



Low voltage AC drives

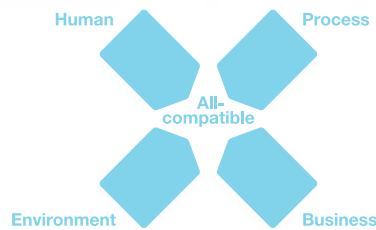
# ABB industrial drives ACS880, multidrives 1.5 to 250 kW Catalog

# 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.

## Contents

3	The all-compatible ACS880 series drives
4	Simplifying your world without limiting your possibilities
5	Multidrives, ACS880
6	Human all-compatible
7	Process all-compatible
8	Environment all-compatible
9	Business all-compatible
10	How to select a drive
11	Technical data
12	ACS880 multidrives
13	Overview of the construction
14	Ratings, types and voltages - Inverter units
14	Inverter units (INU), ACS880-107
15	Ratings, types and voltages - Supply units
15	IGBT supply units (ISU), ACS880-207
15	Diode supply units (DSU), ACS880-307
16	Standard interface and extensions for comprehensive connectivity
17	Standard software for scalable control and functionality
18	Intuitive human-machine interface
19	PC tool for easy startup and maintenance
20	Integrated safety for simplified configuration
21	Drive application programming with CODESYS
22	Flexible connectivity to automation networks
23	Input/output extension modules for increased connectivity
23	Speed feedback interfaces for precise process control
23	DDCS communication option modules
23	Remote monitoring access worldwide
24	EMC – electromagnetic compatibility
24 - 25	Brake options, ACS880-607
25	Dimensioning tool for selecting the optimal drive
26	Expertise at every stage of the value chain
27	Secure uptime throughout the drive life cycle



## 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.



## 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 the energy used in the processes.

## Remote monitoring

With a built-in web server, NETA-21 makes worldwide access easy to industry applications.



## Drive-to-drive link

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

## Drive application programming

Customizable to meet the precise application needs using CODESYS programming. The drive is also easy to integrate with other ABB components such as PLC and HMI.



## Multidrives, ACS880

The all-compatible drives are designed to provide customers across several industries and applications with unprecedented levels of compatibility and flexibility. The ACS880 multidrives are customized meet the precise needs of industries such as metals, pulp and paper, oil and gas, mining, harbours, offshore, marine and power plants. They control a wide range of applications such as paper machines, winders, rolling mills, processing lines, roller tables, cranes and drilling.



### 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 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.

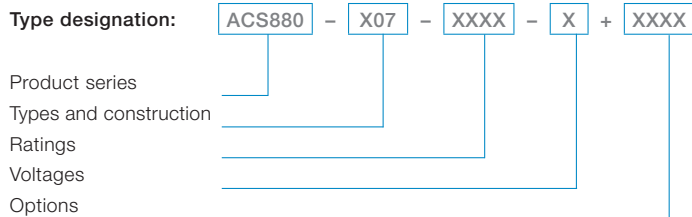
## How to select a drive

Many of the features for the ACS880 multidrives 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 on pages 14 and 15 or use ABB's DriveSize dimensioning tool (page 25). 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, $U_{N3} = 380$ to $415$ V, +10/-10% 3-phase, $U_{N5} = 380$ to $500$ V, +10/-10% 1.5 to 250 kW IGBT supply unit (ISU) 90 to 630 kVA Diode supply unit (DSU) 50 to 850 kVA
<b>Frequency</b>	50/60 Hz $\pm 5\%$
<b>Power factor</b>	IGBT supply unit (ISU): $\cos\phi_1 = 1$ (fundamental) $\cos\phi = 0.99$ (total) Diode supply unit (DSU): $\cos\phi_1 = 0.98$ (fundamental) $\cos\phi = 0.93$ to $0.95$ (total)
<b>TDHI (total harmonic distortion of current) ISU</b>	< 5%
<b>Efficiency (at nominal power)</b>	98% with DSU 97% with ISU

## Motor connection

<b>Voltage</b>	3-phase output voltage 0 to $U_{N3}/U_{N5}$
<b>Frequency</b>	0 to $\pm 500$ Hz * **
<b>Motor control</b>	Direct torque control (DTC)
<b>Torque control:</b> Open loop Closed loop	Torque step rise time: <5 ms with nominal torque <5 ms with nominal torque Non-linearity: Open loop Closed loop
<b>Speed control:</b> Open loop Closed loop	Static accuracy: 10% of motor slip 0.01% of nominal speed Dynamic accuracy: Open loop Closed loop

## 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 UL508A or UL508C and CSA C22.2 NO.14-95, GOST R,  
Pending: C-Tick
- Functional safety: STO TÜV Nord certificate

## EMC according to EN 61800-3 (2004)

2<sup>nd</sup> environment category C3 included

## Environmental limits

<b>Ambient temperature</b> Transport Storage Operation (air-cooled)	-40 to +70 °C -40 to +70 °C 0 to +50 °C, no frost allowed +40 to 50 °C with derating of 1%/1 °C
<b>Cooling method</b> Air-cooled	Dry clean air
<b>Altitude</b> 0 to 1,000 m 1,000 to 4,000 m	Without derating With derating of 1%/100 m
<b>Relative humidity</b>	5 to 95%, no condensation allowed
<b>Degree of protection</b> IP22 IP42	Standard (IP20 cabinet doors open) Option
<b>Paint color</b>	RAL 9017, RAL 7035
<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 61800-5-2) IEC 61508 ed2: SIL 3, IEC 61511: SIL 3, IEC 62061: SIL CL 3, EN ISO 13849-1: PL e
Internal safety option (FSO-11)	Safe stop 1 (SS1), safely-limited speed (SLS), safe stop emergency (SSE), safe brake control, (SBC) and safe maximum speed (SMS) IEC 61508 ed2: SIL 3, IEC 61511: SIL 3, IEC 62061: SIL CL 3, EN ISO 13849-1: PL e TÜV Nord certified ***

