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ПРОМЫШЛЕННЫЕ ПРИВОДЫ

Техническое описание на

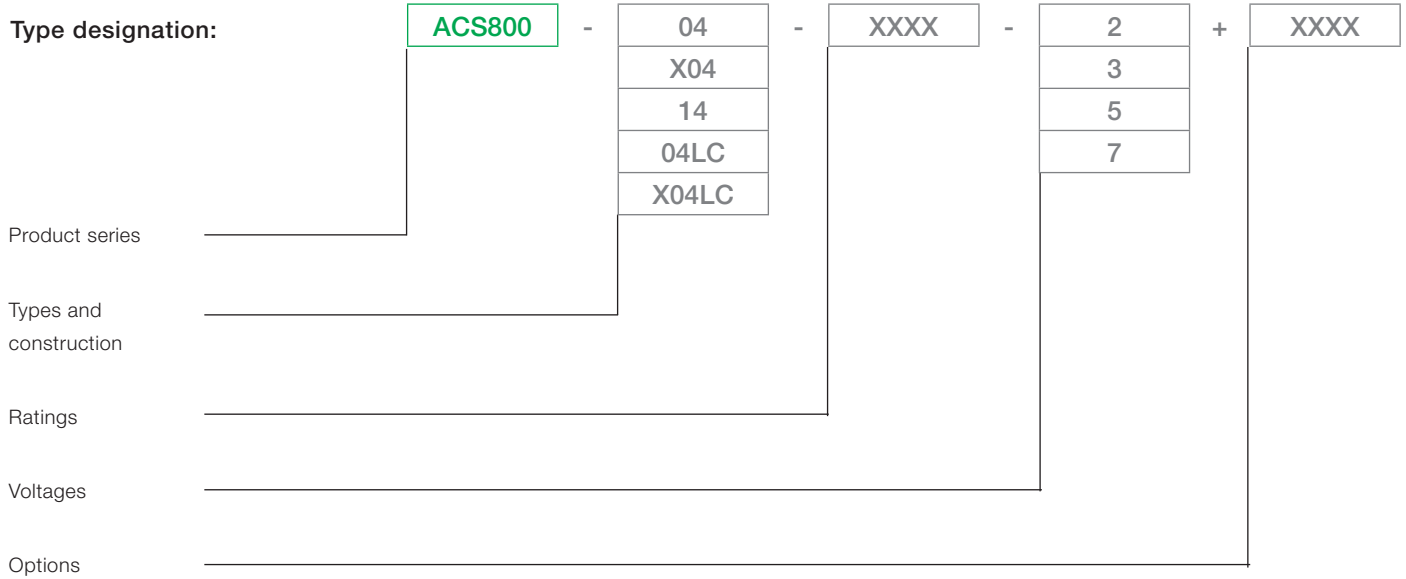
диодные модули

ACS800-704LC, ACS800-704



Selecting and ordering your drive

Build up your own ordering code using the type designation key below or contact your local ABB drives sales office and let them know what you want. Use page 3 as a reference section for more information.



Technical data



Mains connection

Supply voltage	3-phase, $U_{2IN} = 208$ to 240 V, $\pm 10\%$, except multidrive and nxR8i ACS800-04 modules 3-phase, $U_{3IN} = 380$ to 415 V, $\pm 10\%$ 3-phase, $U_{5IN} = 380$ to 500 V, $\pm 10\%$ 3-phase, $U_{7IN} = 525$ to 690 V, $\pm 10\%$
Frequency	48 to 63 Hz
Power factor	$\cos\phi_1 = 0.98$ (fundamental) $\cos\phi = 0.93$ to 0.95 (total)
IGBT supply unit (ISU)	$\cos\phi_1 = 1$ (fundamental) $\cos\phi = 0.99$ (total)
Efficiency (at nominal power)	
ACS800-04	98%
ACS800-X04	98%
	97% with IGBT supply unit (ISU)

Motor connection

Voltage for > 500 V units	3-phase output voltage 0 to $U_{2IN}/U_{3IN}/U_{5IN}/U_{7IN}$ please see "Filter selection table for ACS800" under the du/dt filters on page 42
Frequency	0 to ± 300 Hz 0 to ± 300 Hz, also with built-in du/dt filters in R8i module. (0 to ± 120 Hz with external du/dt filters in R2i to R7i)
Field weakening point	8 to 300 Hz
Motor control	ABB's direct torque control (DTC)
Torque control:	Torque step rise time:
Open loop	<5 ms with nominal torque
Closed loop	<5 ms with nominal torque
	Non-linearity:
Open loop	$\pm 4\%$ with nominal torque
Closed loop	$\pm 3\%$ with nominal torque
Speed control:	Static accuracy:
Open loop	10% of motor slip
Closed loop	0.01% of nominal speed
	Dynamic accuracy:
Open loop	0.3 to 0.4% sec. with 100% torque step
Closed loop	0.1 to 0.2% sec. with 100% torque step

