with direct torque control (DTC), ABB's signature motor control platform which supports motors such as induction motors, permanent magnet motors and servo motors and the new synchronous reluctance motor. DTC helps control the motor from standstill to maximum torque and speed without the necessity of encoders or position sensors. DTC allows high overloadability, gives high starting torque and reduces stress on mechanics.

## Energy efficiency information

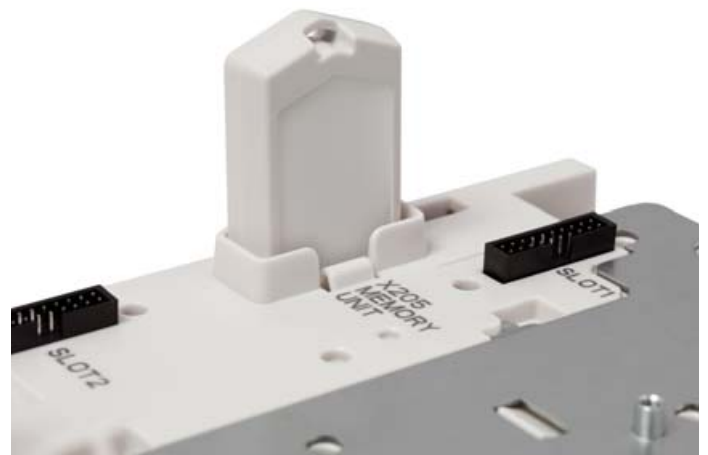
The drives come with built-in energy efficiency information that helps the user fine-tune processes to ensure optimum energy use. The energy optimizer mode ensures the maximum torque per ampere, reducing energy drawn from the supply. The load profile feature collects drive values with three loggers: two amplitude loggers and one peak value logger. Calculators provide essential energy efficiency information: used and saved electrical energy, CO<sub>2</sub> reduction and money saved.

Additional software features include:

- Access levels
- Adaptive programming
- Automatic reset
- Automatic start
- Constant speeds
- Critical speeds and frequencies
- DC hold
- DC magnetizing
- Diagnostics
- Drive-to-drive link for master-follower control
- Flux braking
- Jogging
- Maintenance timer and counters
- Mechanical brake control
- Motor potentiometer
- Output phase order selection, switches rotation direction of the motor
- Oscillation damping
- Power loss ride-through
- Process PID control with trim function
- Programmable and pre-programmed protection functions
- Programmable inputs and outputs
- Scalar control with IR compensation
- Speed controller with auto tuning
- Startup assistants
- User adjustable load supervision/limitation
- User selectable acceleration and deceleration ramps
- Variable slope

## Removable memory unit

The removable memory unit stores the software that includes user settings, parameter settings and motor data. Situated on the control unit, the memory unit can easily be removed for maintenance, update or replacement purposes. This common type of memory unit is used throughout the ACS880 series.



# Application control programs



Our application control programs are developed by working closely with our customers over many years. This results in application programs that include the lessons learned from many customers, and that are designed to give you the flexibility to adapt the programs to your specific needs. These programs enhance application usability and lower energy consumption. They increase safe operation of the applications and reduce the need for a PLC. Other benefits include protection of machinery and optimization of application productivity. The programs also optimize time usage and lower operational costs.

The ACS880 application control programs come with adaptive programming features. This makes fine tuning of the ready-made application control program functionalities easy. Additionally, we understand that you may need to use different configurations in your process. That's why each of our control programs comes with the ability to configure up to four different configurations, or "user sets." The ACS880 drives offer integrated safety with safe torque off (STO) functionality as standard. The optional safety functions module comes with several safety functions including safe brake control (SBC).

## Control program for cranes

This control program is dedicated for industrial, harbor, tower and marine deck cranes. It is possible to control crane movements in hoist and trolley and travel motions using the same software. The control program comes with integrated

mechanical brake control to assure safe opening and closing of the mechanical disc or drum brakes. Standalone and master-follower functionality is supported along with synchro control of multimotors. The synchro control for common operation of the load functionality makes it possible to lift and lower loads, such as containers, in a smooth and balanced way during transportation. The load speed control function maximizes the hoist speed for the given load and ensures that there is sufficient motor torque in the field weakening area. This minimizes operation time and optimizes crane capacity. Fieldbus and conventional I/O control is supported. The antisway function is designed for indoor cranes to prevent unnecessary swaying of the load.

## Control program for winder

This control program makes sure that the unwinding and winding of a roll of web material, such as textile, plastic and paper is performed optimally. The control program observes the diameter of rolls and tension of the web material and makes sure that the drives controlling different parts of the winder are in sync. Based on the feedback from the dancer or tension measurement of the web, the speed or torque of the drive is adjusted appropriately. The result is a straightforward, cost-effective solution in web handling. Another feature is the mechanics ID run function that calculates automatically the inertia and friction of the roll. This speeds up the commissioning of the drive.

# Application control programs



## Control program for artificial oil lifting

This control program increases oil production for PCP (progressive cavity pumps), ESP (electro submersible pumps) or rod pumps. The program does not require any feedback encoder to work, which saves costs and increases reliability. The software also reduces stress on the complete pump system when optimizing fluid production. Backspin functionality is especially suitable for PCP and ESP pumps, which minimizes failure and makes oil pumping safe. Various startup ramp functions are also available. The sensorless control function (pump off control) helps to optimize oil pumping productivity by keeping the energy usage on a predetermined level. The efficiency of PCP pumps is significantly increased when using ACS880 drives together with SynRM motors.

## Control program for centrifuge/decanter

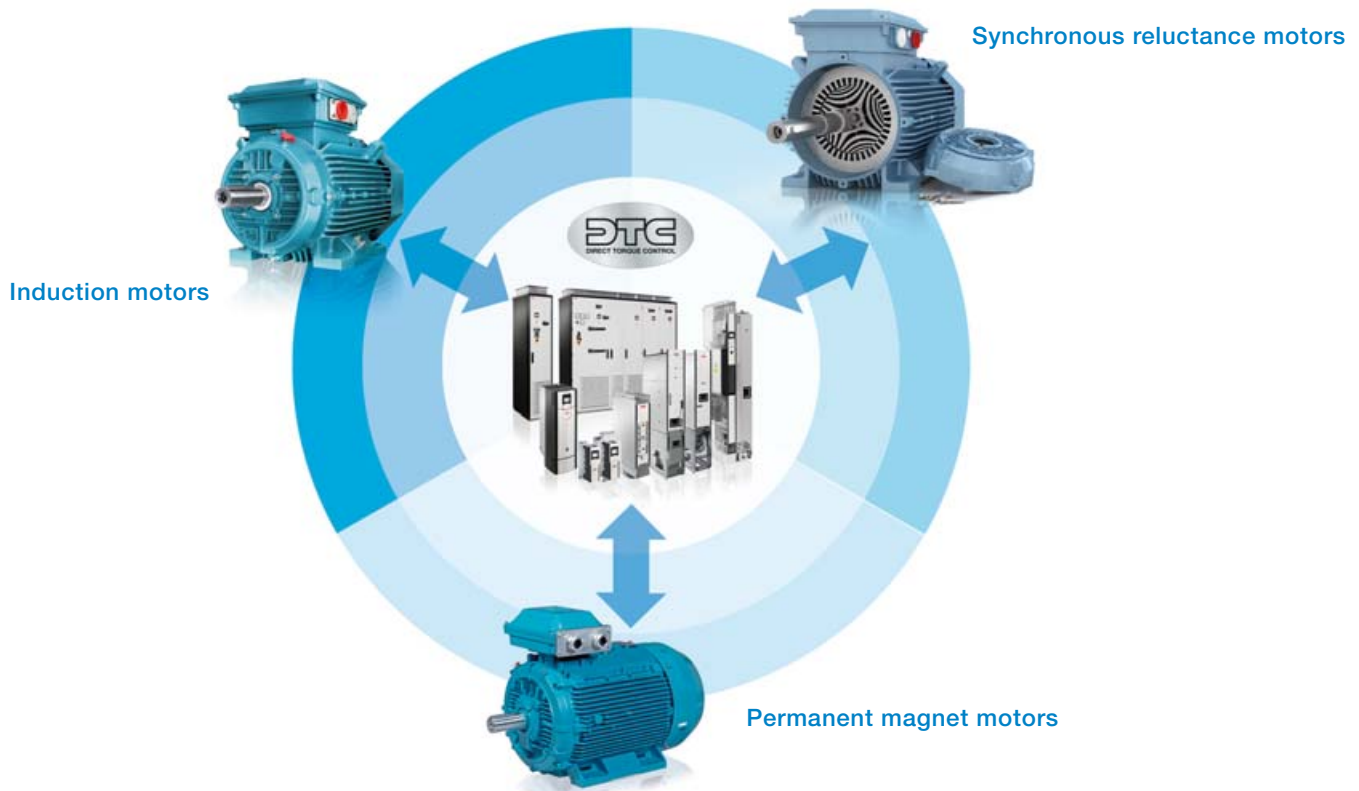
This control program is designed to perform practical programmable sequences for conventional centrifuges. The program optimizes the separation of solids from the liquids in centrifuges, separators or decanter centrifuges. The speed difference of the decanter bowl and the scroll in the decanter centrifuge is controlled by the drive-to-drive functionality available in ACS880 drives.