C = chemically active substances

S = mechanically active substances

\* For higher operational output frequencies please contact your local ABB office

\*\* The operational frequency of the FSO-11 is up to 200 Hz of the drives output

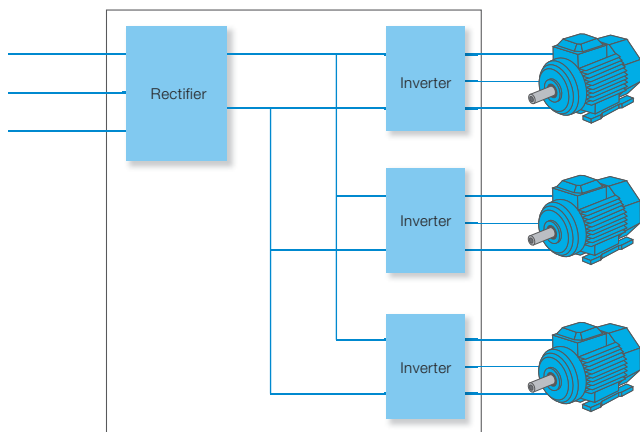
\*\*\* Please check availability per drive type



# ACS880 multidrives

Our ACS880 multidrives are built using ABB's common drives architecture. Built to order, the multidrives meet technical challenges through a wide selection of options that are mountable within the cabinet. With a compact cabinet design and high power density, the single supply and DC bus arrangement with multiple inverters will reduce line power, cabinet size and investment costs.

Induction motors, synchronous motors and induction servo motors are all supported as standard without the need for any 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 include

- Compact design for easy cabinet assembly and maintenance
- High packing density with 16 inverter units up to frame size R2i can be installed into one cabinet
- Diode bridge that is highly reliable with high power density
- Fast connectors for motor cables in the bottom part of the cabinet making installation easy
- Degree of protection IP22 and IP42 for different environments
- Integrated safety including safe torque-off (STO) as standard with several safety functions as options
- Drive composer PC tool for commissioning and configuration
- Intuitive control panel with USB connection
- Device panel for optional switches and pilot light
- Primary control program – common software used throughout the ACS880 drive series.
- Control unit ZCU-13 for inverter and diode supply unit comes with three option slots for extension option modules
- IGBT supply unit uses the BCU-02 control unit that comes with integrated branding unit, power stage link data logger with detachable memory card, embedded Ethernet and three option slots with an additional slot for DDCS communication option
- Removable memory unit for easy maintenance
- Coated boards as standard
- Braking options
- DC fuse disconnectors, DC fuses or DC fuse switch including charging circuit for inverters
- Cabinet light and heater option
- Highly efficient thermal handling as heat loss of each inverter unit is guided to the back of the cabinet. All cabinets are their own compartments.
- Long lifetime capacitors and high efficiency cooling fan with speed or on-off control



IGBT supply unit (ISU) with 18 inverters

# Overview of the construction

The multidrives principle is based on a common DC bus arrangement enabling single power entry and common braking resources for several drives. There are several possibilities on the supply side starting from a simple diode supply unit up to highly sophisticated active IGBT supply units.

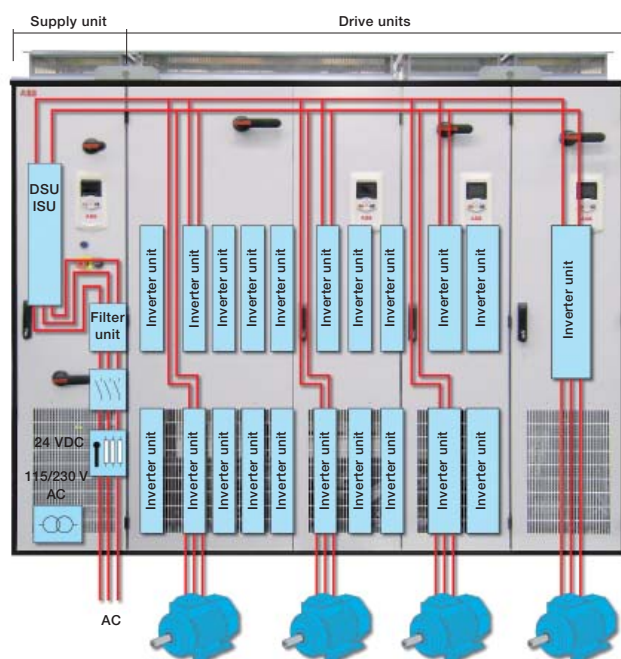
Multidrives can be used wherever several motors form part of a single process. They come with a common DC bus arrangement, enabling single power entry for several drives. The energy circulating over the common DC bus results in energy and cost savings, as not all energy is taken from the supply network allowing the supply unit in the drive to have smaller dimensions. A single power line connection and a common supply unit reduces the need for cabling and floor space, saving investment and maintenance costs. In multimotor applications, for example in a paper machine, the individual inverter modules provide fast communication of torque and speed signals between the inverters for controlling the tension in the paper web. Also in cases where the shafts of the individual motors are not tightly coupled, for example in sugar centrifuges, each inverter module can be programmed with a speed profile in order to minimize overall energy consumption. These two examples merely demonstrate the range of applications where multidrives offer substantial benefits over other types of drive constructions.

## Constructed for controlling multiple motors

Multidrives are made up of several different units (see figure below). The most important units include:

- Drive units, known as inverter units (INU)
- Supply units
- Brake unit (optional)
- Control units (optional)

The common supply of the multidrive enables the implementation of overall safety and control functions.