Environmental limits

Ambient temperature	
Transport	-40 to +70 °C
Storage	-40 to +70 °C
Operation	
ACS800-04	-15 to +50 °C, no frost allowed 40 to 50 °C at reduced output current (1% / 1 °C)
ACS800-04 nxR8i, -X04, -14	0 to +50 °C, no frost allowed 40 to 50 °C at reduced output current (1% / 1 °C)
Cooling method:	Dry clean air
Altitude	
0 to 1000 m	Without derating
1000 to 4000 m	With derating ~ (1% / 100 m) (690 V units 1000 to 2000 m with derating)
Relative humidity	5 to 95%, no condensation allowed
Degree of protection	
IP00	Standard for -04 and 04(M) frame sizes R7, R8 and nxR8i
IP20	Standard for -04 frame sizes R2 to R6 and option for some -04(M) variants
Paint colour	NCS 1502-Y (RAL 9002, PMS 420 C)
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)
Operation	IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles without airinlet filters)

C = chemically active substances
S = mechanically active substances
* = coated ci cuit boards

Product compliance

CE, UL, cUL, CSA; C-Tick and GOST R
Low Voltage Directive 2006/95/EC
Machinery Directive 2006/42/EC
EMC Directive 2006/108/EC
Quality assurance system ISO 9001 and
Environmental system ISO 14001

EMC according to EN 61800-3

2nd environment, unrestricted distribution category C3 - as option in ACS800-04 up to frame size R8
1st environment, restricted distribution category C2 as option up to 1000 A input current

Available options are shown in the summary of features and options table. Please see pages 58-60.

Technical data



Mains connection

Supply voltage	3-phase $U_{3IN} = 380$ to 415 V, $\pm 10\%$ 3-phase $U_{5IN} = 380$ to 500 V, $\pm 10\%$ 3-phase $U_{7IN} = 525$ to 690 V, $\pm 10\%$
Frequency	48 to 63 Hz
Power factor	$\cos\phi_1 = 0.98$ (fundamental) $\cos\phi = 0.93$ to 0.95 (total)
Efficiency (at nominal power)	> 98

Motor connection

3-phase supply voltage	Output voltage: 0 to $U_{3IN} / U_{5IN} / U_{7IN}$
Frequency	0 to ± 300 Hz
Field weakening point	8 to 300 Hz
Motor control	ABB's direct torque control (DTC)
Torque control:	Torque step rise time:
Open loop	<5 ms with nominal torque
Closed loop	<5 ms with nominal torque
	Non-linearity:
Open loop	$\pm 4\%$ with nominal torque
Closed loop	$\pm 3\%$ with nominal torque
Speed Control:	Static accuracy:
Open loop	10% of motor slip
Closed loop	0.01% of nominal speed
	Dynamic accuracy:
Open loop	0.3 to 0.4% sec. with 100% torque step
Closed loop	0.1 to 0.2% sec. with 100% torque step

Enclosure

Degree of protection	IP00
Paint color module front	Light beige RAL 7035

Environmental limits

Ambient temperature	
Transportation	-40 to +70 °C
Storage	-40 to +70 °C
Operation in totally enclosed cabinet	0 to 55 °C, no frost allowed 45 to 55 °C at reduced output power (0.5% /1 °C)
Relative humidity	5 to 95%, no condensation allowed
Vibration	0.7 g, 13.2 Hz to 100 Hz, 1 mm displacement 2 to 13.2 Hz
Cooling Method	Liquid-cooled, closed loop
Internal cooling circuit	Drinking water +42 °C max, 42 to 48 °C at reduced output power (1.0% /1 °C)
External cooling circuit with optimal liquid cooling unit	Industrial or sea water +38 °C max, 38 to 45 °C at reduced output power (1.0% /1 °C)
Altitude	
0 to 1000 m	Without derating
1000 to 4000 m	With derating ~ (1%/100 m) (690 V units 1000 to 2000 m with derating)
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)
Operation	IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles without air inlet filters)

C = chemically active substances
S = mechanically active substances
* = coated circuit boards

Product compliance

CE, UL, CSA, GOST-R
Low Voltage Directive 2006/95/EC
Machinery Directive 2006/42/EC
EMC Directive 2006/108/EC
Quality assurance system ISO 9001 and
Environmental system ISO 14001

EMC according to EN 61800-3

2nd environment, unrestricted distribution category C3 - as option in ACS800-04 up to frame size R8
1st environment, restricted distribution category C2 as option up to 1000 A input current

Multidrive modules

ACS800-X04

Main standard hardware features

- Frame sizes R2i to R5i control board inside of the module
- Frame sizes R7i to nxR8i control board outside of the module
- Extensive, programmable I/O
- Three I/O and fieldbus extension slots
- Inputs galvanically isolated
- Optimised design for cabinet assembly
- Modular design allowing wide variety of variants
- Compact design
- Long lifetime cooling fan and capacitors
- du/dt filters as standard in parallel connected R8i and in single or parallel connected 690 V inverter units
- Mounting on the cabinet wall frame size R2i to R7i and on the cabinet floor for R8i and the D3/D4 supply module
- Wheels and plug connectors in the R8i inverter and D3/D4 supply module
- Coated boards
- LCL-filter units in ISUs