## Control program for cooling tower

This program is used in ACS880 drives to control high-torque and slow-speed synchronous RPM-AC permanent magnet motors in cooling tower applications. The control program is the basis for a drive-motor package where the cooling tower direct drive motor (CTDD) and the ACS880 drive is installed directly to the fans without any need for gearboxes, drive shafts or couplings. This provides high torque that is required for cooling tower applications without additional drivetrain components. The result is energy savings, reduced maintenance risk and costs, and direct-on-load startup current peaks. The control program for cooling tower is easy to commission and use. The ACS880 drives offer a streamlined parameter set that is focused on the typical cooling tower direct drive configurations where only necessary parameters are visible. Other cooling tower features in the drive include trickle current for keeping the motor warm and dry, a de-icing function to prevent ice build-up on the fan blades and an anti-windmill function to prevent rotation of the fan during standby.



# Designed to control virtually any type of AC motor



Our ACS880 drives control virtually any type of AC motor including induction, permanent magnet, servo and synchronous reluctance motors. Motor control is optimized with direct torque control (DTC), ABB's premium motor control, built-in as a standard feature in our ACS880 drives. Our robust industrial drives ensure an energy efficient and reliable motor controller with significant cost savings for the user.

## Direct torque control (DTC) for optimal control of motors

To ensure optimal control of an AC motor, our ACS880 drives offer direct torque control (DTC) as a built-in standard feature. In majority of applications, the DTC reduces the need for an expensive speed feedback encoder. Direct torque control provides fast reaction to load changes in the motor shaft as well as reference changes on speed or torque made by the user. It makes the motor run optimally which lowers energy consumption and wear of the application.

## ACS880 and induction motors form a reliable combination

Induction motors are used throughout the industry in several types of industry applications which demand robust and high enclosure motor and drive solutions. The ACS880 drives fit perfectly together with this type of motor, used in a wide range of industrial environments. The drives fit into environments that require high degree of protection and offer narrow facilities. ACS880 drives come with DTC as standard, which ensures high speed accuracy.

Because ABB Ex motors and ACS880 have been type tested as a package, they are a safe and reliable choice to be used in explosive environments.

## ACS880 and permanent magnet motors for smooth operation

Permanent magnet technology is often used for improved motor characteristics such as energy efficiency, compactness and control performance. This technology is suitable eg for low speed control industry applications, as in some cases they eliminate the need to use gear boxes. Actual characteristics between different permanent magnet motors can vary considerably. ACS880 drives with DTC control ABB and most other permanent magnet motors without speed or rotor position sensors.

## ACS880 and IE4 synchronous reluctance motors for a package with high efficiency

Combining the ACS880's control technology with our synchronous reluctance (SynRM) motors provides an IE4 motor and drive package that gives you great energy savings benefits. The key is in the rotor design. The synchronous reluctance rotor replaces the traditional induction rotor and requires no permanent magnets. ABB has tested our SynRM motor and drive packages and produced manufacturer's statements providing verified system (drive and motor) efficiency.

## Intuitive human-machine interface

The assistant control panel features intuitive use and easy navigation. High resolution display enables visual guidance. The panel saves on commissioning and learning time by means of different assistants, making the drive simple to set up and use.

It is possible to organize parameters in different ways and store essential parameters for different configurations for any specialized application needed. The menus and messages can be customized for specific terminology so that each application can be set up and configured to its optimum performance. This makes the drive easier to use with information that is familiar to users. With the panel's text editor, users can also add information, customize text and label the drive. Powerful backup and restore functions are supported as well as different language versions. The help key provides context sensitive guidance. Faults or warnings can be resolved quickly since the help key provides troubleshooting instructions.

One control panel can be connected to several drives simultaneously using the panel network feature. The user can also select the drive to operate in the panel network. The PC tool can be easily connected to the drive through the USB connector on the control panel. There are also control panel mounting platforms, DPMP-01 and DPMP-02, available for cabinet door mounting with IP55 or IP65 protection class.



## PC tool for easy startup and maintenance

The Drive composer PC tool offers fast and harmonized setup, commissioning and monitoring for the whole drives portfolio. The free version of the tool provides startup and maintenance capabilities, while the professional version provides additional features such as custom parameter windows, control diagrams of the drive's configuration and safety settings.

The Drive composer tool is connected to the drive using an Ethernet connection or through the USB connection on the assistant control panel. All drive information such as parameter loggers, faults, backups and event lists are gathered into a support diagnostics file with a single mouse click. This provides faster fault tracking, shortens downtime and minimizes operational and maintenance costs.

### Drive composer pro

Drive composer pro provides basic functionality, including parameter settings, downloading and uploading files and search parameters. Advanced features such as graphical control diagrams and various displays are also available. The control diagrams save users from browsing long lists of parameters and help to set the drive's logic quickly and easily. The tool has fast monitoring capabilities of multiple signals from several drives in

a PC tool network. Full backup and restore functions are also included. Safety settings and adaptive programming programs can be configured with Drive composer pro.



# Integrated safety simplifies configuration

Integrated safety reduces the need for external safety components, simplifying configuration and reducing installation space. The safety functionality is a built-in feature of the ACS880, with safe torque off (STO) as standard. Additional safety functions can be commissioned with the optional and compact safety functions module. ACS880 drives offer encoderless safety. The drives' functional safety is designed in accordance with EN/IEC 61800-5-2 and complies with the requirements of the European Union Machinery Directive 2006/42/EC.

## Safe torque off as standard

Safe torque off (STO) is used to prevent unexpected startup and in stopping-related functions, enabling safe machine maintenance and operation. With safe torque off activated, the drive will not provide a rotational field. This prevents the motor from generating torque on the shaft. This function corresponds to an uncontrolled stop in accordance with stop category 0 of EN 60204-1.

## The safety functions module

The easy to connect and configure safety functions module (FSO-12 and -21) offers a wide range of safety functions and a self diagnostic function that meets current safety requirements and standards, all in one compact module. Compared to using external safety components, the safety functions module comes with the supported functions seamlessly integrated with the drive functionality, reducing the implementation of safety function connections and configuration. Installation of the module results in less need for cabling and provides a cost-effective solution.

Commissioning and configuration of the safety functions module is done with the Drive composer pro PC tool. Larger safety systems can be built using PROFIsafe over Profinet connection between a safety PLC (such as AC500-S) and the

ACS880 drive. The connection is achieved using the FENA-21 fieldbus adapter module and the safety functions module.

The safety functions module can also be ordered as a spare part kit and installed afterwards to the drive. The kit includes most common assembly accessories for ACS880 drives.

The module supports the following safety functions (which achieve up to SIL 3 or PL e (Cat. 3) safety level:

- **Safe stop 1 (SS1)** brings the machine to a stop (STO) using a monitored deceleration ramp. It is typically used in applications where the machinery motion needs to be brought to a stop (stop category 1) in a controlled way before switching over to the no-torque state.
- **Safe stop emergency (SSE)** can be configured to, upon request, either activate STO instantly (category 0 stop), or first initiate motor deceleration and then, once the motor has stopped, activate the STO (category 1 stop).
- **Safe brake control (SBC)** provides a safe output for controlling the motor's external (mechanical) brakes, together with STO.
- **Safely-limited speed (SLS)** ensures that the specified speed limit of the motor is not exceeded. This allows machine interaction to be performed at slow speed without stopping the drive. The safety function module comes with four individual SLS settings for speed monitoring.
- **Safe maximum speed (SMS)** monitors that the speed of the motor does not exceed the configured speed limit.
- **Prevention of unexpected startup (POUS)** ensures that the machine remains stopped when people are in a danger area.
- **Safe direction (SDI)** ensures that rotation is allowed only to the selected direction. Available only with FSO-21 and FSE-31.
- **Safe speed monitor (SSM)** provides information that speed is within the configured limits. Available only with FSO-21

## Safety functions module

Option	Ordering code
FSO-12	+Q973
FSO-21+FSE-31	+Q972+L521 <sup>1)</sup>

1) For availability please check with your local ABB



ACS880 drive with FSO-12

ACS880 cabinet-built drive with FSO-12

# Drive application programming based on IEC standard 61131-3

Automation Builder, ABB's new software suite for automation engineering, makes programming of industry devices such as drives, PLC's, robots and human machine interfaces (HMI) easy using one Integrated engineering suite. The Automation Builder is used both for engineering individual industry devices and for putting together entire automation projects. It is based on a widely used software environment that fulfills many different requirements of industrial automation projects, according to the IEC standard 61131-3. As a single tool, the Automation Builder reduces time typically needed for system configuration and programming. It also reduces the need for installing and maintaining separate programs simultaneously. Automation Builder enables the possibility to do online diagnostic checking of multiple tasks performed by different industrial devices such as ACS880 drives.

## Drive application programming

Automation Builder makes it possible for system integrators and machine builders to integrate their desired functionality and know-how directly into ACS880 drives. This is possible as ACS880 drives come with programming capability embedded inside the drive. Designing an application program in the drive makes the end user application run more efficiently, even without a separate programmable controller. It also brings higher end-product quality and requires less need for installation space and wiring.