## Inverter units (INU)

Inverter units have built-in capacitors for smoothing the voltage of the DC busbars. The electrical connection to the common DC busbar is fuse protected. An individual inverter unit can be disconnected from the DC bus, either by fuse disconnect or by DC switch. Each inverter unit has a control unit (ZCU) which has slots to place inputs and outputs modules and fieldbus modules. Different input and output extension modules for functions such as control, monitoring and measurement purposes are also available.

## Diode supply unit (DSU)

A diode supply unit is used in non-regenerative drive systems to convert three-phase AC voltage to DC voltage. A diode supply unit (D6D to D8D) is controlled by the ZCU control unit. There is no charging circuit in this DSU as the charging is built into the drive units (R1i to R4i and R6i to R7i).

## IGBT supply unit (ISU)

An IGBT supply unit is used in regenerative drive systems to convert three-phase AC voltage to DC voltage. In power control, it gives the same firm but gentle performance as direct torque control (DTC) gives in motor control. The main circuit consists of a main switch, a filter and a converter. The converter is hardware compatible with drive units and it can operate in both motoring and generating modes.

The DC voltage is constant and the line current is sinusoidal. The control also provides a near unity power factor. The unit can also boost DC voltages eg, when line voltage is low. Harmonic content remains extremely low due to DTC control and LCL filtering.

## Brake unit

The brake unit handles the energy generated by decelerating motors. During resistor braking, whenever the voltage in the intermediate circuit of a drive exceeds a certain limit, a braking chopper connects the circuit to a braking resistor.

## AC800M control unit (optional)

The multidrive concept also includes the control unit for the AC800M process controller and S800 I/O system. The control unit is equipped with communication interfaces, power supplies and the front devices necessary for the automation equipment.

# Ratings, types and voltages

## Inverter units

### Inverter unit (INU), ACS880-107

$U_N = 400\text{ V}$  (range 380 to 415 V). The power ratings are valid at nominal voltage 400 V.

Nominal ratings		No-overload use	Light-overload use		Heavy-duty use		Noise level	Heat dissipation	Air flow	Type designation	Frame size
$I_N$ A (AC)	$I_{max}$ A (AC)	$P_N$ kW	$I_{Ld}$ A	$P_{Ld}$ kW	$I_{Hd}$ A	$P_{Hd}$ kW	dB(A)	kW	m <sup>3</sup> /h		
4.8	7	1.5	4.5	1.5	4	1.5	47	0.07	24	ACS880-107-004A8-3	R1i
6	8.8	2.2	5.5	2.2	5	2.2	47	0.08	24	ACS880-107-006A0-3	R1i
8	10.5	3	7.6	3	6	2.2	47	0.09	24	ACS880-107-008A0-3	R1i
10.5	13.5	4	9.7	4	9	4	39	0.11	48	ACS880-107-0011A-3	R2i
14	16.5	5.5	13	5.5	11	5.5	39	0.14	48	ACS880-107-0014A-3	R2i
18	21	7.5	16.8	7.5	14	7.5	39	0.17	48	ACS880-107-0018A-3	R2i
25	33	11	23	11	19	7.5	63	0.20	142	ACS880-107-0025A-3	R3i
35	44	15	32	15	29	15	63	0.30	142	ACS880-107-0035A-3	R3i
44	53	19	41	22	35	18.5	71	0.35	200	ACS880-107-0044A-3	R3i
50	66	22	46	22	44	22	71	0.41	200	ACS880-107-0050A-3	R3i
61	78	30	57	30	52	22	70	0.50	290	ACS880-107-0061A-3	R4i
78	100	37	74	37	69	37	70	0.60	290	ACS880-107-0078A-3	R4i
94	124	45	90	45	75	37	70	0.74	290	ACS880-107-0094A-3	R4i
104	125	55	100	55	78	37	70	0.75	290	ACS880-107-0100A-3	R4i
141	183	75	135	75	105	55	71	1.1	650	ACS880-107-0140A-3	R6i
169	220	90	162	90	126	55	71	1.4	650	ACS880-107-0170A-3	R6i
206	268	110	198	110	154	75	71	1.8	650	ACS880-107-0210A-3	R6i
246	320	132	236	132	184	90	71	2.1	650	ACS880-107-0250A-3	R6i
300	390	160	288	160	224	110	72	2.5	940	ACS880-107-0300A-3	R7i
350	455	200	336	200	262	132	72	3.1	940	ACS880-107-0350A-3	R7i

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

Nominal ratings		No-overload use	Light-overload use		Heavy-duty use		Noise level	Heat dissipation	Air flow	Type designation	Frame size
$I_N$ A (AC)	$I_{max}$ A (AC)	$P_N$ kW	$I_{Ld}$ A	$P_{Ld}$ kW	$I_{Hd}$ A	$P_{Hd}$ kW	dB(A)	kW	m <sup>3</sup> /h		
3.6	5.3	1.5	3.4	1.5	3	1.5	47	0.06	24	ACS880-107-003A6-5	R1i
4.8	7	2.2	4.5	2.2	4	2.2	47	0.07	24	ACS880-107-004A8-5	R1i
6	8.8	3	5.5	3	5	2.2	47	0.08	24	ACS880-107-006A0-5	R1i
8	10.5	4	7.6	4	6	3	47	0.09	24	ACS880-107-008A0-5	R1i
10.5	13.5	5.5	9.7	5.5	9	4	39	0.13	48	ACS880-107-0011A-5	R2i
14	16.5	7.5	13	7.5	11	5.5	39	0.15	48	ACS880-107-0014A-5	R2i
18	21	11	16.8	7.5	14	7.5	39	0.18	48	ACS880-107-0018A-5	R2i
25	33	15	23	11	19	11	63	0.23	142	ACS880-107-0025A-5	R3i
30	36	18.5	28	15	24	15	63	0.28	142	ACS880-107-0030A-5	R3i
35	44	22	32	18.5	29	18.5	63	0.32	142	ACS880-107-0035A-5	R3i
50	66	30	46	30	44	30	71	0.48	200	ACS880-107-0050A-5	R3i
61	78	37	57	37	52	30	70	0.55	290	ACS880-107-0061A-5	R4i
78	100	45	74	45	69	45	70	0.65	290	ACS880-107-0078A-5	R4i
94	124	55	90	55	75	45	70	0.80	290	ACS880-107-0094A-5	R4i
113	147	75	108	75	85	55	71	1	540	ACS880-107-0110A-5	R6i
136	177	90	131	90	102	55	71	1.2	540	ACS880-107-0140A-5	R6i
165	215	110	158	110	123	75	71	1.5	540	ACS880-107-0170A-5	R6i
197	256	132	189	132	147	90	71	1.8	540	ACS880-107-0200A-5	R6i
240	312	160	230	160	180	110	71	2.2	540	ACS880-107-0240A-5	R6i
302	393	200	290	200	226	132	72	2.7	1020	ACS880-107-0300A-5	R7i
340	442	250	326	250	254	160	72	3.2	1020	ACS880-107-0340A-5	R7i