Main optional hardware features

Inverter frame sizes R2i to R7i:

- Prevention of unexpected startup
- DC fuses, fuse bases or DC-fuse switch
- Mechanics for tilted position assembly in R2i to R5i frame size
- Assembly plates for R7i units
- du/dt filters
- Common mode filter for motor protection
- On-off control for cooling fan with internal charging option
- Mechanical accessories in Rittal TS8 cabinets (only for R7)
 - IP21 to IP54 cabinet door/ oof mechanical kits
 - Accessories kit
- Safe torque-off

Inverter frame sizes R8i to nxR8i:

- Prevention of unexpected startup
- DC fuses, fuse bases or DC-fuse switch + charging circuitry
- du/dt filters as options in 400/500 V
- Mechanical accessories in Rittal TS8 cabinets
 - IP21 to IP54 cabinet door/ oof mechanical kits
 - Accessories kit
- Common mode filters for motor protection
- Safe torque-off (STO)

DSU frame sizes D3 to nxD4:

- Contactor (inside the module)
- RFI filter up to 1000 A
- Front end AC-fuses
- Air circuit breaker
- Mechanical accessories in Rittal TS8 cabinets
 - IP21 to IP54 cabinet door/ oof mechanical kits
 - Accessories kit



Ratings, types and voltages

ACS800-X04, supply module, $U_N = 400\text{ V}$

ACS800	-	X04	-	XXXX	-	3	+	XXXX
						7		

Nominal ratings				No-overload use	Light-overload use	Heavy-duty use		Heat dissipation kW	Type designation	Frame size
$I_{\text{cont. max}}$ A (AC)	$I_{\text{cont. max}}$ A (DC)	I_{max} A (DC)	S_N kVA	$P_{\text{cont. max}}$ kW (DC)	I_N A (DC)	P_N kW (DC)	I_{hd} A (DC)			

$U_N = 400\text{ V}$ (Range 380 to 415 V). The power ratings are valid at nominal voltage 400 V.
IGBT supply module (ISU)

12-pulse diode supply unit (DSU)											
571	700	924	396	367	670	351	560	293	3.8	ACS800-704-0640-7	D4
816	1000	1400	566	524	960	503	800	419	5	ACS800-704-0910-7	D4
1143	1400	1848	792	733	1340	702	1120	587	7.6	ACS800-704-1370-7	2xD4
1518	1860	2604	1052	974	1790	938	1490	780	10	ACS800-704-1810-7	2xD4
2278	2790	3906	1578	1461	2685	1406	2230	1168	15	ACS800-704-2720-7	3xD4
3037	3720	5208	2104	1949	3580	1875	2980	1561	20	ACS800-704-3630-7	4xD4
3796	4650	6510	2630	2436	4475	2344	3720	1949	25	ACS800-704-4540-7	5xD4

Dimensions

Frame size	Height mm	Width mm	Depth mm	Weight kg	Noise level dB(A)	Air flow m ³ /h
IGBT supply unit (ISU)						
R2i	401	165	193	9	62	35
R3i	466	173	232	12	62	69
R4i	525	240	252	15	62	103
R5i	673	265	276	23	65	250
R7i ¹⁾	963	170	408	38	72 ⁴⁾	800
R8i	1397	245	596	130	74 ⁴⁾	1280
2xR8i	1397	245 ²⁾	596	260	76 ⁴⁾	2560
3xR8i	1397	245 ²⁾	596	390	78 ⁴⁾	3840
4xR8i	1397	245 ²⁾	596	520	78 ⁴⁾	5120
6xR8i	1397	245 ²⁾	596	780	80 ⁴⁾	7680
LCL-filter for IGBT supply unit (ISU)						
RLCL-01-5	850	173	137	15	69	-
RLCL-02-5	850	173	137	15	69	-
RLCL-03-5	850	173	137	20	69	-
RLCL-11-5	920	265	169.5	40	69	-
RLCL-12-5	920	265	169.5	50	69	-
ALCL-0X-X	810	304	292	72	-	480
ALCL-1X-X	1397	240	499	180	-	400
ALCL-2X-X	1397	240	573	305	-	1280

Frame size	Height mm	Width mm	Depth mm	Weight kg	Noise level dB(A)	Air flow m ³ /h
6-pulse diode supply unit (DSU)						
D3	1480	234	400 ³⁾	130	65	720
D4	1480	234	400 ³⁾	180	65	720
2XD4	1480	234 ²⁾	400 ³⁾	360	67	1440
3XD4	1480	234 ²⁾	400 ³⁾	540	68	2160
4XD4	1480	234 ²⁾	400 ³⁾	720	69	2880
5XD4	1480	234 ²⁾	400 ³⁾	900	70	3600
6-pulse regenerative thyristor supply unit (TSU)						
2XB4	1808	340 ²⁾	430	110 ²⁾	72 ⁵⁾	2000
2XB5	1808	420 ²⁾	430	150 ²⁾	75 ⁵⁾	3400
DC chokes for 6-pulse regenerative supply unit (TSU)						
choke B4	771	348	449	110	-	600
choke B5	991	348	449	150	-	700
12-pulse diode supply unit (DSU)						
D4	1480	234	400 ³⁾	180	65	720
2XD4	1480	234 ²⁾	400 ³⁾	360	67	1440
3XD4	1480	234 ²⁾	400 ³⁾	540	68	2160
4XD4	1480	234 ²⁾	400 ³⁾	720	69	2880
5XD4	1480	234 ²⁾	400 ³⁾	900	70	3600

¹⁾ Dimensions do not include cooling fan.