Automation Builder lets you extend the standard functionality of parameter functions for ACS880 drives. This makes the ACS880 drives very flexible to meet exact requirements set for end user applications. The library management functionality in Automation Builder shortens engineering time as reuse of existing program code is possible. Additional features include the ability to select and use one of five different programming languages, effective program debugging and user password protection.

## Integrated engineering suite for operating several industry components together

Using the Drive manager tool embedded in Automation Builder together with ABB's AC500 PLC gives the user online connection to all drives in a fieldbus network. This speeds up commissioning and makes diagnostic of the entire automation system easy. Automation Builder saves all the configuration data of industry devices, including drive parameter settings, and program code to the same project archive. This makes engineering work more consistent and manageable.

The drive application programming license should be ordered together with the drive.

## Drive application programmability

Option	Option code
License key <sup>1)</sup>	+N8010

<sup>1)</sup> The Automation Builder tools must be ordered separately. For further information please contact your local ABB.



### Automation Builder

One engineering tool to control all industry devices  
 System configuration and diagnostic  
 IEC programming  
 Common project data handling



# Flexible connectivity to automation networks

Our fieldbus adapter modules enable communication between drives, systems, devices and software. Our industrial drives are compatible with a wide range of fieldbus protocols.

The plug-in fieldbus adapter module can easily be mounted inside the drive. Other benefits include reduced wiring costs when compared with traditional input/output connections. Fieldbus systems are also less complex than conventional systems, resulting in less overall maintenance.

## Multiple fieldbus connections for flexible control

ACS880 supports two fieldbus connections simultaneously. The user has flexibility of choice for control modes by being able to select one protocol for control and one for monitoring. Also redundant fieldbus connection is possible.

## Drive monitoring

A set of drive parameters and/or actual signals, such as torque, speed, current, etc., can be selected for cyclic data transfer, providing fast data access.

## Drive diagnostics

Accurate and reliable diagnostic information can be obtained through the alarm, limit and fault words.

## Drive parameter handling

The Ethernet fieldbus adapter module allows users to build an Ethernet network for drive monitoring and diagnostic and parameter handling purposes.



ACS880 drive with fieldbus adapters and feedback interface module

## Cabling

Substituting the large amount of conventional drive control cabling and wiring with a single cable reduces costs and increases system reliability and flexibility.

## Design

The use of fieldbus control reduces engineering time at installation due to the modular structure of the hardware and software and the simplicity of the connections to the drives.

## Commissioning and assembly

The modular machine configuration allows pre-commissioning of single machine sections and provides easy and fast assembly of the complete installation.

## Universal communication with ABB fieldbus adapters

The ACS880 supports the following fieldbus protocols:

### Fieldbus adapter modules

Option	Option code	Fieldbus protocol
FPBA-01	+K454	PROFIBUS DP, DPV0/DPV1
FCAN-01	+K457	CANopen®
FDNA-01	+K451	DeviceNet™
FENA-11	+K473	1 port EtherNet/IP™, Modbus TCP, PROFINET IO
FENA-21	+K475	2 port EtherNet/IP™, Modbus TCP, PROFINET IO, PROFIsafe <sup>1)</sup>
FECA-01	+K469	EtherCAT®
FSCA-01	+K458	Modbus RTU
FEPL-02	+K470	PowerLink
FCNA-01	+K462	ControlNet™

<sup>1)</sup> For the PROFIsafe to work the PROFINET fieldbus adapter module (FENA-21) and the safety functions module are required.



# Input/output extension modules for increased connectivity

Standard input and output can be extended by using optional analog and digital input/output extension modules. The modules are easily installed in the extension slots located on the control unit.

## Analog and digital input/output extension modules

Option	Option code	Connections
FIO-01	+L501	4×DI/O, 2×RO
FIO-11	+L500	3×AI (mA/V), 1×AO (mA), 2×DI/O
FAIO-01	+L525	2×AI(mA/V), 2×AO(mA)

# Speed feedback interfaces for precise process control

ACS880 drives can be connected to various feedback devices, such as HTL pulse encoder, TTL pulse encoder, absolute encoder and resolver. The optional feedback module is installed in the option slot on the drive. It is possible to use two feedback modules at the same time, either of the same type or different type.

## Feedback interface modules

Option	Option code	Connections
FEN-01	+L517	2 inputs (TTL pulse encoder), 1 output
FEN-11	+L518	2 inputs (SinCos absolute, TTL pulse encoder), 1 output
FEN-21	+L516	2 inputs (Resolver, TTL pulse encoder), 1 output
FEN-31	+L502	1 input (HTL pulse encoder), 1 output

# I/O option extension adapter

For additional I/O option slots the FEA-03 is suitable for this use. An analog and digital input/output extension and speed feedback interface can be installed on the FEA-03. Two extension modules can be installed on each I/O extension slot. The connection to the control unit is via an fiber optic link and the adapter can be mounted on an DIN rail (35 x 7.5 mm).

## I/O extension adapter

Option	Option code	Connections
FEA-03	+L515	2×F-type option extension slots

# DDCS communication option modules

The FDCO-0X optical DDCS communication options are add-on modules on the ACS880 industrial drives control unit. The modules include connectors for two fiber optic DDCS channels. The FDCO-0X modules make it possible to perform master-follower and AC800 M communication.

Option	Option code	Connections
FDCO-01	+L503	Optical DDCS (10 Mbd/10 Mbd)
FDCO-02	+L508	Optical DDCS (5 Mbd/10 Mbd)

# Remote monitoring access worldwide

The remote monitoring tool, NETA-21, gives easy access to the drive via the Internet or local Ethernet network. NETA-21 comes with a built-in web server. Being compatible with standard web browsers, it ensures easy access to a web-based user interface. Through the interface the user can configure drive parameters, monitor drive log data, and follow up load levels, run time, energy consumption, I/O data and bearing temperature of the motor connected to the drive.

The user can access the remote monitoring tool web page using 3G modem from anywhere with a standard PC, tablet or a mobile phone. The remote monitoring tool helps to reduce cost when personnel are able to monitor or perform maintenance for unmanned or manned applications in a range of industries. It is also very useful when more than one user wants to access the drive from several locations.

## Enhanced monitoring functions

The remote monitoring tool supports process and drive data logging. Values of process variables or drives actual

values can be logged to NETA-21's SD memory card which is situated in the remote monitoring tool or sent forward to a centralized database. NETA-21 does not need an external database as the remote monitoring tool is able to store valuable data of the drive during its entire lifetime.

Unmanned monitoring of processes or devices is ensured by the built-in alarm functions that notify maintenance personnel if a safety level is reached. Alarm history with true time stamps are stored internally to the memory card as well as technical data, which is provided by the drive for troubleshooting purposes. True time stamps are also used with drives that do not have a real time clock as standard for ensuring events of all connected drives. Remote monitoring is also possible through AC500 PLC by using Drive Manager functionality.



NETA-21

# EMC – electromagnetic compatibility

Each ACS880 model can be equipped with a built-in filter to reduce high frequency emissions.

## EMC standards

The EMC product standard (EN 61800-3 (2004)) covers the specific EMC requirements stated for drives (tested with motor and cable) within the EU. EMC standards such as EN 55011 or EN 61000-6-3/4 are applicable to industrial and domestic equipment and systems including components inside the drive. Drive units complying with the requirements of EN 61800-3 are compliant with comparable categories in EN 55011 and EN 61000-6-3/4, but not necessarily vice versa. EN 55011 and EN 61000-6-3/4 do not specify cable length or require a motor to be connected as a load. The emission limits are comparable to EMC standards according to the table below.

## 1<sup>st</sup> environment versus 2<sup>nd</sup> environment

1<sup>st</sup> environment includes domestic premises. It also includes establishments directly connected without an intermediate transformer to a low voltage power supply network that supplies buildings used for domestic purposes.

2<sup>nd</sup> environment includes all establishments other than those directly connected to a low voltage power supply network that supplies buildings used for domestic purposes.

## EMC standards

EMC according to EN 61800-3:2004 + A1:2012 product standard	EN 61800-3 product standard	EN 55011, product family standard for industrial, scientific and medical (ISM) equipment	EN 61000-6-4, generic emission standard for industrial environments	EN 61000-6-3, generic emission standard for residential, commercial and light-industrial environment
1 <sup>st</sup> environment, unrestricted distribution	Category C1	Group 1, Class B	Not applicable	Applicable
1 <sup>st</sup> environment, restricted distribution	Category C2	Group 1, Class A	Applicable	Not applicable
2 <sup>nd</sup> environment, unrestricted distribution	Category C3	Group 2, Class A	Not applicable	Not applicable
2 <sup>nd</sup> environment, restricted distribution	Category C4	Not applicable	Not applicable	Not applicable

## Selecting an EMC filter

The following table gives the correct filter selection.

