Low voltage AC drives

ABB industrial drives
ACS880, drive modules
1.5 to 250 Hp / 1.5 to 250 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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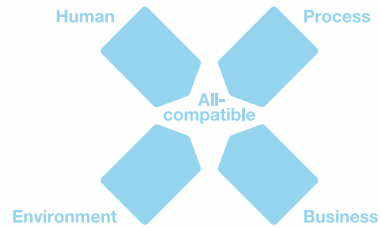


The all-compatible ACS880 series drives

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, despite 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

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.

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 access
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 modules, ACS880

The all-compatible drives are designed to provide customers across industries and applications with unprecedented levels of compatibility and flexibility. The ACS880 drive modules are customized to meet the precise needs of industries such as metals, oil and gas, mining, marine, material handling, pulp and paper. They control a wide range of applications such as cranes, conveyors, 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 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 drive modules 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 13, 16 and 17 or use ABB's DriveSize (page 29) 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

Type designation: ACS880 – X04 – XXXX – X + XXXX

Product series
Types and construction
Ratings
Voltages
Options

Mains connection	
Voltage and power range	3-phase, U_{N3} = 380 to 415 V, ± 10% (-X04) 3-phase, U_{N5} = 380 to 500 V, ± 10% (-X04) 2 to 250 HP / 1.5 to 250 kW IGBT supply unit (ISU) 300 to 630 kVA Diode supply unit (DSU) 50 to 850 kVA
Frequency	50/60 Hz ±5%
Power factor	IGBT supply unit (ISU): cosφ1 = 1 (fundamental) cosφ = 0.99 (total) Diode supply unit (DSU): cosφ1 = 0.98 (fundamental) cosφ = 0.93 to 0.95 (total)
Efficiency (at nominal power)	98% with DSU 97% with ISU

Motor connection	
Voltage	3-phase output voltage 0 to U_{N3} /U_{N5}
Frequency	0 to ± 500 Hz * **
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

- UL, cUL 508C and CSA C22.2 No14-10
- 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
- GOST R, Pending: C-Tick
- Functional safety: STO TÜV Nord certificate (-104)

EMC according to EN 61800-3 (2004)

2nd environment category C3 included as standard (-X04)
2nd environment category C4 included as standard

Environmental limits	
Ambient temperature Transport Storage Operation (air-cooled)	 -40 to +70 °C (-40 to +158 °F) -40 to +70 °C (-40 to +158 °F) 0 to +40 °C as standard (-X04) (32 to +104 °F) +40 to +50 °C (+104 to +122 °F) with derating of 1%/1 °C (1%/1.8 °F) (-X04)
Cooling method Air-cooled	 Dry clean air
Altitude 1 to 1000m (0 to 3,300 ft) 1,000 to 40,000m (3,300 to 13,333 ft)	 Without derating With derating ~ (1%/100 m) (1%/330 ft)
Relative humidity	5 to 95%, no condensation allowed
Degree of protection Open Chasis (IP00)	 (-X04)
Paint color	RAL 9017, RAL 9002
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 or 3C2 (chemical gases), Class 2S2 (solid particles without air inlet filters)
Operation	IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles)
Functional safety Standard Internal safety option	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 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
* The 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

ACS880 multidrive modules

Our ACS880 multidrive modules are designed to be built into a customers' own cabinet by machine builders and system integrators. The power of the inverter modules is available up to 250 Hp (250 kW). The diode supply unit (DSU) is available up to 850 kVA, and has a supply voltage of 380 to 500 V. The IGBT supply module (ISU) is available up to 630 kVA, and has a supply voltage of 380 to 500 V. Multidrive modules are used for building multidrive configurations. The modules are used in industries such as metals, oil and gas, mining, marine, offshore, material handling machines, pulp and paper, automotive, food and beverage, cement, power, water and wastewater. They control a wide range of applications such as cranes, profile and flat rolling, conveyors, winches, test benches, processing lines, paper machines, pumps and fans. The multidrive modules are built using ABB's common drives architecture and come in several frame sizes.