#### Nominal ratings

$I_N$  Rated current available continuously without overloadability at 40 °C.

$P_N$  Typical motor power in no-overload use.

$I_{max}$  Maximum output current. Available for 10 seconds at start, then as long as allowed by drive temperature.

#### Light-overload use

$I_{Ld}$  Continuous current allowing 110%  $I_{Ld}$  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 150%  $I_{Hd}$  for 1 min/5 min at 40 °C.

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

Frame size	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
R1i	2130	400 to 1000*	644	200
R2i	2130	400 to 1000*	644	200
R3i	2130	400 to 1000*	644	210
R4i	2130	400 to 1000*	644	220
R6i	2130	400	644	250
R7i	2130	400	644	250

\* Width depends on the amount of inverter units.

The ratings apply at 40 °C ambient temperature. At higher temperatures (up to 50 °C) the derating is 1%/1 °C. The current ratings are the same regardless of the supply voltage within one voltage range. Dimensioning has to be checked by DriveSize.



# Ratings, types and voltages

## Supply units

### IGBT supply unit (ISU), ACS880-207

$U_N = 400\text{ V}$  (range 380 to 415 V). The power ratings are valid at nominal voltage 400 V.

Nominal ratings				No-overload use	Light-overload use		Heavy-duty use		Noise level	Heat dissipation	Air flow	Type designation	Frame size
$I_N$ A (AC)	$I_N$ A (DC)	$I_{max}$ A (DC)	$S_N$ kVA	$P_N$ kW (DC)	$I_{Ld}$ A (DC)	$P_{Ld}$ kW (DC)	$I_{Hd}$ A (DC)	$P_{Hd}$ kW (DC)	dB(A)	kW	m <sup>3</sup> /h		
423	513	667	304	301	492	289	384	225	72	4.6	1300	ACS880-207-0420A-3	R8i
576	698	908	414	410	670	393	522	307	72	6.4	1300	ACS880-207-0580A-3	R8i
810	982	1277	582	576	943	553	735	431	72	9.4	1300	ACS880-207-0810A-3	R8i

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

Nominal ratings				No-overload use	Light-overload use		Heavy-duty use		Noise level	Heat dissipation	Air flow	Type designation	Frame size
$I_N$ A (AC)	$I_N$ A (DC)	$I_{max}$ A (DC)	$S_N$ kVA	$P_N$ kW (DC)	$I_{Ld}$ A (DC)	$P_{Ld}$ kW (DC)	$I_{Hd}$ A (DC)	$P_{Hd}$ kW (DC)	dB(A)	kW	m <sup>3</sup> /h		
396	480	624	343	340	461	326	359	254	72	4.7	1300	ACS880-207-0400A-5	R8i
531	644	837	460	455	618	437	482	341	72	6.1	1300	ACS880-207-0530A-5	R8i
729	884	1149	631	625	849	600	661	468	72	8.7	1300	ACS880-207-0730A-5	R8i

### Diode supply units (DSU), ACS880-307

$U_N = 400\text{ V}$  (range 380 to 415 V). The power ratings are valid at nominal voltage 400 V.

Nominal ratings				No-overload use	Light-overload use		Heavy-duty use		Noise level	Heat dissipation	Air flow	Type designation	Frame size
$I_N$ A (AC)	$I_N$ A (DC)	$I_{max}$ A (DC)	$S_N$ kVA	$P_N$ kW (DC)	$I_{Ld}$ A (DC)	$P_{Ld}$ kW (DC)	$I_{Hd}$ A (DC)	$P_{Hd}$ kW (DC)	dB(A)	kW	m <sup>3</sup> /h		
80	98	137	55	53	94	51	78	42	62	1.4	720	ACS880-307-0080A-3+A003	D6D
173	212	297	120	114	203	110	170	92	62	2.0	720	ACS880-307-0170A-3+A003	D6D
327	400	561	227	216	384	208	320	173	62	3.0	1070	ACS880-307-0330A-3+A003	D7D
490	600	840	339	324	576	311	480	259	62	4.1	1070	ACS880-307-0490A-3+A003	D7D
653	800	1120	452	432	768	415	640	345	65	5.8	1430	ACS880-307-0650A-3+A003	D8D
980	1200	1680	679	648	1152	622	960	519	65	7.6	1430	ACS880-307-0980A-3+A003	D8D

