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 V AC (range 380 to 500 V AC). The power ratings are valid at nominal voltage 480 V AC, 60 Hz							
Nominal ratings						Type designation	Frame size
Light-duty use (10% overload for 1 min)			Heavy-duty use (50% overload for 1 min)				
I_{Ld}	P_{Ld}		I_{2Hd}	P_{Hd}			
A	Hp	kW	A	Hp	kW		
U_N = 500 V AC (range 380 to 500 V AC). The power ratings are valid at nominal voltage 480 V AC, 60 Hz							
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 V (range 525 to 690 V). The power ratings are valid at nominal voltage 690 V, 50 Hz							
Nominal ratings						Type designation	Frame size
Light-duty use (10% overload for 1 min)			Heavy-duty use (50% overload for 1 min)				
I_{Ld}	P_{Ld}		I_{2Hd}	P_{Hd}			
A	Hp	kW	A	Hp	kW		
U_N =690 V (range 525 to 690 V). The power ratings are valid at nominal voltage 690 V, 50 Hz							
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

UL Type 1

Frame size	Height (H)		Width (W)		Depth (D)		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

UL Type 12

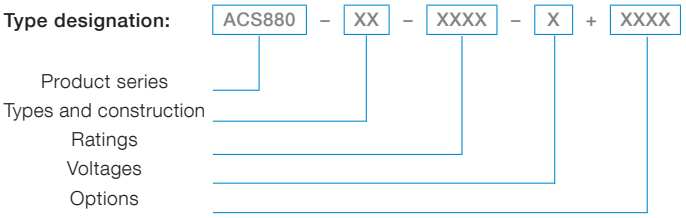
Frame size	Height (H)		Width (W)		Depth (D)		Weight	
	UL type 12	IP55	UL type 12	IP55	UL type 12	IP55	UL type 12	IP55
	(in)	(mm)	(in)	(mm)	(in)	(mm)	(lbs)	(kg)
1xR8i+1xR8i	91.2	2315	48.5	1230	27.4	698	2602	1180
2xR8i+2xR8i	91.2	2315	115.4	2930	28.1	714	5732	2600
3xR8i+3xR8i	91.2	2315	146.9	3730	28.1	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-overload use	
I_{Ld}	Continuous current allowing 10% I_{Ld} for 1 min/5 min at 40 °C.
P_{Ld}	Typical motor power in light-overload use.
Heavy-duty use	
I_{Hd}	Continuous current allowing 50% I_{Hd} for 1 min/5 min at 40 °C.
P_{Hd}	Typical motor power in heavy-duty use.

The ratings apply at 40 °C ambient temperature. At higher temperatures (up to 50 °C) the derating is 1%/1 °C. Operation above 150 Hz might require type specific derating.

How to select a drive

Many of the features for the ACS880 single drives are built-in as standard, making selection easy. A wide range of options are available to optimize the drive for different requirements. To choose the right drive for your application, please refer to the rating tables or use ABB's DriveSize dimensioning tool (page 47). The selected drive 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	
Voltage and power range	3-phase, U_{N2} = 208 to 240 V, +10/-15% (-01) 3-phase, U_{N5} = 380 to 500 V, +10/-15% (-01), ±10% (-07,-17,-37) 3-phase, U_{N7} = 525 to 690 V, +10/-15% (-01), ±10% (-07,-17,-37) 0.75 to 350 hp (0.55 to 250 kW) (-01) 50 to 3000 hp (45 to 2800 kW) (-07) 250 to 4250 hp (250 to 3200 kW) (-17, -37)
Frequency	50/60 Hz ±5%
Power factor (ACS880-01, -07)	$\cos\varphi_1$ = 0.98 (fundamental) $\cos\varphi$ = 0.93 to 0.95 (total)
Power factor (ACS880-17, -37)	$\cos\varphi_1$ = 1 (fundamental)
Efficiency (at nominal power)	98% (-01,-07) 97% (-17,-37)
Motor connection	
Voltage	3-phase output voltage 0 to U_{N2} /U_{N3} /U_{N5} /U_{N7}
Frequency	0 to ±500 Hz [1) 2)]
Motor control	Direct torque control (DTC)
Torque control: Open loop Closed loop Open loop Closed loop	Torque step rise time: <5 ms with nominal torque <5 ms with nominal torque Non-linearity: ± 4% with nominal torque ± 3% with nominal torque
Speed control: Open loop Closed loop Open loop Closed loop	Static accuracy: 10% of motor slip 0.01% of nominal speed Dynamic accuracy: 0.3 to 0.4% seconds with 100% torque step 0.1 to 0.2% seconds with 100% torque step

Product compliance

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

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

Categories C3 and C2 with internal option

Environmental limits	
Ambient temperature Transport Storage Operation (air-cooled)	 -40 to +70 °C -40 to +70 °C -15 to +55 °C, no frost allowed (-01) 0 to +50 °C, no frost allowed (-07, -17, -37) +40 to 55 °C with derating (-01) [3)] +40 to 50 °C with derating of 1%/1 °C (-07,-17,-37)
Cooling method Air-cooled	 Dry clean air
Altitude 0 to 1,000 m 1,000 to 4,000 m	 Without derating With derating of 1%/100 m [6)]
Relative humidity	5 to 95%, no condensation allowed
Degree of protection IP20 IP21 IP22 IP42, IP54 IP55	 Option (-01) Standard (-01) Standard (-07, -17, -37) Option (-07, -17, -37) Option (-01)
Paint color	RAL 9017/9002 (-01), RAL 9017/7035 (-07, -17, -37)
Contamination levels	No conductive dust allowed
Storage	IEC 60721-3-1, Class 1C2 (chemical gases), Class 1S2 (solid particles)
Transportation	IEC 60721-3-2, Class 2C2 (chemical gases), Class 2S2 (solid particles)
Operation	IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles)
Functional safety Standard With internal safety option safety functions module Fieldbus communication	 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 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 PROFIsafe over profinet, certified

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

Contact us

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

www.abb.com/drives

ACS880 single drives web page

Power and productivity for a better world™