Rectifiers, inverters, brake options, filters, inputs and outputs options, communication option, documentation and everything else required for a complete drive is available. The drive can control 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
- Diode bridge that is highly reliable with high power density
- IGBT supply modules for regenerative drive systems
- 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
- 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 branching unit, power stage link data logger with detachable memory card, embedded Ethernet and three option slots with an additional slot for DDCS communication option
- Supports various motor types including synchronous reluctance motors
- Removable memory unit for easy maintenance
- Coated boards as standard
- Braking options
- Cabinet accessory kits
- Detailed documentation for cabinet assembly

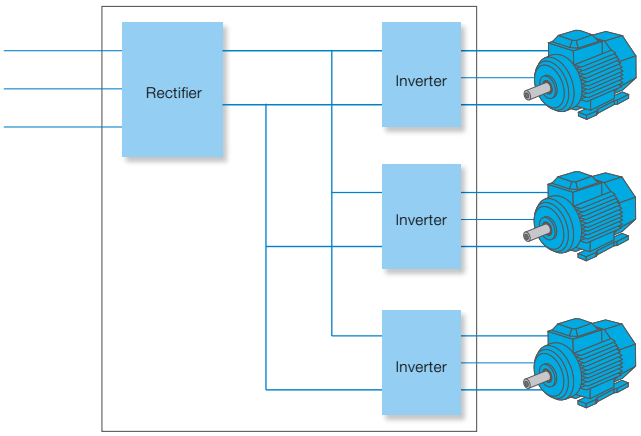
Cabinet assembly accessories simplify installation and connection

Installation of multidrive modules into cabinets is simplified with the use of mechanical and electrical accessories, which can be purchased with most available cabinet types. Alternatively, ABB authorized and registered machine builders, system integrators and panel builders can manufacture their own accessory kits by accessing the online engineering support website which features detailed kit drawings. Cabinet assembly accessories help shorten engineering and assembly time as well as reduce the risk of errors.

Using our cabinet assembly accessories and part drawings enable easy and efficient installation, making sourcing the mechanical components more flexible. Other benefits that reduce time required for mechanical engineering include dimensional and assembly drawings with accessories drawings available as 3D images, EPLAN electric P8 macros, module circuit diagrams and installation example videos and animations for cabinets. Training material for cabinet assembly of drives is also available.

Multidrive modules, ACS880-X04

The multidrive modules are optimized for assembly into a customer's own cabinets. The modules have a side-by-side mounting on the assembly plate situated in the cabinet, making module installation faster and easier. Modules with bigger frame sizes are equipped with wheels so they can easily be moved in or out of the cabinet for maintenance purposes. This concept also allows pre-installation of the power cables inside the empty cabinet. Besides the compact design, the new ACS880 inverter and rectifier units include an extensive selection of options.



Inverter modules (INU)

Inverter modules come in 6 different frame sizes. Frame sizes R1i to R4i and R6i to R7i start from 2 to 250 Hp (1.5 to 250 kW). The voltage ranges from 380 to 500 V. 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 optional switch can be selected to disconnect the whole drive unit. Each inverter unit has a control unit (ZCU) which has slots to place input and output modules and fieldbus adapter modules. Different inputs and outputs extension modules for different functions such as control, monitoring and measurement purposes are also available.

Frame sizes R1i to R7i

Frame sizes D6D to D8D

Diode supply modules (DSU)

Supply modules are available as diode based solutions. They come in three different frame sizes (D6D to D8D) and a power range from 50 to 850 kVA. A diode supply unit is used in non-regenerative drive systems to convert three-phase AC voltage to DC voltage. A diode supply unit is controlled by the ZCU control unit. There is no charging circuit in the DSU as the charging is built into the drive units (R1i to R4i and R6i to R7i).