Type	Voltage	Frame sizes	1 <sup>st</sup> environment, restricted distribution, C2, grounded network (TN) Option code	2 <sup>nd</sup> environment, C3, grounded network (TN) Option code	2 <sup>nd</sup> environment, C3, ungrounded network (IT) Option code	2 <sup>nd</sup> environment, C3, grounded/ungrounded network (TN/IT) Option code
ACS880-01	380 to 500 V	R1 to R9	+E202	+E200	+E201 (R6 to R9 frame size)	–
ACS880-01	690 V	R5 to R9	–	+E200 (R5 to R9 frame size)	+E201 (R7 to R9 frame size)	–
ACS880-07	380 to 690 V	R6 to R11	+E202 (not for 690 V)	+E200	+E201	+E210 (R10 to R11)
ACS880-07	380 to 690 V	n×R8i	+E202 (not for 690 V only for 0990A, 1070A and 1140A)	–	–	As standard
ACS880-17	380 to 690 V	n×R8i	+E202 (not for 690 V. Only for 1×R8i)	–	–	As standard
ACS880-37	380 to 690 V	n×R8i	+E202 (not for 690 V. Only for 1×R8i)	–	–	As standard

# Brake options

## Brake chopper

The brake chopper is built-in as standard for the ACS880-01 frame sizes R1 to R4. For other frames, a brake chopper is a selectable internal option. Braking control is integrated into the ACS880 single drives. It not only controls braking, but also supervises system status and detects failures such as brake resistor and resistor cable short-circuits, chopper short-circuit, and calculated resistor overtemperature.

## Brake resistor

The brake resistors are separately available for ACS880-01 and built in for the cabinet-built ACS880-07. Resistors other than the standard option resistors may be used, provided

that the specified resistance value is not decreased and that the heat dissipation capacity of the resistor is sufficient for the drive application. No separate fuses in the brake circuit are required if the conditions for eg. the mains cable is protected with fuses and no mains cable/fuse overrating takes place.



Brake resistor, SACE15RE13

## Brake options, ACS880-01

$U_N = 230\text{ V}$ (range 208 to 240 V)						
Braking power					Type designation	Frame size
$P_{brcont}$ [kW]	$R_{min}$ ohm	$R$ [Ohm]	$E_r$ [kJ]	$P_{rcont}$ [kW]		
0.75	65	80	40	0.14	ACS880-01-04A6-2	R1
1.1	65	80	40	0.14	ACS880-01-06A6-2	R1
1.5	65	80	40	0.14	ACS880-01-07A5-2	R1
2.2	65	80	40	0.14	ACS880-01-10A6-2	R1
4	18	22	420	2	ACS880-01-16A8-2	R2
5.5	18	22	420	2	ACS880-01-24A3-2	R2
7.5	13	13	435	2	ACS880-01-031A-2	R3
11	12	13	435	2	ACS880-01-046A-2	R4
11	12	13	435	2	ACS880-01-061A-2	R4
18.5	6	8	1800	4.5	ACS880-01-075A-2+D150	R5
22	6	8	1800	4.5	ACS880-01-087A-2+D150	R5
30	3.5	4	3600	9	ACS880-01-115A-2+D150	R6
37	3.5	4	3600	9	ACS880-01-145A-2+D150	R6
45	2.4	2.7	5400	13.5	ACS880-01-170A-2+D150	R7
55	2.4	2.7	5400	13.5	ACS880-01-206A-2+D150	R7
75	1.8	2.7	5400	13.5	ACS880-01-274A-2+D150	R8



# Brake options, ACS880-01

$U_N = 480 \text{ V}$ (range 380 to 500 V)						
Braking power					Type designation	Frame size
$P_{\text{brcont}}$ [kW]	$R_{\text{min}}$ ohm	$R$ [Ohm]	$E_r$ [kJ]	$P_{\text{rcont}}$ [kW]		
0.75	78	80	40	0.14	ACS880-01-02A1-5	R1
1.1	78	80	40	0.14	ACS880-01-03A0-5	R1
1.5	78	80	40	0.14	ACS880-01-03A4-5	R1
2.2	78	80	40	0.14	ACS880-01-04A8-5	R1
3	78	80	40	0.14	ACS880-01-05A2-5	R1
4	78	80	40	0.14	ACS880-01-07A6-5	R1
5.5	78	80	40	0.14	ACS880-01-11A0-5	R1
7.5	39	44	210	1	ACS880-01-014A-5	R2
11	39	44	210	1	ACS880-01-021A-5	R2
15	19	22	420	2	ACS880-01-027A-5	R3
18.5	19	22	420	2	ACS880-01-034A-5	R3
22	13	13	435	2	ACS880-01-040A-5	R4
22	13	13	435	2	ACS880-01-052A-5	R4
37	8	8	1800	4.5	ACS880-01-065A-5+D150	R5
45	8	8	1800	4.5	ACS880-01-077A-5+D150	R5
55	5.4	6	2400	6	ACS880-01-096A-5+D150	R6
75	5.4	6	2400	6	ACS880-01-124A-5+D150	R6
90	3.3	4	3600	9	ACS880-01-156A-5+D150	R7
110	3.3	4	3600	9	ACS880-01-180A-5+D150	R7
132	2.3	2.7	5400	13.5	ACS880-01-240A-5+D150	R8
132	2.3	2.7	5400	13.5	ACS880-01-260A-5+D150	R8
160	2.3	2.7	5400	13.5	ACS880-01-361A-5+D150	R9
160	2.3	2.7	5400	13.5	ACS880-01-414A-5+D150	R9

$U_N = 575 \text{ V}$ (range 525 to 690 V)						
Braking power					Type designation	Frame size
$P_{\text{brcont}}$ [kW]	$R_{\text{min}}$ ohm	$R$ [Ohm]	$E_r$ [kJ]	$P_{\text{rcont}}$ [kW]		
6	18	44	210	1	ACS880-01-07A3-7+D150	R5
8	18	44	210	1	ACS880-01-09A8-7+D150	R5
11	18	44	210	1	ACS880-01-14A2-7+D150	R5
17	18	22	420	2	ACS880-01-018A-7+D150	R5
23	18	22	420	2	ACS880-01-022A-7+D150	R5
28	18	22	420	2	ACS880-01-026A-7+D150	R5
33	18	22	420	2	ACS880-01-035A-7+D150	R5
45	18	22	420	2	ACS880-01-042A-7+D150	R5
45	18	22	420	2	ACS880-01-049A-7+D150	R5
55	13	13	435	2	ACS880-01-061A-7+D150	R6
65	13	13	435	2	ACS880-01-084A-7+D150	R6
90	8	8	1800	4.5	ACS880-01-098A-7+D150	R7
110	8	8	1800	4.5	ACS880-01-119A-7+D150	R7
132	6	6	2400	6	ACS880-01-142A-7+D150	R8
160	6	6	2400	6	ACS880-01-174A-7+D150	R8
200	4	4	3600	9	ACS880-01-210A-7+D150	R9
200	4	4	3600	9	ACS880-01-271A-7+D150	R9

All brake resistors are to be installed outside the converter module.  
 The JBR brake resistors are built-in to an IP20 metal housing.  
 The SACE brake resistors are built-in to an IP21 metal housing.  
 The SAFUR brake resistors are built-in to an IP00 metal frame.

## Maximum braking power of the ACS880 equipped with the standard chopper and the standard resistor

$P_{\text{brcont}}$	Continuous brake chopper power. The value applies to the minimum resistance value. With a higher resistance value the $P_{\text{brcont}}$ may increase in some ACS880 units.
$R$	Resistance value for the listed resistor type.
$R_{\text{min}}$	Minimum allowable resistance value for the brake resistor.
$E_r$	Energy pulse that the resistor assembly will withstand (400 s duty cycle). This energy will heat the resistor element from 40 °C to the maximum allowable temperature.
$P_{\text{rcont}}$	Continuous power (heat) dissipation of the resistor when placed correctly. Energy $E_r$ dissipates in 400 seconds.

# Brake options, ACS880-07

$U_N = 500 \text{ V}$  (range 380 to 500 V)

Braking power		Brake resistor(s)				Type designation	Frame size
$P_{brcont}$ [kW]	$R_{min}$ Ohm	Type	$R$ [Ohm]	$E_r$ [kJ]	$P_{rcont}$ [kW]		
55	5.4	SAFUR80F500	6	2400	6	ACS880-07-0096A-5+D150 <sup>2)</sup>	R6
75	5.4	SAFUR80F500	6	2400	6	ACS880-07-0124A-5+D150 <sup>2)</sup>	R6
90	3.3	SAFUR125F500	4	3600	9	ACS880-07-0156A-5+D150 <sup>2)</sup>	R7
110	3.3	SAFUR125F500	4	3600	9	ACS880-07-0180A-5+D150 <sup>2)</sup>	R7
132	2.3	SAFUR200F500	2.7	5400	13.5	ACS880-07-0240A-5+D150 <sup>2)</sup>	R8
132	2.3	SAFUR200F500	2.7	5400	13.5	ACS880-07-0260A-5+D150 <sup>2)</sup>	R8
160	2.3	SAFUR200F500	2.7	5400	13.5	ACS880-07-0361A-5+D150 <sup>2)</sup>	R9
160	2.3	SAFUR200F500	2.7	5400	13.5	ACS880-07-0414A-5+D150 <sup>2)</sup>	R9
250	2	2xSAFUR125F500	2	7200	18	ACS880-07-0460A-5+D150 <sup>2)</sup>	R10
250	2	2xSAFUR125F500	2	7200	18	ACS880-07-0503A-5+D150 <sup>2)</sup>	R10
315	1.3	2xSAFUR200F500	1.35	10800	27	ACS880-07-0583A-5+D150 <sup>2)</sup>	R10
315	1.3	2xSAFUR200F500	1.35	10800	27	ACS880-07-0635A-5+D150 <sup>2)</sup>	R10
400	0.7	3xSAFUR200F500	0.90	16200	40	ACS880-07-0715A-5+D150 <sup>2)</sup>	R11
400	0.7	3xSAFUR200F500	0.90	16200	40	ACS880-07-0820A-5+D150 <sup>2)</sup>	R11
400	0.7	3xSAFUR200F500	0.90	16200	40	ACS880-07-0880A-5+D150 <sup>2)</sup>	R11