²⁾ Single module only.

³⁾ Cable connections need additional space (about 200 mm) behind the module.

⁴⁾ Supply modules + filters.

⁵⁾ Supply modules + choke.

Ratings, types and voltages

ACS800-X04, supply module, $U_N = 500$ V



Nominal ratings				No-overload use	Light-overload use		Heavy-duty use		Heat dissipation kW	Type designation	Frame size
$I_{cont. max}$ A (AC)	$I_{cont. max}$ A (DC)	I_{max} A (DC)	S_N kVA	$P_{cont. max}$ kW (DC)	I_N A (DC)	P_N kW (DC)	I_{hd} A (DC)	P_{hd} kW (DC)			

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

12-pulse diode supply unit (DSU)

571	700	924	495	458	670	439	560	367	3.8	ACS800-704-0640-7	D4
816	1000	1400	707	655	960	629	800	524	5	ACS800-704-0910-7	D4
1143	1400	1848	990	917	1340	877	1120	733	7.6	ACS800-704-1370-7	2xD4
1518	1860	2604	1315	1218	1790	1172	1490	976	10	ACS800-704-1810-7	2xD4
2278	2790	3906	1972	1827	2685	1758	2230	1460	15	ACS800-704-2720-7	3xD4
3037	3720	5208	2630	2436	3580	2344	2980	1951	20	ACS800-704-3630-7	4xD4
3796	4650	6510	3287	3045	4475	2930	3720	2436	25	ACS800-704-4540-7	5xD4

Dimensions

Frame size	Height mm	Width mm	Depth mm	Weight kg	Noise level dB(A)	Air flow m ³ /h
IGBT supply unit (ISU)						
R2i	401	165	193	9	62	35
R3i	466	173	232	12	62	69
R4i	525	240	252	15	62	103
R5i	673	265	276	23	65	250
R7i ¹⁾	963	170	408	38	72 ⁴⁾	800
R8i	1397	245	596	130	74 ⁴⁾	1280
2xR8i	1397	245 ²⁾	596	260	76 ⁴⁾	2560
3xR8i	1397	245 ²⁾	596	390	78 ⁴⁾	3840
4xR8i	1397	245 ²⁾	596	520	78 ⁴⁾	5120
6xR8i	1397	245 ²⁾	596	780	80 ⁴⁾	7680
LCL-filter for IGBT supply unit (ISU)						
RLCL-01-5	850	173	137	15	69	-
RLCL-02-5	850	173	137	15	69	-
RLCL-03-5	850	173	137	20	69	-
RLCL-11-5	920	265	169.5	40	69	-
RLCL-12-5	920	265	169.5	50	69	-
ALCL-0X-X	810	304	292	72	-	480
ALCL-1X-X	1397	240	499	180	-	400
ALCL-2X-X	1397	240	573	305	-	1280

Frame size	Height mm	Width mm	Depth mm	Weight kg	Noise level dB(A)	Air flow m ³ /h
6-pulse diode supply unit (DSU)						
D3	1480	234	400 ³⁾	130	65	720
D4	1480	234	400 ³⁾	180	65	720
2XD4	1480	234 ²⁾	400 ³⁾	360	67	1440
3XD4	1480	234 ²⁾	400 ³⁾	540	68	2160
4XD4	1480	234 ²⁾	400 ³⁾	720	69	2880
5XD4	1480	234 ²⁾	400 ³⁾	900	70	3600
6-pulse regenerative thyristor supply unit (TSU)						
2XB4	1808	340 ²⁾	430	110 ²⁾	72 ⁵⁾	2000
2XB5	1808	420 ²⁾	430	150 ²⁾	75 ⁵⁾	3400
DC chokes for 6-pulse regenerative supply unit (TSU)						
choke B4	771	348	449	110	-	600
choke B5	991	348	449	150	-	700
12-pulse diode supply unit (DSU)						
D4	1480	234	400 ³⁾	180	65	720
2XD4	1480	234 ²⁾	400 ³⁾	360	67	1440
3XD4	1480	234 ²⁾	400 ³⁾	540	68	2160
4XD4	1480	234 ²⁾	400 ³⁾	720	69	2880
5XD4	1480	234 ²⁾	400 ³⁾	900	70	3600

¹⁾ Dimensions do not include cooling fan.

²⁾ Single module only.