The multidrive construction simplifies the total installation and provides many advantages such as:

- Savings in cabling, installation and maintenance costs
- Space savings
- Reduced component count and increased reliability
- Reduced line currents and simpler braking arrangements
- Energy circulation over the common DC busbar, which can be used for motor-to-motor braking without the need for a braking chopper or regenerative supply unit
- Optimized and simple cabinet

IGBT supply modules (ISU)

An IGBT supply modules is used in regenerative drives to convert three-phase AC voltage to DC voltage. It is available in R8i frame size with LCL line filter in a power range from 300 to 630 kVA. In power control it gives the same firm but gentle performance as Direct torque control (DTC) gives in motor control. The IGBT module is hardware compatible with drive modules 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 module can also boost DC voltages eg, when line voltage is low. Harmonic content remains extremely low due to DTC control and LCL line filtering.

Frame size R8i and LCL line filter

Brake unit

It handles the energy generated by decelerating motors such as emergency stopping. 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.

Ratings, types and voltages
Inverter modules

Inverter modules (INU), ACS880-104

U_N = 500 V (380 to 500 V). The power ratings are valid at nominal voltage 500 V (1.5 to 250 kW).

Light-overload use			Heavy-duty use			Noise level	Heat dissi-pation	Air flow	Type designation	Frame size
I_{Ld}	P_{Ld}		I_{Hd}	P_{Hd}		dB(A)	kW	cfm		
A	Hp	kW	A	Hp	kW					
3.4	1.5	1.5	3	1.5	1.5	47	0.06	14	ACS880-104-003A6-5	R1i
4.5	2	2.2	4	2	2.2	47	0.07	14	ACS880-104-004A8-5	R1i
5.5	3	3	5	3	2.2	47	0.08	14	ACS880-104-006A0-5	R1i
7.6	5	4	6	3	3	47	0.09	14	ACS880-104-008A0-5	R1i
9.7	5	5.5	9	5	4	39	0.13	28	ACS880-104-0011A-5	R2i
13	7.5	7.5	11	7.5	5.5	39	0.15	28	ACS880-104-0014A-5	R2i
16.8	10	7.5	14	10	7.5	39	0.18	28	ACS880-104-0018A-5	R2i
23	15	11	19	10	11	63	0.23	84	ACS880-104-0025A-5	R3i
28	20	15	24	15	15	63	0.28	84	ACS880-104-0030A-5	R3i
32	20	18.5	29	20	18.5	63	0.32	84	ACS880-104-0035A-5	R3i
46	30	30	44	30	30	71	0.48	118	ACS880-104-0050A-5	R3i
57	40	37	52	40	30	70	0.55	171	ACS880-104-0061A-5	R4i
74	50	45	69	50	45	70	0.65	171	ACS880-104-0078A-5	R4i
90	60	55	75	50	45	70	0.8	171	ACS880-104-0094A-5	R4i
108	75	75	85	60	55	71	1	318	ACS880-104-0110A-5	R6i
131	100	90	102	75	55	71	1.2	318	ACS880-104-0140A-5	R6i
158	125	110	123	100	75	71	1.5	318	ACS880-104-0170A-5	R6i
189	150	132	147	125	90	71	1.8	318	ACS880-104-0200A-5	R6i
230	200	160	180	150	110	71	2.2	318	ACS880-104-0240A-5	R6i
290	250	200	226	200	132	72	2.7	600	ACS880-104-0300A-5	R7i
326	250	250	254	200	160	72	3.2	600	ACS880-104-0340A-5	R7i

HP ratings are based on 2 or 4 pole motors and NEMA MG-1 Table 12-11 motor full load efficiencies of EPAct Efficient Electric Motors

Light-overload use	
I_{Ld}	Continuous current allowing 110% I_{Ld} for 1 min/5 min at 40 °C (104 °F).
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 (104 °F).
P_{Hd}	Typical motor power in heavy-duty use.

The ratings apply at 40 °C (104 °F) ambient temperature. At higher temperatures (up to 50 °C (122 °F)) the derating is 1%/1 °C (1%/1.8 °F).