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

Nominal ratings				No-overload use	Light-overload use		Heavy-duty use		Noise level	Heat dissipation	Air flow	Type designation	Frame size
$I_N$ A (AC)	$I_N$ A (DC)	$I_{max}$ A (DC)	$S_N$ kVA	$P_N$ kW (DC)	$I_{Ld}$ A (DC)	$P_{Ld}$ kW (DC)	$I_{Hd}$ A (DC)	$P_{Hd}$ kW (DC)	dB(A)	kW	m <sup>3</sup> /h		
80	98	137	69	66	94	63	78	53	62	1.4	720	ACS880-307-0080A-5+A003	D6D
173	212	297	150	143	203	137	170	114	62	2.0	720	ACS880-307-0170A-5+A003	D6D
327	400	561	283	270	384	260	320	216	62	3.0	1070	ACS880-307-0330A-5+A003	D7D
490	600	840	424	405	576	389	480	324	62	4.1	1070	ACS880-307-0490A-5+A003	D7D
653	800	1120	566	540	768	518	640	432	65	5.8	1430	ACS880-307-0650A-5+A003	D8D
980	1200	1680	849	810	1152	778	960	648	65	7.6	1430	ACS880-307-0980A-5+A003	D8D

#### Nominal ratings

$I_N$	Rated current available continuously without overloadability at 40 °C.
$S_N$	Nominal apparent power.
$P_N$	Power in no-overload use.
$I_{max}$	Maximum output current. Available for 10 seconds at start, otherwise as long as allowed by drive temperature.

#### Light-overload use

$I_{Ld}$	Continuous current allowing 110% $I_{Ld}$ for 1 min/5 min at 40 °C.
$P_{Ld}$	Power in light-overload use.

#### Heavy-duty use

$I_{Hd}$	Continuous current allowing 150% $I_{Hd}$ for 1 min/5 min at 40 °C.
$P_{Hd}$	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.

#### Dimensions (for ISU and DSU)

Frame size	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
------------	-------------	------------	------------	-------------

#### IGBT supply unit (ISU)

R8i	2130	1000	644	700
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#### 6-pulse diode supply unit (DSU)

D6D	2130	400	644	300
D7D	2130	400	644	350
D8D	2130	700	644	550

# Standard interface and extensions for comprehensive connectivity

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

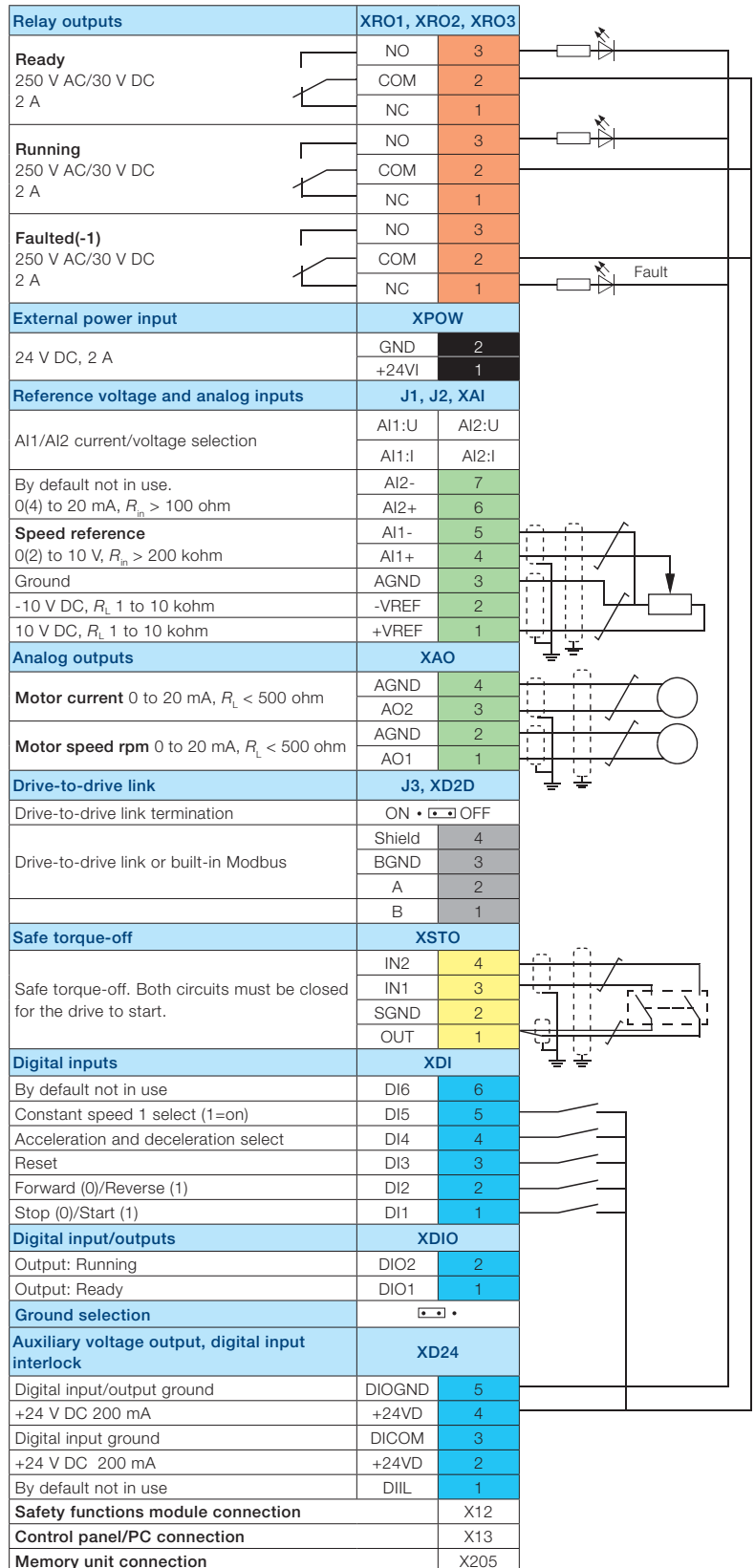
input/output extension modules, feedback modules and a safety functions module.