$U_N = 500 \text{ V}$  (range 380 to 500 V)

Nominal ratings					Duty cycle (1min/5min)		Duty cycle (10s/60s)		Brake Chopper Type	Brake resistor Type	Er [kJ]	Type designation	Frame size
$P_{brcont}$ kW	$R$ ohm	$I_{max}$ A	$I_{rms}$ A	$P_{cont.}$ kW	$P_{br.}$ kW	$I_{rms}$ A	$P_{br.}$ kW	$I_{rms}$ A					
<b>6-pulse diode</b>													
806	0,68	1210	134	108	333	412	575	710	2xNBRA-659	2 x (2 x SAFUR200F500)	21600	ACS880-07-1070A-5	D8T+2xR8i
1208	0,45	1815	201	162	500	618	862	1065	3xNBRA-659	3 x (2 x SAFUR200F500)	32400	ACS880-07-1320A-5	2xD8T+2xR8i
1208	0,45	1815	201	162	500	618	862	1065	3xNBRA-659	3 x (2 x SAFUR180F460)	32400	ACS880-07-1450A-5	2xD8T+2xR8i
1208	0,45	1815	201	162	500	618	862	1065	3xNBRA-659	3 x (2 x SAFUR200F500)	32400	ACS880-07-1580A-5	2xD8T+2xR8i
<b>12-pulse diode</b>													
806	0,68	1210	134	108	333	412	575	710	2xNBRA-659	2 x (2 x SAFUR200F500)	21600	ACS880-07-0990A-5+A004	2xD7T+2xR8i
1208	0,45	1815	201	162	500	618	862	1065	3xNBRA-659	3 x (2 x SAFUR200F500)	32400	ACS880-07-1320A-5+A004	2xD8T+2xR8i
1208	0,45	1815	201	162	500	618	862	1065	3xNBRA-659	3 x (2 x SAFUR180F460)	32400	ACS880-07-1450A-5+A004	2xD8T+2xR8i
1208	0,45	1815	201	162	500	618	862	1065	3xNBRA-659	3 x (2 x SAFUR200F500)	32400	ACS880-07-1580A-5+A004	2xD8T+2xR8i

# Brake options, ACS880-07

$U_N = 690 \text{ V}$  (range 525 to 690 V)

Braking power		Brake resistor(s)				Type designation	Frame size
$P_{brcont}$ [kW]	$R_{min}$ Ohm	Type	$R$ [Ohm]	$E_r$ [kJ]	$P_{rcont}$ [kW]		
55	13	SACE15RE13	13	435	2	ACS880-07-0061A-7+D150 <sup>2)</sup>	R6
65	13	SACE15RE13	13	435	2	ACS880-07-0084A-7+D150 <sup>2)</sup>	R6
90	8	SAFUR90F575	8	1800	4.5	ACS880-07-0098A-7+D150 <sup>2)</sup>	R7
110	8	SAFUR90F575	8	1800	4.5	ACS880-07-0119A-7+D150 <sup>2)</sup>	R7
132	6	SAFUR80F500	6	2400	6	ACS880-07-0142A-7+D150 <sup>2)</sup>	R8
160	6	SAFUR80F500	6	2400	6	ACS880-07-0174A-7+D150 <sup>2)</sup>	R8
200	4	SAFUR125F500	4	3600	9	ACS880-07-0210A-7+D150 <sup>2)</sup>	R9
200	4	SAFUR125F500	4	3600	9	ACS880-07-0271A-7+D150 <sup>2)</sup>	R9
285	2.2	SAFUR200F500	2.7	3600	13	ACS880-07-0330A-7+D150 <sup>2)</sup>	R10
285	2.2	SAFUR200F500	2.7	3600	13	ACS880-07-0370A-7+D150 <sup>2)</sup>	R10
285	2.2	SAFUR200F500	2.7	3600	13	ACS880-07-0430A-7+D150 <sup>2)</sup>	R10
350	2.0	2xSAFUR125F500	2.0	7200	18	ACS880-07-0425A-7+D150 <sup>2)</sup>	R11
350	2.0	2xSAFUR125F500	2.0	7200	18	ACS880-07-0470A-7+D150 <sup>2)</sup>	R11
350	2.0	2xSAFUR125F500	2.0	7200	18	ACS880-07-0522A-7+D150 <sup>2)</sup>	R11
400	1.8	2xSAFUR125F500	2.0	7200	18	ACS880-07-0590A-7+D150 <sup>2)</sup>	R11
400	1.8	2xSAFUR125F500	2.0	7200	18	ACS880-07-0650A-7+D150 <sup>2)</sup>	R11
400	1.8	2xSAFUR125F500	2.0	7200	18	ACS880-07-0721A-7+D150 <sup>2)</sup>	R11

Note: All brake resistors are to be installed inside the drive cabinet.

<sup>1)</sup> = Connected in parallel

Brake options for high power types, contact your local ABB.

<sup>2)</sup> = +D151 if resistor is ordered

$U_N = 690 \text{ V}$  (range 525 to 690 V)

Nominal ratings					Duty cycle (1min/5min)		Duty cycle (10s/60s)		Brake Chopper Type	Brake resistor Type	$E_r$ [kJ]	Type designation	Frame size
$P_{brcont}$ kW	$R$ ohm	$I_{max}$ A	$I_{rms}$ A	$P_{cont}$ kW	$P_{br}$ kW	$I_{rms}$ A	$P_{br}$ kW	$I_{rms}$ A					
<b>6-pulse diode</b>													
1211	0,45	2505	291	162	500	447	862	771	3xNBRA-669	3 x (2 x SAFUR200F500)	32400	ACS880-07-0800A-7	D8T+2xR8i
1211	0,45	2505	291	162	500	447	862	771	3xNBRA-669	3 x (2 x SAFUR200F500)	32400	ACS880-07-0900A-7	D8T+2xR8i
1211	0,45	2505	291	162	500	447	862	771	3xNBRA-669	3 x (2 x SAFUR200F500)	32400	ACS880-07-1160A-7	2xD8T+2xR8i
<b>12-pulse diode</b>													
1211	0,45	2505	291	162	500	447	862	771	3xNBRA-669	3 x (2 x SAFUR200F500)	32400	ACS880-07-0800A-7+A004	2xD7T+2xR8i
1211	0,45	2505	291	162	500	447	862	771	3xNBRA-669	3 x (2 x SAFUR200F500)	32400	ACS880-07-0950A-7+A004	2xD8T+2xR8i
1211	0,45	2505	291	162	500	447	862	771	3xNBRA-669	3 x (2 x SAFUR200F500)	32400	ACS880-07-1160A-7+A004	2xD8T+2xR8i

For other frame sizes application engineering only

## Maximum braking power of the ACS880 equipped with the standard chopper and the standard resistor

$P_{brcont}$	Continuous brake chopper power. The value applies to the minimum resistance value. With a higher resistance value the $P_{brcont}$ may increase in some ACS880 units.
$R$	Resistance value for the listed resistor type.
$R_{min}$	Minimum allowable resistance value for the brake resistor.
$E_r$	Energy pulse that the resistor assembly will withstand (400 s duty cycle). This energy will heat the resistor element from 40 °C to the maximum allowable temperature.
$P_{rcont}$	Continuous power (heat) dissipation of the resistor when placed correctly. Energy $E_r$ dissipates in 400 seconds.