Dimensions

Frame size	Height		Width		Depth		Weight	
	(in)	(mm)	(in)	(mm)	(in)	(mm)	(lb)	(kg)
R1i	14.33	364	3.54	90	9.21	234	8.8	4
R2i	14.96	380	3.94	100	12.28	312	13.2	6
R3i	18.39	467	6.61	168	12.32	313	24.2	11
R4i	18.39	467	8.78	223	15.04	382	39.6	18
R6i	35.04	890	6.69	170	17.95	456	85.8	39
R7i	35.04	890	6.69	170	17.95	456	83.6	38

With module covers (R1i to R4i)

Ratings, types and voltages
Supply modules

IGBT supply modules (ISU), ACS880-204

U_N = 500 V (380 to 500 V). The power ratings are valid at nominal voltage 500 V.

Nominal ratings		No-over-load 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)	P_N kW (DC)	I_{Ld} A (DC)	P_{Ld} kW (DC)	I_{Hd} A (DC)	P_{Hd} kW (DC)	dB(A)	kW	cfm		
396	480	340	356	348	278	271	72	9.3	765	ACS880-204-0400A-5	1xR8i + BLCL-13-5
477	578	409	388	378	302	295	72	10.5	765	ACS880-204-0530A-5	1xR8i + BLCL-13-5
531	644	455	430	419	335	327	72	11.6	765	ACS880-204-0400A-5	1xR8i + BLCL-13-5
666	808	571	555	542	433	422	72	14.1	765	ACS880-204-0530A-5	1xR8i + BLCL-14-5
729	884	625	629	613	490	478	72	16.8	765	ACS880-204-0730A-5	1xR8i + BLCL-13-5

Diode supply modules (DSU), ACS880-304

U_N = 500 V (380 to 500 V). The power ratings are valid at nominal voltage 500 V.

Nominal ratings		No-over-load use	Light-overload use		Heavy-duty use		Noise level	Heat dissi-pation	Air flow	Type designation	Frame size
I_N A (AC)	I_N A (DC)	P_N kW (DC)	I_{Ld} A (DC)	P_{Ld} kW (DC)	I_{Hd} A (DC)	P_{Hd} kW (DC)	dB(A)	kW	cfm		
80	98	66	94	63	78	53	62	0.8	218	ACS880-304-0080A-5+A003	D6D
173	212	143	203	137	170	114	62	1.3	218	ACS880-304-0170A-5+A003	D6D
327	400	270	384	260	320	216	62	2.0	424	ACS880-304-0330A-5+A003	D7D
490	600	405	576	389	480	324	62	3.0	424	ACS880-304-0490A-5+A003	D7D
653	800	540	768	518	640	432	65	3.5	530	ACS880-304-0650A-5+A003	D8D
980	1200	810	1152	778	960	648	65	6.0	530	ACS880-304-0980A-5+A003	D8D

Nominal ratings	
I_N	Rated current available continuously without overloadability at 40 °C (104 °F).
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 (104 °F).
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 (104 °F).
P_{Hd}	Power in heavy-duty use.

The ratings apply at 40 °C (104 °F) ambient temperature. At higher temperatures 50 °C (122 °F) the derating is 1%/1 °C (1%/1.8 °F).

Dimensions

Frame size	Height		Width		Depth		Weight	
	(in)	(mm)	(in)	(mm)	(in)	(mm)	(lb)	(kg)
IGBT supply module (ISU)								
R8i	53.39	1356	9.45	240	22.48	571	275	125
LCL-line filter for IGBT supply module (ISU)								
BLCL-13-5	53.35	1355	9.45	240	19.88	505	398	181
BLCL-14-5	53.35	1355	9.45	240	19.88	505	440	200
BLCL-15-5	53.35	1355	9.45	240	19.88	505	493	224
Diode supply modules (DSU)								
D6D	32.09	815	6.69	170	16.34	415	81.4	37
D7D	41.50	1054	6.69	170	16.42	417	160.6	73
D8D	55.00	1397	9.45	240	23.19	589	380.6	173