Control connections (ZCU-13)	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 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



Control unit ZCU-13

## Default input/output connection diagram (for ZCU-13)



# Standard software for scalable control and functionality

The same software, the primary control program, is used across the whole ACS880 series for controlling inverter units and motors. 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 adapter 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 inverters are equipped with direct torque control (DTC), ABB's signature motor control platform which supports motors such as induction motors, permanent magnet synchronous motors, 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

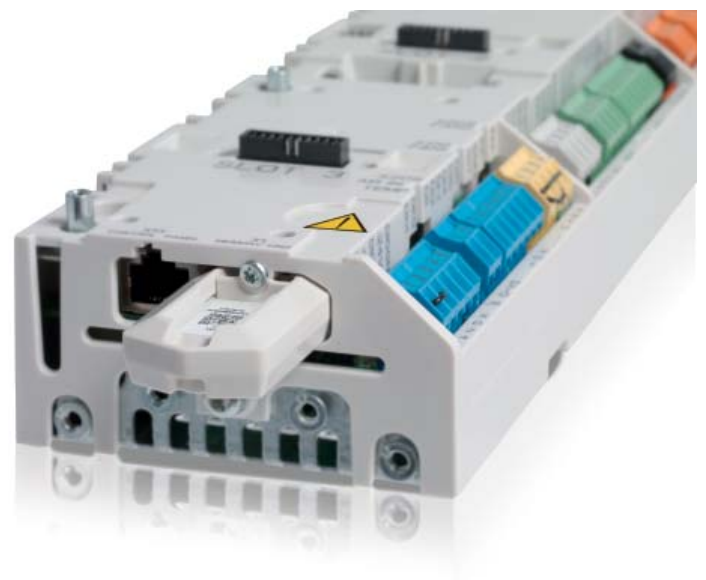
The inverters come with built-in energy efficiency information that helps the user fine-tune processes to ensure optimum energy use. The energy optimizer mode ensures the maximum torque per ampere, reducing energy drawn from the supply. The load profile feature collects inverter values with three loggers: 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
- Mechanical brake control
- Jogging
- Output phase order, switches rotation direction of the motor
- 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 standard 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.





# 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 inverters simultaneously using the panel network feature. The user can also select the inverter 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 is also the assistant control panel mounting platform, DPMP-01 IP55 kit available for cabinet door flush mounting.



# 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 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 that includes safe stop 1 (SS1), safe stop emergency (SSE), safely-limited speed (SLS), safe brake control (SBC) and safe maximum speed (SMS). The drives' functional safety is designed according to 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 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-11 comes with a range of safety functions and a self-diagnostic function that meets current safety requirements and standards, in one compact module. Compared to using external safety components, the FSO-11 comes with the supported functions seamlessly integrated with the drive functionality, reducing the implementation of safety function connections and configuration. Installing FSO-11 results in less needs for cabling and provides a cost-effective solution packed into a single safety functions module to ensure safe drive operation. Commissioning and configuration of the safety functions is done with the Drive composer pro PC tool. The drive and FSO-11 is easy to connect to a safety PLC using PROFIsafe fieldbus adapter module (FENA-11).



The operational frequency of the FSO-11 is up to 200 Hz of the drives output. The safety functions module supports the following safety functions (which achieve up to SIL 3 or PL e safety level (Cat. 3)):

- **Safe stop 1 (SS1)** brings the machine to a stop using a monitored deceleration ramp. It is typically used in applications where the machinery motion needs to be brought to a stop 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. FSO-11 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.

Safety functions are designed to the multidrives on project specific requirements.

## Engineered and verified solutions with safety function module FSO-11 (+Q973)

Safety function	Option code
Emergency Stop, Cat 0 without opening main contactor/breaker, activates STO	+Q963+Q973
SS1, Emergency Stop, Cat 1 without opening main contactor/breaker, with ramp monitoring, activates STO	+Q964+Q973
POUS (Prevention of unexpected startup)	+Q950+Q973
SLS (Safely-limited speed) without encoder	+Q966+Q973

Safety data and safety levels up to SIL3 or PL<sub>e</sub> can be calculated for engineered solutions for multidrives cabinets as option.



Safety functions module, FSO-11

# Drive application programming with CODESYS

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 common engineering tool. The Automation Builder is used both for engineering individual industry devices and for putting together entire automation projects. It is based on CODESYS, 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 CODESYS programming capability embedded inside the drive. Designing a CODESYS-based 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.

## Common engineering tool 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.



### 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, and the possibility for redundant fieldbus adapters using the same protocol.

## 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.

## 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	EtherNet/IP™, Modbus TCP, PROFINET IO, PROFI-safe *
FECA-01	+K469	EtherCAT®
FSCA-01	+K458	Modbus RTU
FEPL-02	+K470	PowerLink

\* For the PROFI-safe to work PROFINET fieldbus adapter module (FENA-11) and the safety functions module (FSO-11) 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 x DI/O, 2 x RO
FIO-11	+L500	3 x AI (mA/V), 1 x AO (mA), 2 x DI/O

FIO-01



# 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

FEN-21



# DDCS communication option modules

The FDCO-0X optical DDCS communication options are add-on modules on the ACS880 industrial drives control board. The modules include connectors for two fiber optic

DDCS channels. The FDCO-0X modules makes 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.

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.

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.

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.

## Enhanced monitoring functions

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

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. Supply 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) 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
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

Type	Voltage	Frame sizes	2nd environment, C3, grounded network (TN) and ungrounded network (IT) Option code
ACS880-307	380 to 500 V	D6D to D8D	With option +E210 *
ACS880-207	380 to 500 V	R6i to R8i	With option +E210 *

\* Conducted emission and immunity are fulfilled with standard filtering.  
Radiated emission and immunity are as option (Cabinet construction).

