



Catalog

ABB industrial drives ACS800, drive modules, 0.55 to 2240 kW

Power and productivity
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Type code structure

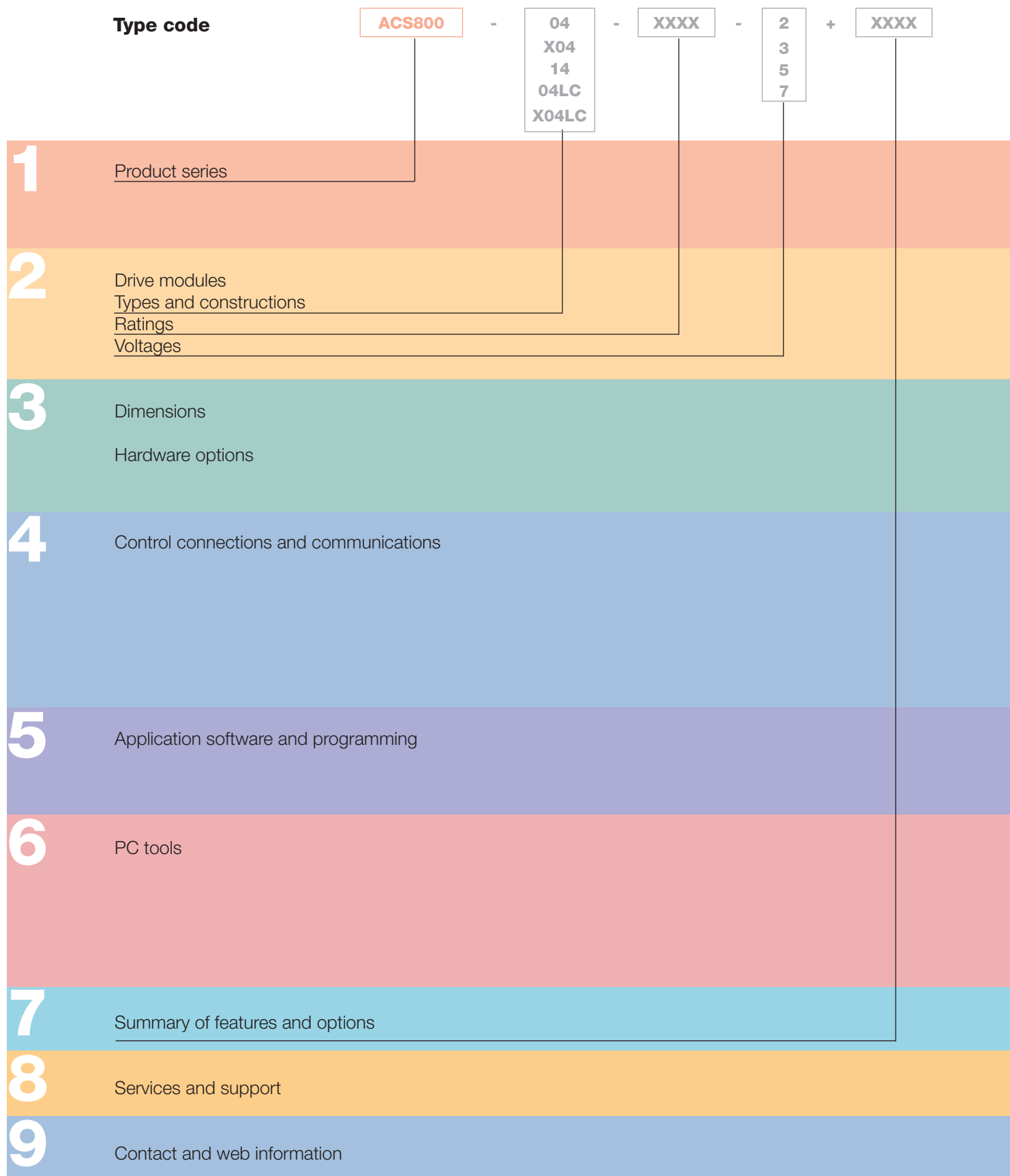




ABB industrial drives, drive modules

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ABB industrial drives



ABB industrial drives

ABB industrial drives are designed for industrial applications, and especially for applications in process industries such as the pulp & paper, metals, mining, cement, power, chemical, and oil & gas industries. ABB industrial drives are highly flexible AC drives that can be configured to meet the precise needs of these applications, and hence order-based configuration is an integral part of the offering. These drives cover a wide range of powers and voltages, including voltages up to 690 V. ABB industrial drives come with a wide range of inbuilt options. A key feature of these drives is programmability, which makes adaptation to different applications easy.