³⁾ Cable connections need additional space (about 200 mm) behind the module.

⁴⁾ Supply modules + filters.

⁵⁾ Supply modules + choke.

Ratings, types and voltages

ACS800-X04, supply module, $U_N = 690$ V

ACS800 - X04 - XXXX - 7 + XXXX

Nominal ratings				No-overload use	Light-overload use		Heavy-duty use		Heat dissipation kW	Type designation	Frame size
$I_{cont. max}$ A (AC)	$I_{cont. max}$ A (DC)	I_{max} A (DC)	S_N kVA	$P_{cont. max}$ kW (DC)	I_N A (DC)	P_N kW (DC)	I_{hd} A (DC)	P_{hd} kW (DC)			

$U_N = 690$ V (Range 525 to 690 V). The power ratings are valid at nominal voltage 690 V.

IGBT supply module (ISU)

12-pulse diode supply unit (DSU)											
571	700	924	683	632	670	605	560	506	3.8	ACS800-704-0640-7	D4
816	1000	1400	976	904	960	867	800	723	5	ACS800-704-0910-7	D4
1143	1400	1848	1366	1265	1340	1211	1120	1012	7.6	ACS800-704-1370-7	2xD4
1518	1860	2604	1815	1681	1790	1617	1490	1346	10	ACS800-704-1810-7	2xD4
2278	2790	3906	2722	2521	2685	2426	2230	2015	15	ACS800-704-2720-7	3xD4
3037	3720	5208	3629	3361	3580	3235	2980	2693	20	ACS800-704-3630-7	4xD4
3796	4650	6510	4537	4202	4475	4043	3720	3361	25	ACS800-704-4540-7	5xD4

Dimensions

Frame size	Height mm	Width mm	Depth mm	Weight kg	Noise level dB(A)	Air flow m ³ /h
IGBT supply unit (ISU)						
R7i ¹⁾	963	170	408	38	72 ⁴⁾	800
R8i	1397	245	596	130	74 ⁴⁾	1280
2xR8i	1397	245 ²⁾	596	260	76 ⁴⁾	2560
3xR8i	1397	245 ²⁾	596	390	78 ⁴⁾	3840
4xR8i	1397	245 ²⁾	596	520	78 ⁴⁾	5120
6xR8i	1397	245 ²⁾	596	780	80 ⁴⁾	7680
LCL-filter for IGBT supply unit (ISU)						
ALCL-0X-X	810	304	292	72	-	480
ALCL-1X-X	1397	240	499	180	-	400
ALCL-2X-X	1397	240	573	305	-	1280
6-pulse diode supply unit (DSU)						
D3	1480	234	400 ³⁾	130	65	720
D4	1480	234	400 ³⁾	180	65	720
2XD4	1480	234 ²⁾	400 ³⁾	360	67	1440
3XD4	1480	234 ²⁾	400 ³⁾	540	68	2160
4XD4	1480	234 ²⁾	400 ³⁾	720	69	2880
5XD4	1480	234 ²⁾	400 ³⁾	900	70	3600

¹⁾ Dimensions do not include cooling fan.

²⁾ Single module only.

³⁾ Cable connections need additional space (about 200 mm) behind the module.

⁴⁾ Supply modules + filters.

⁵⁾ Supply modules + choke.

Frame size	Height mm	Width mm	Depth mm	Weight kg	Noise level dB(A)	Air flow m ³ /h
6-pulse regenerative thyristor supply unit (TSU)						
2XB4	1808	340 ²⁾	430	110 ²⁾	72 ⁵⁾	2000
2XB5	1808	420 ²⁾	430	150 ²⁾	75 ⁵⁾	3400
DC chokes for 6-pulse regenerative supply unit (TSU)						
choke B4	771	348	449	110	-	600
choke B5	991	348	449	150	-	700
12-pulse diode supply unit (DSU)						
D4	1480	234	400 ³⁾	180	65	720
2XD4	1480	234 ²⁾	400 ³⁾	360	67	1440
3XD4	1480	234 ²⁾	400 ³⁾	540	68	2160
4XD4	1480	234 ²⁾	400 ³⁾	720	69	2880
5XD4	1480	234 ²⁾	400 ³⁾	900	70	3600

Nominal ratings	
$I_{cont. max}$	Rated current available continuously without overloadability at 40 °C.
I_{max}	Maximum output current.
S_N	Nominal apparent power.
Typical ratings: No-overload use	
$P_{cont. max}$	Power in no-overload use.
Light-overload use	
I_N	Continuous current allowing 110% I_N for 1 min/5 min at 40 °C.
P_N	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 current ratings are the same regardless of the supply voltage within one voltage range.

The ratings apply in 40 °C ambient temperature. In lower temperatures the ratings are higher (except I_{max}).

Liquid-cooled modules

ACS800-04LC/-X04LC



Solutions for high power drives

The liquid-cooled ACS800 frequency converter modules offer robust design for high-power applications. The liquid-cooled ACS800 product family provides advanced reliability and availability in all industry sectors.