## Brake options, ACS880-607

### Brake unit

The brake unit is a cabinet-built option. It handles the energy generated by a decelerating motor. The brake chopper connects the brake resistor to the intermediate DC circuit whenever the voltage in the circuit exceeds the limit defined by the control program. Energy consumption by the resistor losses lowers the voltage until the resistor can be disconnected.

### Brake resistor

The brake resistors are separately available for ACS880 multidrive cabinets as an option. 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.



NBRA659

# Brake options, ACS880-607

$U_N = 400\text{ V}$ (range 380 to 415 V)															Type designation	Module type	Resistor type
Nominal ratings					Duty cycle (1min/5min)		Duty cycle (10s/60s)		Height <sup>2)</sup>	Width <sup>1)3)</sup>	Width	Noise	Air flow				
$P_{br,max}$ kW	$R_{min}$ ohm	$I_{max}$ A	$I_{rms}$ A	$P_{cont.}$ kW	$P_{br.}$ kW	$I_{rms}$ A	$P_{br.}$ kW	$I_{rms}$ A	mm	mm	kg	dB(A)	m <sup>3</sup> /h				

### Brake unit without brake resistor

353	1.2	545	149	96	303	468	353	545	2130	400	110	64	660	ACS880-607-0320-3	NBRA659	-
706	2x1.2	1090	298	192	606	936	706	1090	2130	800	220	67	1320	ACS880-607-0640-3	2xNBRA659	-

### Brake unit with brake resistor

353	1.2	545	84	54	167	257	287	444	2130	1200	340	66	2500	ACS880-607-0320-3+D151	NBRA659	2xSAFUR210F575
706	2x1.2	1090	168	108	333	514	575	888	2130	2400	680	69	5000	ACS880-607-0640-3+D151	2xNBRA659	2xSAFUR180F460

$U_N = 500\text{ V}$ (range 380 to 500 V)															Type designation	Module type	Resistor type
Nominal ratings					Duty cycle (1min/5min)		Duty cycle (10s/60s)		Height <sup>2)</sup>	Width <sup>1)3)</sup>	Width	Noise	Air flow				
$P_{br,max}$ kW	$R_{min}$ ohm	$I_{max}$ A	$I_{rms}$ A	$P_{cont.}$ kW	$P_{br.}$ kW	$I_{rms}$ A	$P_{br.}$ kW	$I_{rms}$ A	mm	mm	kg	dB(A)	m <sup>3</sup> /h				

### Brake unit without brake resistor

403	1.43	571	136	109	317	391	403	498	2130	400	110	64	660	ACS880-607-0400-5	NBRA659	-
806	2x1.43	1142	272	218	634	782	806	996	2130	800	220	67	1320	ACS880-607-0800-5	2xNBRA659	-

### Brake unit with brake resistor

403	1.35	605	67	54	167	206	287	355	2130	1200	340	66	2500	ACS880-607-0400-5+D151	NBRA659*	2xSAFUR125F500
806	2x1.35	1210	134	108	333	412	575	710	2130	2400	680	69	5000	ACS880-607-0800-5+D151	2xNBRA659*	2xSAFUR200F500

$E_r$	Energy pulse that the resistor assembly will withstand with the 400 seconds duty cycle. This energy will heat the resistor element from 40 °C to the maximum allowable temperature.
$P_{br,max}$	Maximum braking power of the NBRA-6xx chopper and SAFUR resistor combination.

Note: The braking energy transmitted to the resistor during any period shorter than 400 seconds may not exceed  $E_r$ .

Thus, the standard resistor withstands continuous braking of  $P_{br,max}$  typically 20 to 40 seconds ( $t = E_r / P_{br,max}$ ) during the total cycle time of 400 s.

$R$	Recommended braking resistor resistance. Also nominal resistance of corresponding SAFUR resistor. Dedicated resistor for each brake chopper.
$I_{max}$	Maximum peak current per chopper during braking. Current is achieved with minimum resistor resistance.
$I_{rms}$	Corresponding rms current per chopper during load cycle.

Heat loss of brake chopper is 1% of braking power.  
Heat loss of section with brake resistors is the same as braking power.

- <sup>1)</sup> Additional 200 mm junction section needed.
  - <sup>2)</sup> 2130 mm + additional 10 mm is required for marine supports.
  - <sup>3)</sup> Total width of the line-up is the sum of widths of the sections + 30 mm for the end plates.
- \* D151 = braking resistor, degree of protection IP21

## Dimensioning tool for selecting the optimal drive



DriveSize is designed to help select the optimal drive, motor or 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.

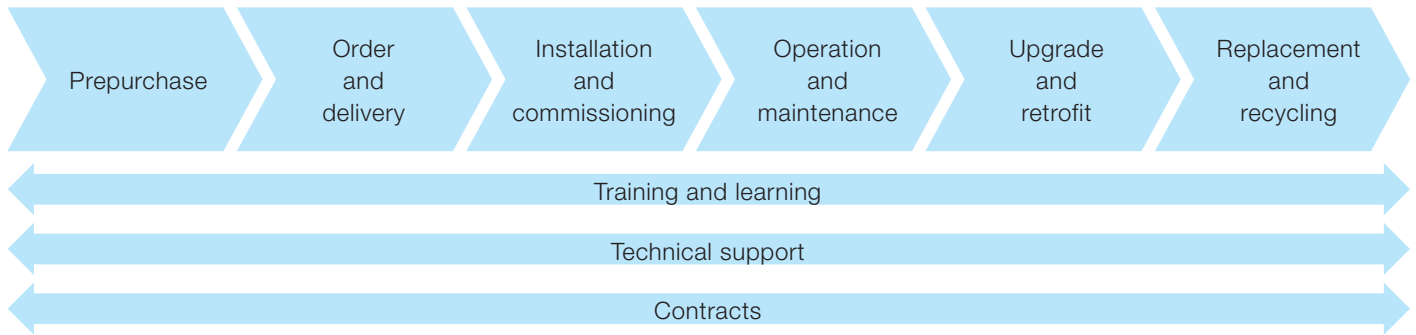
The tool can be used to calculate currents and network harmonics for a single supply unit or a whole system. The user can import a user-defined motor database by using a separate template that comes with the installation package. DriveSize is easy to use and has shortcut keys to make navigation quicker.