Brake resistor	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
JBR-03	124	340	77	0.8
SACE08RE44	365	290	131	6.1
SACE15RE22	365	290	131	6.1
SACE15RE13	365	290	131	6.8
SAFUR80F500	600	300	345	14
SAFUR90F575	600	300	345	12
SAFUR125F500	1320	300	345	25
SAFUR200F500	1320	300	345	30

## Additional width for ACS880-07

Resistor quantity	Width (mm)
1xSAFUR	400
2xSAFUR	800

# Brake options, ACS880-37

$U_N = 500\text{ V}$  (range 380 to 500 V)

Nominal ratings					Duty cycle (1 min/5 min)		Duty cycle (10 s/60 s)		Brake Chopper Type	Brake resistor Type	Er [kJ]	Type designation	Frame size
$P_{br.cont}$ kW	R ohm	$I_{max}$ A	$I_{rms}$ A	$P_{cont.}$ kW	$P_{br.}$ kW	$I_{rms}$ A	$P_{br.}$ kW	$I_{rms}$ A					
403	1.35	605	67	54	167	206	287	355	NBRA659	2 x SAFUR200F500	10800	ACS880-37-0420A-5	R8i
403	1.35	605	67	54	167	206	287	355	NBRA659	2 x SAFUR200F500	10800	ACS880-37-0570A-5	R8i
806	0.68	1210	134	108	333	412	575	710	2xNBRA659	2 x (2 x SAFUR200F500)	21600	ACS880-37-0780A-5	R8i
806	0.68	1210	134	108	333	412	575	710	2xNBRA659	2 x (2 x SAFUR180F460)	21600	ACS880-37-1010A-5	2xR8i
806	0.68	1210	134	108	333	412	575	710	2xNBRA659	2 x (2 x SAFUR200F500)	21600	ACS880-37-1110A-5	2xR8i
1208	0.45	1815	201	162	500	618	862	1065	3xNBRA659	3 x (2 x SAFUR200F500)	32400	ACS880-37-1530A-5	2xR8i

$U_N = 690\text{ V}$  (range 525 to 690 V)

Nominal ratings					Duty cycle (1 min/5 min)		Duty cycle (10 s/60 s)		Brake Chopper Type	Brake resistor Type	Er [kJ]	Type designation	Frame size
$P_{br.cont}$ kW	R ohm	$I_{max}$ A	$I_{rms}$ A	$P_{cont.}$ kW	$P_{br.}$ kW	$I_{rms}$ A	$P_{br.}$ kW	$I_{rms}$ A					
404	1.35	835	97	54	167	149	287	257	NBRA669	2 x SAFUR200F500	10800	ACS880-37-0320A-7	R8i
404	1.35	835	97	54	167	149	287	257	NBRA669	2 x SAFUR200F500	10800	ACS880-37-0390A-7	R8i
807	0.68	1670	194	108	333	298	575	514	2xNBRA669	2 x (2 x SAFUR200F500)	21600	ACS880-37-0580A-7	R8i
807	0.68	1670	194	108	333	298	575	514	2xNBRA669	2 x (2 x SAFUR200F500)	21600	ACS880-37-0660A-7	2xR8i
1211	0.45	2505	291	162	500	447	862	771	3xNBRA-669	3 x (2 x SAFUR200F500)	32400	ACS880-37-0770A-7	2xR8i
1211	0.45	2505	291	162	500	447	862	771	3xNBRA-669	3 x (2 x SAFUR200F500)	32400	ACS880-37-0950A-7	2xR8i
1211	0.45	2505	291	162	500	447	862	771	3xNBRA-669	3 x (2 x SAFUR200F500)	32400	ACS880-37-1130A-7	2xR8i

For other frame sizes application engineering only



# du/dt filters

du/dt filtering suppresses inverter output voltage spikes and rapid voltage changes that stress motor insulation. Additionally, du/dt filtering reduces capacitive leakage currents and high frequency emission of the motor cable as well as high frequency losses and bearing currents in the motor. The need for du/dt filtering depends on the motor insulation. For information on the construction of the motor insulation, consult the manufacturer.

If the motor does not fulfil the following requirements, the lifetime of the motor might decrease. Insulated N-end (non-driven end) bearings and/or common mode filters are also required for motor bearing currents with motors bigger than 100 kW. For more information, please see the ACS880 hardware manuals.

Please see below about how to select a filter according to the motor.

## Filter selection table for ACS880

Motor type	Nominal AC supply voltage	Requirements for		
		Motor insulation system	ABB du/dt and common mode filters, insulated N-end motor bearings	
			$P_N < 100 \text{ kW}$ and frame size < IEC 315	$100 \text{ kW} \leq P_N < 350 \text{ kW}$ or IEC 315 $\leq$ frame size < IEC 400
			$P_N < 134 \text{ hp}$ and frame size < NEMA 500	$134 \text{ hp} \leq P_N < 469 \text{ hp}$ or NEMA 500 $\leq$ frame size $\leq$ NEMA 580
<b>ABB motors</b>				
Random-wound M2__, M3__ and M4__	$U_N \leq 500 \text{ V}$	Standard	–	+ N
	$500 \text{ V} < U_N \leq 600 \text{ V}$	Standard	+ du/dt	+ du/dt + N
		or Reinforced	–	+ N
	$600 \text{ V} < U_N \leq 690 \text{ V}$ (cable length $\leq 150 \text{ m}$ )	Reinforced	+ du/dt	+ du/dt + N
$600 \text{ V} < U_N \leq 690 \text{ V}$ (cable length $> 150 \text{ m}$ )	Reinforced	–	+ N	
Form-wound HX__ and AM__	$380 \text{ V} < U_N \leq 690 \text{ V}$	Standard	n/a	+ N + CMF
Old <sup>1)</sup> form-wound HX__ and modular	$380 \text{ V} < U_N \leq 690 \text{ V}$	Check with the motor manufacturer	+ du/dt with voltages over 500 V + N + CMF	
Random-wound HX__ and AM__ <sup>2)</sup>	$0 \text{ V} < U_N \leq 500 \text{ V}$	Enmelled wire with fiber glass taping	+ N + CMF	
	$500 \text{ V} < U_N \leq 690 \text{ V}$		+ du/dt + N + CMF	
HDP	Consult the motor manufacturer.			

<sup>1)</sup> Manufactured before 1.1.1998.

<sup>2)</sup> For motors manufactured before 1.1.1998, check for additional instructions with the motor manufacturer.

## Non-ABB motors

Random-wound and form-wound	$U_N \leq 420 \text{ V}$	Standard $\hat{U}_{LL} = 1300 \text{ V}$	–	+ N or CMF
	$420 \text{ V} < U_N \leq 500 \text{ V}$	Standard $\hat{U}_{LL} = 1300 \text{ V}$	+ du/dt	+ du/dt + N or + du/dt + CMF
		or Reinforced: $\hat{U}_{LL} = 1600 \text{ V}$ , 0.2 microsecond rise time	–	+ N or CMF
	$500 \text{ V} < U_N \leq 600 \text{ V}$	Reinforced: $\hat{U}_{LL} = 1600 \text{ V}$	+ du/dt	+ du/dt + N or + du/dt + CMF
		or Reinforced: $\hat{U}_{LL} = 1800 \text{ V}$	–	+ N or CMF
	$600 \text{ V} < U_N \leq 690 \text{ V}$	Reinforced: $\hat{U}_{LL} = 1800 \text{ V}$	+ du/dt	+ du/dt + N
Reinforced: $\hat{U}_{LL} = 2000 \text{ V}$ , 0.3 microsecond rise time		–	+ N or CMF	

## The abbreviations used in the table are defined below

Abbr.	Definition
$U_N$	Nominal AC line voltage.
$\hat{U}_{LL}$	Peak line-to-line voltage at motor terminals which the motor insulation must withstand.
$P_N$	Motor nominal power.
du/dt	du/dt filter at the output of the drive. Available from ABB as an optional add-on kit.
CMF	Common mode filter. Depending on the drive type, CMF is available from ABB as a factory-installed option (+208) or as an optional add-on kit.
N	N-end bearing: insulated motor non-drive end bearing.
n/a	Motors of this power range are not available as standard units. Consult the motor manufacturer.

# Dimensioning tool for selecting the optimal drive

DriveSize is designed to help select the optimal drive, motor and transformer for the application. Based on data supplied by the user, the tool calculates and suggests which drive and motors to use. DriveSize uses technical specifications found in our technical catalogs and manuals. It provides default values which can be changed by the user.

DriveSize creates documents for drive and motor dimensioning based on the load, network and cooling data provided by the user. Dimensioning results can be viewed graphically and numerically in the tool.

The tool can be used to calculate currents and network harmonics for a single supply unit or a whole system. The user can import a user-defined motor database by using a separate template that comes with the installation package. DriveSize is easy to use and has shortcut keys to make navigation quicker.

## Easy to access and use

DriveSize is a free software and can be used either online or downloaded for PC from [www.abb.com/drives](http://www.abb.com/drives).