Standard interface and extensions for comprehensive connectivity

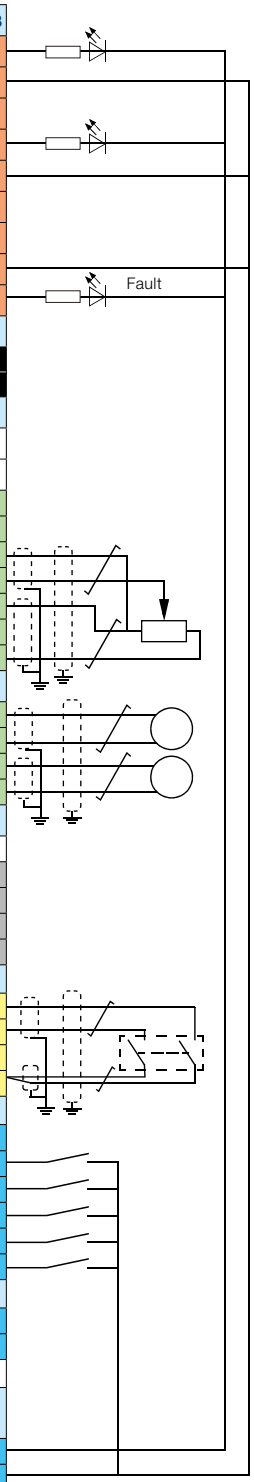
The ACS880 drive modules offer a wide range of standard interfaces. In addition the drive has three option slots that can be used for extensions including fieldbus adapter modules, input/output extension modules, feedback modules and a safety functions module.

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-4z85
Assistant control panel/ PC tool connection	Connector: RJ-45

Control unit ZCU-13

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

Relay outputs	**XRO1, XRO2, XRO3**	
Ready 250 V AC/30 V DC 2 A	NO	3
	COM	2
	NC	1
Running 250 V AC/30 V DC 2 A	NO	3
	COM	2
	NC	1
Faulted(-1) 250 V AC/30 V DC 2 A	NO	3
	COM	2
	NC	1
External power input	**XPOW**	
24 V DC, 2 A	GND	2
	+24VI	1
Reference voltage and analog inputs	**J1, J2, XAI**	
AI1/AI2 current/voltage selection	AI1:U	AI2:U
	AI1:I	AI2:I
By default not in use. 0(4) to 20 mA, R_{in} > 100 ohm	AI2-	7
	AI2+	6
Speed reference 0(2) to 10 V, R_{in} > 200 kohm	AI1-	5
	AI1+	4
Ground	AGND	3
-10 V DC, R_L 1 to 10 kohm	-VREF	2
10 V DC, R_L 1 to 10 kohm	+VREF	1
Analog outputs	**XAO**	
Motor current 0 to 20 mA, R_L < 500 ohm	AGND	4
	AO2	3
Motor speed rpm 0 to 20 mA, R_L < 500 ohm	AGND	2
	AO1	1
Drive-to-drive link	**J3, XD2D**	
Drive-to-drive link termination	ON • ▭ OFF	
Drive-to-drive link or built-in Modbus	Shield	4
	BGND	3
	A	2
	B	1
Safe torque-off	**XSTO**	
Safe torque-off. Both circuits must be closed for the drive to start.	IN2	4
	IN1	3
	SGND	2
	OUT	1
Digital inputs	**XDI**	
By default not in use	DI6	6
Constant speed 1 select (1=on)	DI5	5
Acceleration and deceleration select	DI4	4
Reset	DI3	3
Forward (0)/Reverse (1)	DI2	2
Stop (0)/Start (1)	DI1	1
Digital input/outputs	**XDIO**	
Output: Running	DIO2	2
Output: Ready	DIO1	1
Ground selection	▭ •	
Auxiliary voltage output, digital input interlock	**XD24**	
Digital input/output ground	DIOGND	5
+24 V DC 200 mA	+24VD	4
Digital input ground	DICOM	3
+24 V DC 200 mA	+24VD	2
By default not in use	DIIL	1
Safety functions module connection		X12
Control panel/PC connection		X13
Memory unit connection		X205



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 defined sets, for own parameter settings

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 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 position sensors or encoders. 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_2 reduction and money saved.