### 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).



# Expertise at every stage of the value chain



The services offered for ABB low voltage drives span the entire value chain, from the moment a customer makes the first enquiry through to disposal and recycling of the drive. Throughout the value chain, ABB provides training and learning, technical support and contracts. All of this is supported by one of the most extensive global drive sales and service networks.

## Pre-purchase

ABB provides a range of services that help guide the customers to the right products for their applications. Examples of services include correct drive selection and dimensioning, energy appraisal, harmonic survey and EMC assessment.

## Order and delivery

Orders can be placed through any ABB office or through ABB's channel partners. Orders can be placed and tracked online.

ABB's sales and services network offers timely deliveries including express delivery.

## Installation and commissioning

While many customers have the resources to undertake installation and commissioning on their own, ABB and its third party channel companies are available to advise or undertake the entire drive installation and commissioning.

## Operation and maintenance

Through remote monitoring, ABB can guide the customer through a fast and efficient fault-finding procedure as well as analyze the operation of the drive and the customer's process. From maintenance assessment to preventive maintenance and reconditioning of drives, ABB has all the options covered to keep its customers' processes operational.

Should corrective maintenance of drives be needed, ABB offers on-site and workshop repair, fully backed up by the most extensive spare holding.

## Upgrade and retrofit

An existing ABB drive can often be upgraded to the latest software or hardware to improve the performance of the application.

Existing processes can be economically modernized by retrofitting the latest drive technology to mechanical control equipment, such as inlet guide vanes or dampers or older generations of drives.

Instead of replacing an entire drive or drive system, it is often more economical to modernize the old installation by reusing all relevant parts of the original equipment and purchasing new where necessary.

## Replacement and recycling

ABB can advise on the best replacement drive while ensuring that the existing drive is disposed in a way that meets all local environmental regulations.

## Entire value chain services

The main services available throughout the value chain include:

- Training and learning – ABB offers product and application training in classrooms and on the Internet.
- Technical support – At each stage of the value chain, an ABB expert is available to offer advice to keep the customer's process or plant operational.
- Contracts – Drive care contracts and other types of agreements, from individual services through to complete drive care covering all repairs and even drive replacements, are available.

# Secure uptime throughout the drive life cycle

ABB follows a four-phase model for managing the life cycles of its drives. The life cycle phases are active, classic, limited and obsolete. Within each phase, every drive series has a defined set of services.

Examples of individual services are drive selection and dimensioning, installation and commissioning, preventive and corrective maintenance, remote monitoring and intelligent diagnostics, technical support, upgrade and retrofit, replacement and recycling plus training and learning.

In the active phase the drive is in serial production. The drive, with complete life cycle services, is available for purchase.

In the classic phase, the serial production of the drive has ended. The drive, with complete life cycle services, is available for plant extensions.

In the limited phase, the drive is no longer available. The life cycle services are limited. Spare parts as well as maintenance and repair services are available as long as materials can be obtained.

In the obsolete phase, the drive is not available. ABB cannot guarantee availability of services for technical reasons or within reasonable cost.

To ensure the availability of complete life cycle services, ABB recommends that a drive is kept in the active or classic phase by upgrading, retrofitting or replacing.

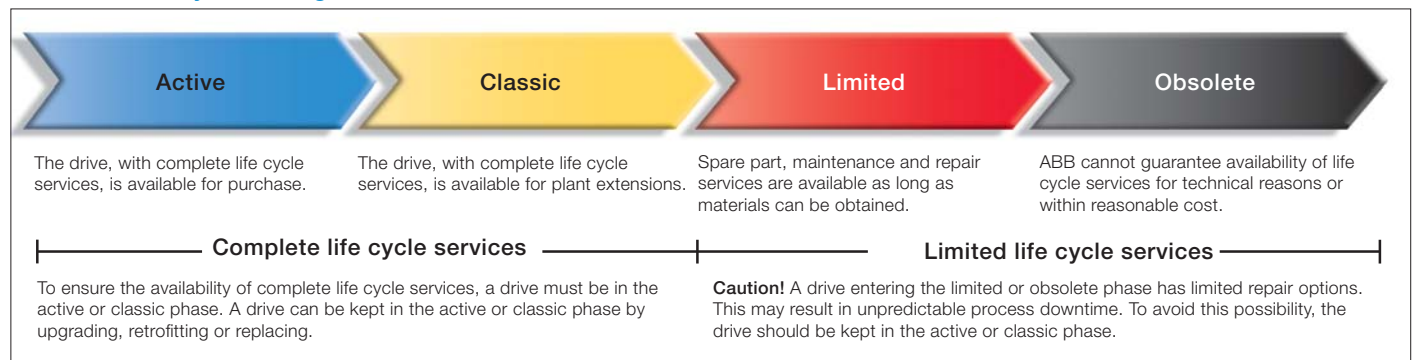
In the classic phase ABB carries out an annual review for each drive life cycle plan. Should any changes to the availability or duration of the services be necessary, ABB gives a life cycle announcement indicating eventual change of life cycle phase and/or any change in the duration of services.

In the limited phase, ABB issues a life cycle phase change announcement, half a year prior to shifting the product into the obsolete phase.

## Maximizing return on investment

The four-phase life cycle management model provides customers with a transparent method for managing their investment in drives. In each phase, customers clearly see what life cycle services are available, and more importantly, what services are not available. Decisions on upgrading, retrofitting or replacing drives can be made with confidence.

## ABB drive life cycle management model



# 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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