# Summary of features and options

Power and voltage range	Ordering code	ACS880-01	ACS880-07	ACS880-07	ACS880-17	ACS880-37
		R1 to R9	R6 to R11	n×R8i	n×R8i <sup>9)</sup>	n×R8i <sup>9)</sup>
		Hp	kW	kW	kW	kW
230 V 480 V 575 V		0.75 to 100 0.75 to 350 5 to 300	45 to 630 45 to 710	560 to 1400 560 to 2800	200 to 1600 200 to 3200	200 to 1600 200 to 3200
<b>Mounting</b>						
Wall-mounting		●	–	–	–	–
For cabinet mounting	+P940, +944	□	–	–	–	–
Cabinet-built		–	●	●	●	●
Flange mounting	+C135	□ <sup>20)</sup>	–	–	–	–
<b>Cabling</b>						
Bottom entry and exit		●	●	●	●	●
Top entry and exit		–	□	□	□	□
<b>Degree of protection</b>						
IP20 (UL type 1)	+P940, +944	□	–	–	–	–
IP21 (UL type 1)		●	–	–	–	–
IP22 (UL type 1)		–	●	●	●	●
IP42 (UL type 1)	+B054	–	□	□	□	□
IP54 (UL type 12)	+B055	–	□	□	□	□
IP55 (UL type 12)	+B056	□	–	–	–	–
<b>Motor control</b>						
DTC motor control		●	●	●	●	●
<b>Software</b>						
Primary control program, for more details see section: Standard software for scalable control and functionality		●	●	●	●	●
Drive application programming based on IEC 61131-3 using Automation Builder	+N8010	□	□	□	□ <sup>11)</sup>	□ <sup>11)</sup>
Application control program for winder	+N5000	□	□	□	□	□
Application control program for crane	+N5050	□	□	□	□	□
Application control program for centrifuge/decanter	+N5150	□	□	□	□	□ <sup>11)</sup>
Application control program for PCP/ESP pump	+N5200	□	□	□	□	□
Application control program for Rod pump	+N5250	□ <sup>11)</sup>	□ <sup>11)</sup>	□ <sup>11)</sup>	□ <sup>11)</sup>	□ <sup>11)</sup>
Application control program for cooling tower direct drive	+N5350	□	□	□	□	□
Application control program for PCP/ESP pump with SynRM	+N5400	□	□	□	□	□
Support for asynchronous motor		●	●	●	●	●
Support for permanent magnet motor		●	●	●	●	●
Support for synchronous reluctance motor (SynRM)	+N7502	□	□	□ <sup>11)</sup>	□	□
<b>Control panel</b>						
Intuitive control panel		● <sup>1)</sup>	●	●	●	●
Integrated control panel holder in the drive		●	–	–	–	–
Control panel mounting platform DPMP-01 (flush)/ DPMP-02 (surface)		■	–	–	–	–
<b>Control connections (I/O) and communications</b>						
2 pcs analog inputs, programmable, galvanically isolated		●	●	●	●	●
2 pcs analog outputs, programmable		●	●	●	●	●
6 pcs digital inputs, programmable, galvanically isolated - can be divided into two groups		●	●	●	●	●
2 pcs digital inputs/outputs		●	●	●	●	●
1 pcs digital input interlock		●	●	●	●	●
3 pcs relay outputs programmable		●	●	●	●	●
Safe torque off (STO)		●	●	●	●	●
Drive-to-drive link/Built-in Modbus		●	●	●	●	●
Assistant control panel/PC tool connection		●	●	●	●	●
Possibility for external power supply for control unit		●	●	●	●	●
Built-in I/O extension and speed feedback modules: for more details see sections: "Input/output extension modules for increased connectivity", "Speed feedback interfaces for precise process control" and "DDCS communication option modules"		□	□	□	□	□
Built-in adapters for several fieldbuses: for more details see section "Flexible connectivity to automation networks"		□	□	□	□	□
<b>EMC filters</b>						
EMC 1 <sup>st</sup> environment, unrestricted distribution (category C2)	+E202	□ <sup>2)</sup>	□ <sup>2)</sup>	□ <sup>9)</sup>	□ <sup>9)</sup>	□ <sup>9)</sup>
EMC 2 <sup>nd</sup> environment, unrestricted distribution (category C3)	+E200	□ <sup>3)</sup>	□ <sup>3)</sup>	–	–	–
EMC 2 <sup>nd</sup> environment, unrestricted distribution (category C3)	+E201	□ <sup>4)</sup>	□ <sup>4)</sup>	–	–	–
EMC 2 <sup>nd</sup> environment, unrestricted distribution (category C3)	+E210	–	□ <sup>5)</sup>	●	●	●



# Summary of features and options

Power and voltage range	Ordering code	ACS880-01	ACS880-07	ACS880-07	ACS880-17	ACS880-37
		R1 to R9	R6 to R11	n×R8i	n×R8i <sup>9)</sup>	n×R8i <sup>9)</sup>
		Hp	kW	kW	kW	kW
230 V		0.75 to 100	45 to 630	560 to 1400	200 to 1600	200 to 1600
480 V		0.75 to 350	45 to 710	560 to 2800	200 to 3200	200 to 3200
575 V		5 to 300				
<b>Line filter</b>						
AC or DC choke		●	●	●	–	–
LCL		–	–	–	●	●
<b>Output filters</b>						
Common mode filter	+E208	□	□	●	●	●
du/dt filters	+E205	■	□	●	●	●
<b>Braking (see braking unit table)</b>						
Brake chopper	+D150	□ <sup>6)</sup>	□	□ <sup>7)</sup>	–	□ <sup>7)</sup>
Brake resistor	+D151	■	□	□ <sup>7)</sup>	–	□ <sup>7)</sup>
<b>Rectifier bridge</b>						
12-pulse	+A004	–	–	□	–	–
<b>Line side apparatus</b>						
aR line fuses		–	●	●	●	●
Main switch		–	●	●	●	●
Line contactor	+F250	–	□	□ <sup>13)</sup>	● <sup>14)</sup>	● <sup>14)</sup>
Air circuit breaker	+F255	–	–	□ <sup>8)</sup>	● <sup>15)</sup>	● <sup>15)</sup>
Earthing switch	+F259	–	–	□	□	□
<b>Cabinet options</b>						
Cabinet heater (ext. supply)	+G300	–	□	□	□	□
Output for motor heater (ext. supply)	+G313	–	□	□	□	□
Customized options	+P902	–	□	□	□	□
<b>Safety functions</b>						
Safe torque off (STO)		●	●	●	●	●
Safety functions module, FSO-12, without encoder, programmable functions:	+Q973	□	□	□	□	□
Safe stop 1 (SS1)						
Safely-limited speed (SLS)						
Safe brake control (SBC)						
Safe maximum speed (SMS)						
Safe stop emergency (SSE)						
Prevention of unexpected startup (POUS)						
Safety functions module, FSO-21, with encoder support, programmable functions:	+Q972 <sup>11)</sup>	□	□	□	□	□
Safe stop 1 (SS1)						
Safely-limited speed (SLS)						
Safe brake control (SBC)				□		
Safe maximum speed (SMS)						
Safe stop emergency (SSE)						
Prevention of unexpected startup (POUS)						
Safe direction (SDI), requires encoder feedback, FSE-31						
Safe speed monitoring (SSM)						
Pulse encoder interface module, FSE-31	+L521 <sup>11)</sup>					
PROFIsafe over profinet	+Q982	□	□	□	□	□
Prevention of unexpected startup with safety relay	+Q957	–	□	□	□	□
Prevention of unexpected startup with FSO-12 and -21	+Q950	–	□	□	□	□
Emergency stop, category 0 with opening the main contactor/breaker, with safety relay	+Q951	–	□	□	□	□
Emergency stop, category 1 with opening the main contactor/breaker, with safety relay	+Q952	–	□	□	□	□
Emergency stop, category 0 with STO, with safety relay	+Q963	–	□	□	□	□
Emergency stop, category 1 with STO, with safety relay	+Q964	–	□	□	□	□
Emergency stop, configurable category 0 or 1 with opening the main contactor/breaker, with FSO-12 and -21	+Q978	–	□	□	□	□
Emergency stop, configurable category 0 or 1 with STO and FSO-12 and -21	+Q979	–	□	□	□	□
Safely-limited speed with encoder, with FSO-21 and FSE-31	+Q965	–	□	□	□	□
Earth fault monitoring, earthed mains		●	●	●	●	●
Earth fault monitoring, unearthed mains	+Q954	–	□	□	□	□
ATEX thermal motor protection PTC/Pt100, Ex II (2) GD	+L513/+L514, +Q971	□ <sup>11)</sup>	□	□	□ <sup>9)</sup>	□ <sup>9)</sup>

# Summary of features and options

Power and voltage range	Ordering code	ACS880-01	ACS880-07	ACS880-07	ACS880-17	ACS880-37
		R1 to R9	R6 to R11	n×R8i	n×R8i <sup>9)</sup>	n×R8i <sup>9)</sup>
		Hp	kW	kW	kW	kW
230 V 480 V 575 V		0.75 to 100 0.75 to 350 5 to 300	45 to 630 45 to 710	560 to 1400 560 to 2800	200 to 1600 200 to 3200	200 to 1600 200 to 3200

Approvals						
CE		●	●	●	●	●
UL, cUL	+C121	●	□ <sup>10)</sup>	□	□	□
CSA	+C134	●	□ <sup>9)</sup>	□ <sup>9)</sup>	□	□
EAC/GOST R <sup>12)</sup>		●	●	●	●	●
RoHS		●	●	●	●	●
C-Tick		●	●	●	●	●
Marine type approvals	+C121 <sup>16)</sup> , +C132 <sup>19)</sup>	□ <sup>17)</sup>	□	□	□	□
TUV nord certificate for safety functions	+Q973	●	□	□	□ <sup>9)</sup>	□ <sup>9)</sup>
VTT ATEX protective device certificate	+Q973	□	□	□	□	□

- Standard
- Selectable option, with plus code
- Selectable option, external, no plus code
- Not available

## Notes

- <sup>1)</sup> Without control panel, +OJ400
- <sup>2)</sup> Earthed network, frame sizes R1 to R9, 380 to 500 V
- <sup>3)</sup> Earthed network, frame sizes R6 to R9 (-01, -07), 380 to 500 V. Frame sizes R10 to R11 (-07) 690 V