Customer specific design

The liquid-cooled ACS800 is available for single and system drive purposes. The modular hardware design and advanced software features enable the most sophisticated drive solutions. Our customised solutions provide the optimum customer benefits for any demanding application. Our product know-how is at your service.

Advanced liquid-cooling

The ACS800 can utilize direct liquid-cooling which makes the converter extremely compact and silent. Liquid-cooling reduces the need for high-power filtered air cooling in the installation rooms. Along with the high efficiency, direct liquid-cooling offers low noise and easy heat transfer without air filtering problems.

Support for cabinet assembly

A full selection of both mechanical and electrical installation kits is available for liquid-cooled ACS800 frequency converter modules. These make cabinet installation into RITTAL TS8 cabinets efficient and easy. A large variety of support material such as dimensional drawings and circuit diagrams is also available for making cabinet assembly, planning and implementation as straightforward and rapid as possible. It is also possible to use optional installation racks instead of cabinets. Installation racks are a compact and cost efficient way to assemble a full liquid-cooled ACS800 frequency converter drive system inside a closed environment such as, for example, a container without an existing air-conditioning system.

Full selection of drive module products

The liquid-cooled ACS800 frequency converter module product family includes diode and regenerative IGBT supply units, a large variety of inverter units, high power dynamic braking unit modules, and liquid cooling units for all demanding customer needs. Both diode supply units and regenerative IGBT supply units are available with a wide power range and high power density. When high capacity braking is needed and the drive cannot be equipped with a regenerative supply unit, it is possible to use three-phase liquid-cooled dynamic braking unit modules. With a liquid cooling unit it is possible to add supply, inverter and brake unit piping and heat exchangers to the same closed-loop cooling system. The liquid-cooled modules are available in both multidrive and single drive modules.



ACS800-704LC, D4

ACS800-104LC, R8i

Ratings, types and voltages

ACS800-X04LC, drive module, $U_N = 400\text{ V}$

ACS800 - X04LC - XXXX - 3 + XXXX

Inverter unit modules (INU)

Nominal ratings		No-overload use		Light-overload use		Heavy-duty use		Losses ¹⁾		Mass flow ²⁾	Type designation	Frame size
$I_{\text{cont. max}}$	I_{max}	$P_{\text{cont. max}}$	I_N	P_N	I_{hd}	P_{hd}	P_{loss}			l/min		
A	A	kW	A	kW	A	kW	kW					

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

12-pulse, diode supply unit modules (DSU)

1143	1400	1960	792	756	1344	726	1120	605	7.2	-	-	-	19	ACS800-704LC-1370-7	1xD4
1796	2200	3080	1245	1188	2112	1141	1760	951	11.8	-	-	-	19	ACS800-704LC-2150-7	1xD4
2126	2604	3646	1473	1407	2500	1350	2083	1125	13.0	-	-	-	38	ACS800-704LC-2540-7	2xD4
3200	3919	5487	2217	2117	3762	2032	3135	1694	19.7	-	-	-	38	ACS800-704LC-3820-7	2xD4

¹⁾ In totally enclosed cabinet 98% of losses are conducted to coolant, 2% to ambient air.

²⁾ Pressure loss 100 kPa. Hydrostatic pressure loss 120 kPa due to 2 m height difference.

Nominal ratings	
$I_{\text{cont. max}}$	Rated current available continuously without overloadability at 42 °C liquid temperature.
I_{max}	Maximum output current. Available for 10 s at start, otherwise as long as allowed by drive temperature. Note: max. motor shaft power is 150% P_{hd} .
S_N	Nominal apparent power.
No-overload use	
$P_{\text{cont. max}}$	Typical motor power in no-overload use.
Light-overload use	
I_N	Continuous base current allowing 110% overload for 1 min /5 min.
P_N	Typical motor power in light-overload use.

Heavy-duty use	
I_{hd}	Continuous base current allowing 150% overload for 1 min /5 min.
P_{hd}	Typical motor power in heavy-duty use.
Losses	
P_{loss}	Power loss conducted to coolant.
P_{lossSU}	Power loss of supply module(s).
P_{lossLCL}	Power loss of supply LCL filter.
$P_{\text{loss tot}}$	Sum of P_{lossSU} and P_{lossLCL} .

The current ratings are the same regardless of the supply voltage within one voltage range.

Ratings, types and voltages

ACS800-X04LC, drive module, $U_N = 500\text{ V}$

ACS800 - X04LC - XXXX - 5 + XXXX

Inverter unit modules (INU)

Nominal ratings		No-overload use		Light-overload use		Heavy-duty use		Losses ¹⁾		Mass flow ²⁾	Type designation	Frame size
$I_{\text{cont.max}}$ A	I_{max} A	$P_{\text{cont.max}}$ kW	I_N A	P_N kW	I_{hd} A	P_{hd} kW	P_{loss} kW	l/min				

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

12-pulse, diode supply unit modules (DSU)

1143	1400	1960	990	945	1344	908	1120	756	7.2	-	-	-	19	ACS800-704LC-1370-7	1xD4
1796	2200	3080	1556	1486	2112	1426	1760	1188	11.8	-	-	-	19	ACS800-704LC-2150-7	1xD4
2126	2604	3646	1841	1758	2500	1688	2083	1407	13.0	-	-	-	38	ACS800-704LC-2540-7	2xD4
3200	3919	5487	2771	2646	3762	2540	3135	2117	19.7	-	-	-	38	ACS800-704LC-3820-7	2xD4

¹⁾ In totally enclosed cabinet 98% of losses are conducted to coolant, 2% to ambient air.