Additional software features include:

- Adaptive programming
- Automatic reset
- Automatic start
- Access levels
- Constant speeds
- Critical speeds and frequencies
- DC hold
- DC magnetizing
- Diagnostics
- Flux braking
- Jogging
- Mechanical brake control
- Drive-to-drive link for master-follower control
- Power loss ride-through
- Process PID control with trim function
- Programmable inputs and outputs
- Programmable and pre-programmed protection functions
- Speed controller with auto tuning
- Startup assistants
- Scalar control with IR compensation
- User selectable acceleration and deceleration ramps
- User adjustable load supervision/limitation
- 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 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 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 TÜV Nord certified 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 module

Option	Option code
FSO-11	+Q973

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.

Human Machine Interface (HMI) | PLC, AC500 | LV AC drives | Industrial application

CODESYS

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, PROFIsafe *
FECA-01	+K469	EtherCAT®
FSCA-01	+K458	Modbus RTU
FEPL-02	+K470	PowerLink

* For the PROFIsafe 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)

FDPI-02 Communication Option module

The FDPI-0X Diagnostics and Panel Interface communication option is an add-on module used on the ACS880 industrial drives control board. It is compatible with the ZCU-xx control units. The FDPI-02 diagnostics and panel interface is used for branching the RS-485 panel bus and chaining a control panel or PC tool to several drives. The interface unit provides a feed-through connection between a control unit and an F-type option module. The interface unit is installed in an option slot of the control unit. A small F-type option module can then be installed on top of the interface unit. The module includes connectors for two Panel to Panel channels through two RJ-45 connectors, a drive connection port thru an RJ-11 connector and a pass-through connection for an F-Series Communications Option.

FDPI-02

Option	Option code	Connections
FDPI-02	+K450	2xRJ45, 1xRJ-11, Pass-Thru Header

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.

NETA-21

EMC – electromagnetic compatibility

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.

1st environment versus 2nd environment

1st 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.

2nd 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
1st environment, restricted distribution	Category C2	Group 1, Class A	Applicable	Not applicable
2nd environment, unrestricted distribution	Category C3	Group 2, Class A	Not applicable	Not applicable
2nd environment, restricted distribution	Category C4	Not applicable	Not applicable	Not applicable

Brake options

Brake chopper

The brake chopper is built-in as an option for the ACS880-04. Braking control of the ACS880-04 single drive modules supervises system status and detects failures such as brake resistor and resistor cable short-circuits, chopper short-circuit, and calculated resistor overtemperature. For ACS880-104 multidrive modules the air-cooled brake chopper unit includes an NBRA brake chopper module or two parallel-connected NBRA brake chopper modules. The brake chopper handles the energy generated by a decelerating motor. The 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 drive modules. 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 the fuses and no mains cable/fuse overrating takes place.

NBRA659

ACS880-604 brake chopper

U_N = 500 V (range 380 to 500 V)												
Nominal ratings					Duty cycle (1min/5min)		Duty cycle (10s/60s)		Noise	Air flow	Type designation	Module type
$P_{br.max}$ 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	dB(A)	m³/h		
Brake chopper without brake resistor												
268	2.15	380	101	81	268	331	268	331	64	660	ACS880-604-0260-5	NBRA658
403	1.43	571	136	109	317	391	403	498	64	660	ACS880-604-0400-5	NBRA659
806	2×1.43	1142	272	218	634	782	806	996	67	1320	ACS880-604-0800-5	2×NBRA659
Brake chopper with the resistor												
268	2.00	408	45	36	111	137	192	237	66	2500	ACS880-604-0260-5+D151	NBRA658
403	1.35	605	67	54	167	206	287	355	66	2500	ACS880-604-0400-5+D151	NBRA659
806	2×1.35	1210	134	108	333	412	575	710	69	5000	ACS880-604-0800-5+D151	2×NBRA659

Heat loss of braking chopper is 1% of braking power.