- <sup>4)</sup> Unearthed network, frame sizes R6 to R9 380 to 500 V, frame sizes R7 to R11, 690 V
- <sup>5)</sup> Earthed/unearthed network, frame sizes R10 to R11 (380 to 500 V)
- <sup>6)</sup> Frame sizes R1 to R4 built-in and R5 to R9 as selectable option
- <sup>7)</sup> 2×R8i
- <sup>8)</sup> 2×D8T to 4×D8T
- <sup>9)</sup> Check availability from local ABB
- <sup>10)</sup> Frame sizes R10 to R11 pending
- <sup>11)</sup> Pending
- <sup>12)</sup> EAC has replaced GOST R

- <sup>13)</sup> D8T, 2×D7T and 2×D8T
- <sup>14)</sup> R8i to 2×R8i, 400 to 500 V. R8i to 3×R8i, 690 V
- <sup>15)</sup> 3×R8i, 400 to 500 V. 4×R8i and 6×R8i, 690 V
- <sup>16)</sup> Safe Disconnection Function (+Q971), does not include an ATEX relay
- <sup>17)</sup> Marine type approvals for ACS880-01 (ABS, Bureau veritas, CCS, DNV GL, Lloyd's, NK, RINA)
- <sup>18)</sup> For cabinet-built drives (-07)
- <sup>19)</sup> For wall-mounted drives (-01)
- <sup>20)</sup> Available only with IP20 (P940 or P944)

# Drives service

## Your choice, your future

### The future of your drives depends on the service you choose.

Whatever you choose, it should be a well-informed decision. No guesswork. We have the expertise and experience to help you find and implement the right service for your drive equipment. You can start by asking yourself these two critical questions:

- Why should my drive be serviced?
- What would my optimal service options be?

From here, you have our guidance and full support along the course you take, throughout the entire lifetime of your drives.

### Your choice, your business efficiency

ABB Drive Care agreement lets you focus on your core business. A selection of predefined service options matching your needs provides optimal, more reliable performance, extended drive lifetime and improved cost control. So you can reduce the risk of unplanned downtime and find it easier to budget for maintenance.

### We can help you more by knowing where you are!

Register your drive at [www.abb.com/drivereg](http://www.abb.com/drivereg) for extended warranty options and other benefits.



## Service to match your needs

Your service needs depend on your operation, life cycle of your equipment and business priorities. We have identified our customers' four most common needs and defined service options to satisfy them. What is your choice to keep your drives at peak performance?

### Is uptime your priority?

Keep your drives running with precisely planned and executed maintenance.

#### Example services include:

- ✓ Life Cycle Assessment
- ✓ Installation and Commissioning
- ✓ Spare Parts
- ✓ Preventive Maintenance
- ✓ Reconditioning
- ✓ ABB Drive Care agreement

### Is rapid response a key consideration?

If your drives require immediate action, our global network is at your service.

#### Example services include:

- ✓ Technical Support
- ✓ Drive Exchange
- ✓ On-site Repair
- ✓ Remote Support
- ✓ Response time agreements

### Need to extend your assets' lifetime?

Maximize your drive's lifetime with our services.

#### Example services include:

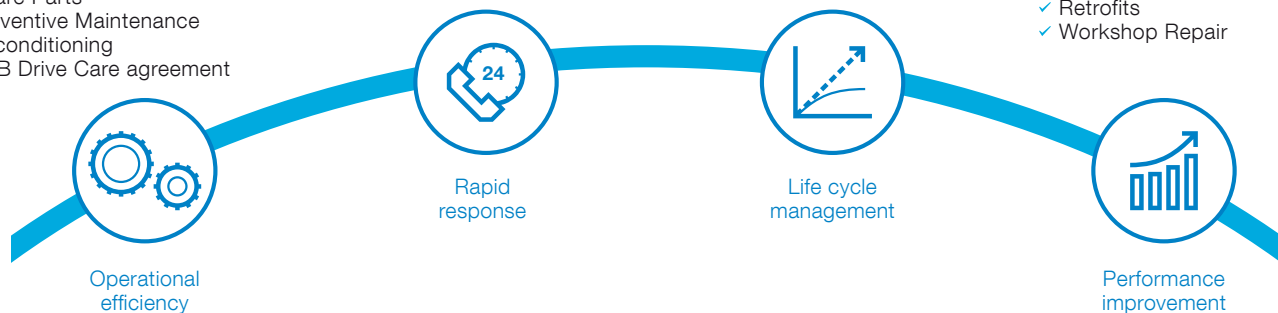
- ✓ Life Cycle Assessment
- ✓ Control Upgrades
- ✓ Retrofits
- ✓ Replacement, Disposal and Recycling

### Is performance most critical to your operation?

Get optimal performance out of your machinery and systems.

#### Example services include:

- ✓ Training
- ✓ Inspections and Diagnostics
- ✓ Hardware Upgrades
- ✓ Retrofits
- ✓ Workshop Repair



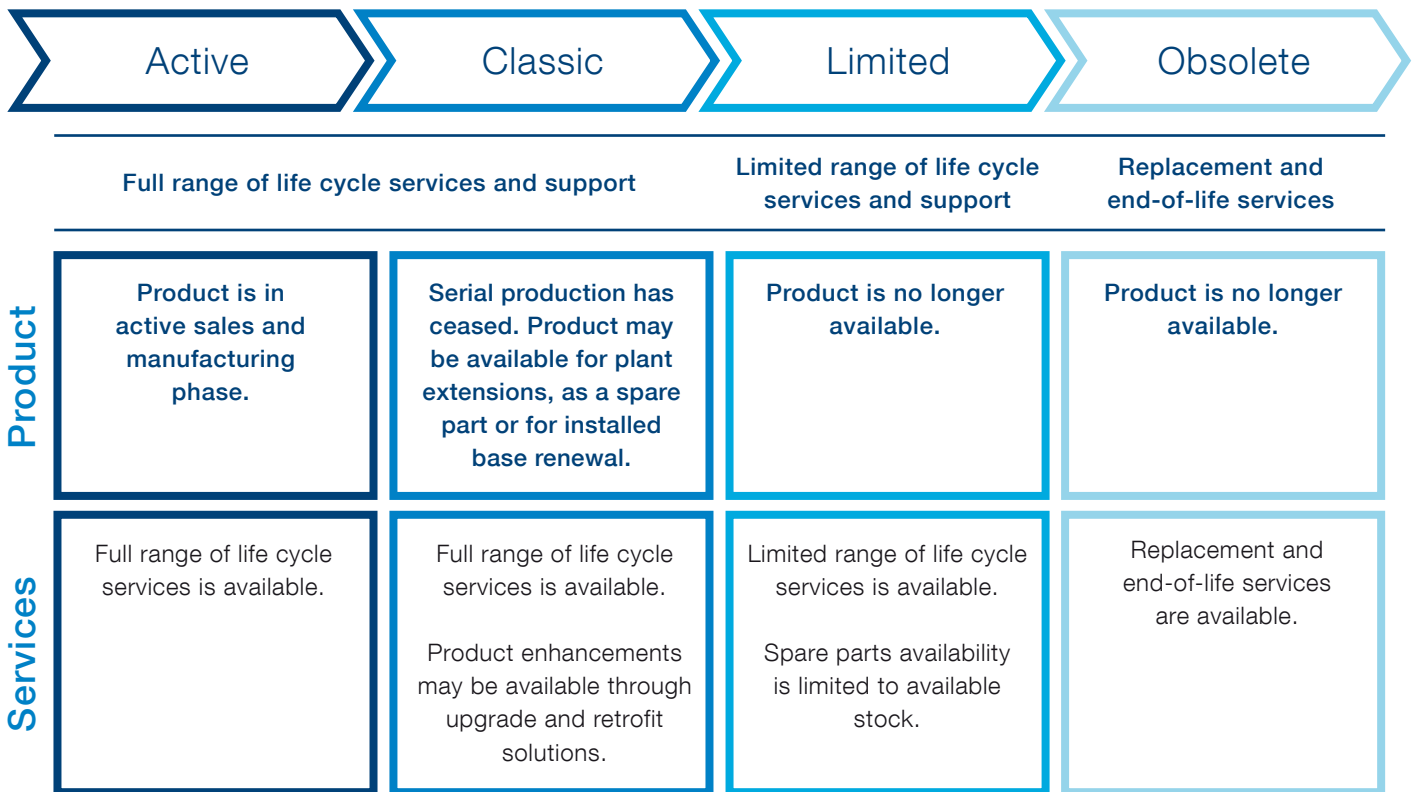
# Drives service

## A lifetime of peak performance

You're in control of every life cycle phase of your drives. At the heart of drive services is a four-phase product life cycle management model. This model defines the services recommended and available throughout drives lifespan.

Now it's easy for you to see the exact service and maintenance available for your drives.

ABB drives life cycle phases explained:



### Keeping you informed

We notify you every step of the way using life cycle status statements and announcements.

Your benefit is clear information about your drives' status and precise services available. It helps you plan the preferred service actions ahead of time and make sure that continuous support is always available.

### Step 1 Life Cycle Status Announcement

Provides early information about the upcoming life cycle phase change and how it affects the availability of services.

### Step 2 Life Cycle Status Statement

Provides information about the drive's current life cycle status, availability of product and services, life cycle plan and recommended actions.



# Notes

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# Notes

A series of horizontal dotted lines for taking notes.

# Contact us

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

[www.abb.com/drives](http://www.abb.com/drives)

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ACS880 single  
drives web page

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Power and productivity  
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