²⁾ Pressure loss 100 kPa. Hydrostatic pressure loss 120 kPa due to 2 m height difference.

Nominal ratings	
$I_{\text{cont.max}}$	Rated current available continuously without overloadability at 42 °C liquid temperature.
I_{max}	Maximum output current. Available for 10 s at start, otherwise as long as allowed by drive temperature. Note: max. motor shaft power is 150% P_{hd} .
S_n	Nominal apparent power.
No-overload use	
$P_{\text{cont.max}}$	Typical motor power in no-overload use.

Light-overload use	
I_N	Continuous base current allowing 110% overload for 1 min /5 min.
P_N	Typical motor power in light-overload use.
Heavy-duty use	
I_{hd}	Continuous base current allowing 150% overload for 1 min /5 min.
P_{hd}	Typical motor power in heavy-duty use.
Losses	
P_{loss}	Power loss conducted to coolant.
P_{lossSU}	Power loss of supply module(s).
P_{lossLCL}	Power loss of supply LCL filter.
$P_{\text{loss tot}}$	Sum of P_{lossSU} and P_{lossLCL} .

The current ratings are the same regardless of the supply voltage within one voltage range.

Ratings, types and voltages

ACS800-X04LC, drive module, $U_N = 690\text{ V}$

ACS800 - X04LC - XXXX - 7 + XXXX

Inverter unit modules (INU)

Nominal ratings		No-overload use		Light-overload use		Heavy-duty use		Losses ¹⁾		Mass flow ²⁾	Type designation	Frame size
$I_{\text{cont. max}}$	I_{max}	$P_{\text{cont. max}}$	I_N	P_N	I_{hd}	P_{hd}	P_{loss}			l/min		
A	A	kW	A	kW	A	kW	kW					

$U_N = 690\text{ V}$ (Range 525 to 690 V). The power ratings are valid at nominal voltage 690 V.

12-pulse, diode supply unit modules (DSU)

1143	1400	1960	1366	1305	1344	1252	1120	1044	7.2	-	-	-	19	ACS800-704LC-1370-7	1xD4
1796	2200	3080	2147	2050	2112	1968	1760	1640	11.8	-	-	-	19	ACS800-704LC-2150-7	1xD4
2126	2604	3646	2541	2426	2500	2329	2083	1941	13.0	-	-	-	38	ACS800-704LC-2540-7	2xD4
3200	3919	5487	3824	3652	3762	3506	3135	2921	19.7	-	-	-	38	ACS800-704LC-3820-7	2xD4

¹⁾ In totally enclosed cabinet 98% of losses are conducted to coolant, 2% to ambient air.

²⁾ Pressure loss 100 kPa. Hydrostatic pressure loss 120 kPa due to 2 m height difference.

Nominal ratings	
$I_{\text{cont. max}}$	Rated current available continuously without overloadability at 42 °C liquid temperature.
I_{max}	Maximum output current. Available for 10 s at start, otherwise as long as allowed by drive temperature. Note: max. motor shaft power is 150% P_{hd} .
S_n	Nominal apparent power.
No-overload use	
$P_{\text{cont. max}}$	Typical motor power in no-overload use.
Light-overload use	
I_N	Continuous base current allowing 110% overload for 1 min /5 min.
P_N	Typical motor power in light-overload use.

Heavy-duty use	
I_{hd}	Continuous base current allowing 150% overload for 1 min /5 min.
P_{hd}	Typical motor power in heavy-duty use.
Losses	
P_{loss}	Power loss conducted to coolant.
P_{lossSU}	Power loss of supply module(s).
P_{lossLCL}	Power loss of supply LCL filter.
$P_{\text{loss tot}}$	Sum of P_{lossSU} and P_{lossLCL} .

The current ratings are the same regardless of the supply voltage within one voltage range.

EMC filters

EMC - Electromagnetic Compatibility and modules

The electrical/electronic equipment must be able to operate without problems within an electromagnetic environment. This is called immunity. The ACS800 is designed to have adequate immunity against interference from other equipment. Likewise, the equipment must not disturb or interfere with any other product or system within its locality. This is called emission. Each ACS800 model can be equipped with a built-in filter to reduce high frequency emission.

EMC standards

The EMC product standard (EN 61800-3 + Amendment A11(2000)) 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, apply to industrial and household equipments and systems including drive component inside. Drive units complying with requirements of EN 61800-3 are always 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 nor require a motor to be connected as a load. The emission limits are comparable according to the following table, EMC standards.