Maximum braking power of the ACS880 equipped with the standard chopper	
$P_{br.max}$	Maximum short time braking power.
I_{max}	Maximum peak current per chopper during braking. Current is achieved with recommended resistor resistance.
P_{cont}	Maximum continous braking power. Continuous power (heat) dissipation of the resistor when placed correctly. Energy Er dissipates in 400 seconds.
E_r	SAFUR resistor nominal braking capacity without forced cooling. 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.
$P_{br.}$	Braking power during corresponding cycle load: 1min/5min = 1 minute braking with power $P_{br.}$ and 4 minutes unload. 10s/60s = 10 second braking with power $P_{br.}$ and 50 seconds unload.
I_{rms}	Corresponding rms current per chopper during load cycle.
P_{brcont}	Continuous brake chopper power. The value applies to the minimum resistance value. With a higher resistance value the Pbrcont may increase in some ACS880 units.
R_{min}	Minimum allowable resistance value for the brake resistor.

Brake chopper	Height		Width		Depth		Weight	
	(in)	(mm)	(in)	(mm)	(in)	(mm)	(lb)	(kg)
NBRA658	22.99	584	13.15	334	9.45	240	57.2	26
NBRA659	22.99	584	13.15	334	9.45	240	57.2	26

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 150 Hp (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 kW and frame size < IEC 315	100 kW ≤ P_N < 350 kW or IEC 315 ≤ frame size < IEC 400
			P_N < 134 hp and frame size < NEMA 500	134 hp ≤ P_N < 469 hp or NEMA 500 ≤ frame size ≤ NEMA 580
ABB motors				
Random-wound M2__, M3__ and M4__	U_N ≤ 500 V	Standard	–	+ N
	500 V < U_N ≤ 600 V	Standard	+ du/dt	+ du/dt + N
		or		
		Reinforced	–	+ N
	600 V < U_N ≤ 690 V (cable length ≤ 150 m)	Reinforced	+ du/dt	+ du/dt + N
	600 V < U_N ≤ 690 V (cable length > 150 m)	Reinforced	–	+ N
Form-wound HX__ and AM__	380 V < U_N ≤ 690 V	Standard	n/a	+ N + CMF
Old* form-wound HX__ and modular	380 V < U_N ≤ 690 V	Check with the motor manufacturer	+ du/dt with voltages over 500 V + N + CMF	
Random-wound HX__ and AM__**	0 V < U_N ≤ 500 V	Enmelled wire with fiber glass taping	+ N + CMF	
	500 V < U_N ≤ 690 V		+ du/dt + N + CMF	
HDP	Consult the motor manufacturer.			
Non-ABB motors				
Random-wound and form-wound	U_N ≤ 420 V	Standard $\hat{U}_{LL}$ = 1300 V	–	+ N or CMF
	420 V < U_N ≤ 500 V	Standard $\hat{U}_{LL}$ = 1300 V	+ du/dt	+ du/dt + N or + du/dt + CMF
		or		
		Reinforced: $\hat{U}_{LL}$ = 1600 V, 0.2 microsecond rise time	–	+ N or CMF
	500 V < U_N ≤ 600 V	Reinforced: $\hat{U}_{LL}$ = 1600 V	+ du/dt	+ du/dt + N or + du/dt + CMF
		or		
		Reinforced: $\hat{U}_{LL}$ = 1800 V	–	+ N or CMF
	600 V < U_N ≤ 690 V	Reinforced: $\hat{U}_{LL}$ = 1800 V	+ du/dt	+ du/dt + N
		Reinforced: $\hat{U}_{LL}$ = 2000 V, 0.3 microsecond rise time	–	+ N or CMF

* Manufactured before 1.1.1998. ** For motors manufactured before 1.1.1998, check for additional instructions with the motor manufacturer.

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-ned 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 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.

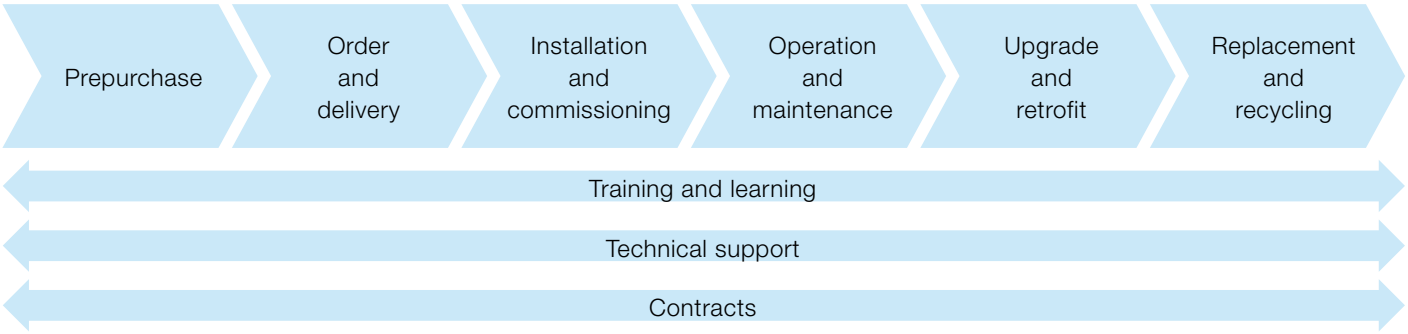
DriveSize creates documents for drive and motor dimensioning based on the load, network and cooling data provided by the user. Dimensioning results can be viewed graphically and numerically in the tool.

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.

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.

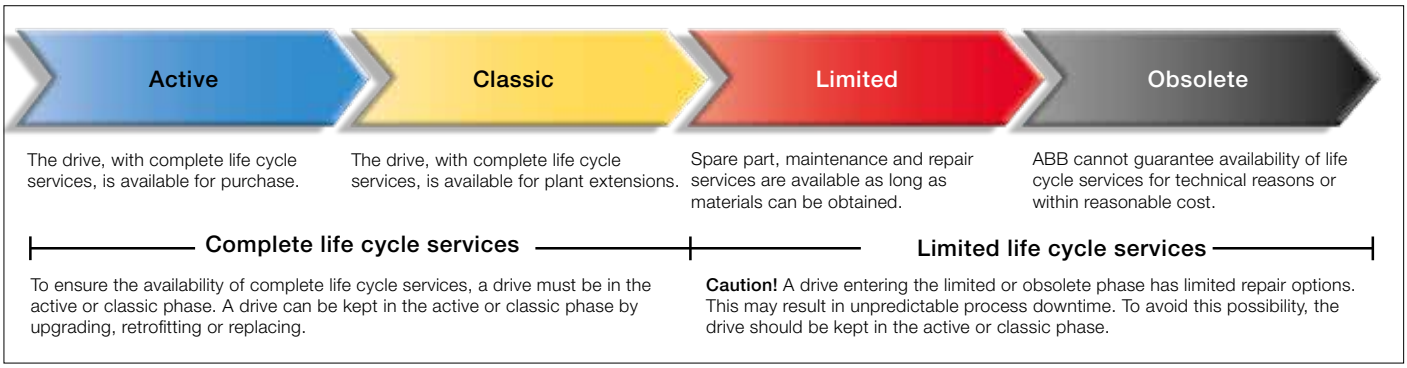
In the classic phase ABB carries out an annual review for each drive life cycle plan. Should any changes to the availability or duration of the services be necessary, ABB gives a life cycle announcement indicating eventual change of life cycle phase and/or any change in the duration of services.

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



Notes

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Contact us

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

www.abb.com/drives

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