EMC standards

EN61800-3:2004 product standard	EN 55011, product family standard for industrial, scientific and medical (ISM) equipment	EN61000-6-4, generic emission standard for industrial environments	EN61000-6-3, generic emission standard for residential, commercial and light-industrial environment
Category C1 (1 st environment)	Group 1 Class B	Not applicable	Applicable
Category C2 (1 st environment)	Group 1 Class A	Applicable	Not applicable
Category C3 (2 nd environment)	Group 2 Class A	Not applicable	Not applicable
Category C4 (2 nd environment)	Not applicable	Not applicable	Not applicable

1st environment vs 2nd environment

1st environment (category C1 and C2)

1st environment includes domestic premises. It also includes establishments directly connected without intermediate transformer to a low-voltage power supply network which supplies buildings used for domestic purposes.

2nd environment (category C3 and C4)

2nd environment includes all establishments other than those directly connected to a low-voltage power supply network which supplies buildings used for domestic purposes.

Selecting an EMC filter

The following table gives the correct filter selection.

Type designation	Voltage	Frame sizes	1 st environment, restricted distribution, C2, grounded network (TN)	2 nd environment, C3, grounded network (TN)	2 nd environment, C3, floating network (IT)
ACS800-04	400-500	R2-R6	+E202	+E200/+E210 (R6 frame size)	- *)/+E210 (R6 frame size)
	690	R2-R6	-	+E200/+E210 (R6 frame size)	- *)/+E210 (R6 frame size)
ACS800-04(M)	400-500	R7-R8	+E202 ¹⁾	+E210	+E210
	690	R7-R8	-	+E210	+E210
ACS800-04	400-500	R7-R8	-	+E210	+E210
	690	R7-R8	-	+E210	+E210

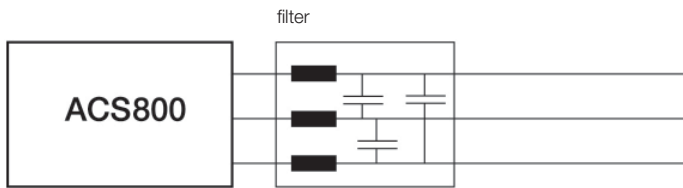
¹⁾ Includes externally mounted components.

*) These drives are category C4 equipment and EMC plan for installation is required.

Sine filters

ABB sine filter solution

The ACS800 sine filter solution is an ACS800 industrial drive equipped with a sine filter. It enjoys most of the premium features of the standard ACS800 industrial drive. The LC filter suppresses the high frequency components of the output voltage.



This means that the output voltage waveform is almost sinusoidal without high voltage peaks.

Filters are available in IP00 degree of protection over the whole power range. Up to ACS800-04 frame size R6 power range, filters are available also with IP23 enclosure class.

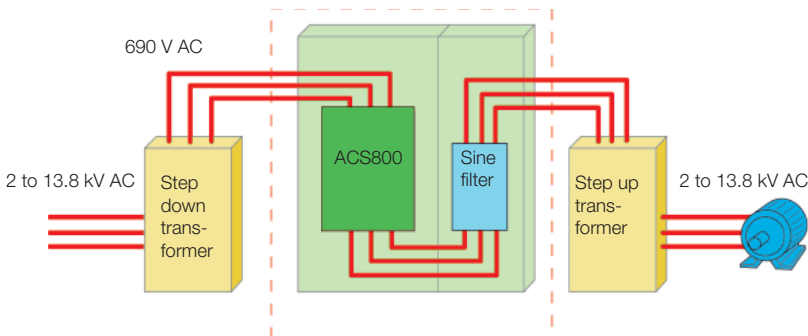
The ABB sine filter solution can be used in a variety of applications:

- Motor does not have adequate insulation for VSD duty
- Total motor cable length is long e.g. there are a number of parallel motors
- Step up applications e.g. medium voltage motor needs to be driven
- Step down applications
- There are industry specific requirements for peak voltage level and voltage rise time
- Motor noise needs to be reduced
- Maximum safety and reliability is needed in e.g. EX applications
- Submersible pumps with long motor cables e.g. in the oil industry

Main features

- Optimized LC design that takes into account switching frequency, voltage drop and filtering characteristics
- Proven technology as ABB has delivered hundreds of sine filter solutions over the last 20 years
- Cost effective solution
- Standard software has all the parameters that need to be set

Feature	Benefit	Note
Sinusoidal output voltage	No additional stress on the motor insulation: non-VSD compliant motors can be used, motor reliability and lifetime are maximized.	
	Allows the use of transformers in the drive output to match any required motor voltage.	Voltage drop at motor cable can be compensated with transformer i.e. there are no restrictions to motor cable length.
	Standard distribution transformer can be used in step up solutions.	High starting torque is available with special transformer design.
	Less motor noise.	
AP programming, advanced IR-compensation and flux control	The effects of load changes to motor voltage can be compensated i.e. the motor always has the optimum voltage.	Scalar control is required with sine filters.



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