Industrial design

ABB industrial drives are designed with current ratings to be used in industrial environments for applications requiring high overloadability. The heart of the drive is DTC, Direct Torque Control, that provides high performance and significant benefits: e.g. accurate static and dynamic speed and torque control, high starting torque and long motor cables. Inbuilt drive options make the installation work fast and easy.

One of the most significant design criteria of ABB industrial drives has been the long lifetime. Wearing parts such as fans and capacitors have been selected accordingly. Together with the extensive protection features this results in excellent reliability in the demanding industrial market.



Drive modules

Drive modules are designed to be built into a customer's own cabinet. The modules typically have an IP00 or IP20 enclosure class. ABB's module package also includes cabinet assembly documentation.

Type code

This is the unique reference number that clearly identifies your drive by construction, power rating voltage and selected options. Using the type code you can specify your drives from the wide range of options available, customer specific options are added to the type code using the corresponding + code.

ABB's module offering - common features

ABB industrial drive module products are meant for system integrators and/or OEMs who are making their own applications, which include the cabinet structure as well as the software features needed.

ACS800 modules include everything that is required for a complete drive, there is always an inbuilt harmonic filtering choke, for example. There is also a wide selection of inbuilt options such as EMC filtering and different I/O and communication options. In addition to these a selection of external accessories is also available. All the modules can be mounted side by side.

In addition to the modules being designed for cabinet assembly, cabinet assembly documentation is included. The documentation gives examples of different cabinet installations, examples of drawings, and hints on the selection of auxiliary equipment. The flexibility and programmability of the modules makes them very viable for various application needs in different areas of industry.

Other products

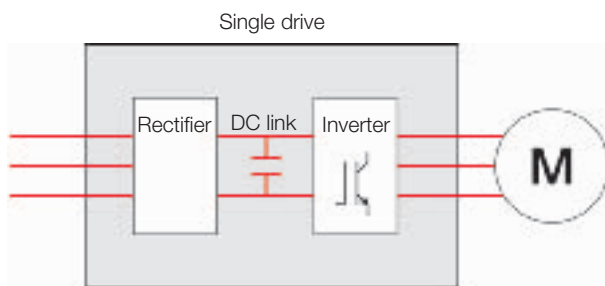
Please also see the separate technical catalogues ACS800 multidrives, code 3AFE68248531 EN, ACS800 single drives, code 3AFE68375126 EN.



ACS800-X4 single drive modules

ACS800-X4 units are complete single drive module products that are optimised for assembly in customers' own cabinets.

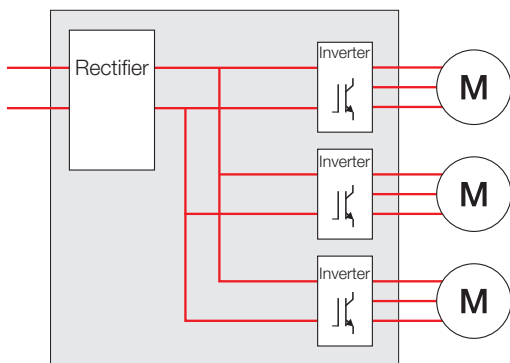
The single drive configuration contains a rectifier, DC link and an inverter in one single AC drive unit.



The ACS800-X4 is designed to minimise the amount of cabinet space used and to make cabinet assembly as easy as possible. The power range is from 0.55 kW up to 1900 kW.

ACS800-X04 multidrive modules

The multidrive principle is based on a standard 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 IGBT supply units.



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

With their compact and modular design and wide range of powers, voltages and options, ABB multidrive modules offer optimised and simple cabinet installation. The power range is from 1.1 kW up to 2000 kW.

Liquid-cooled modules

The ACS800 liquid-cooled drive modules with direct liquid cooling and robust design are an ultimate solution for various applications where space savings and silent operation is a must.

Since the coolant takes care of 98% of the heat losses, no additional filtered air-cooling is needed.

This decreases the noise level and increases the total efficiency of the converter installation. The high-efficiency liquid cooling removes the need for air-conditioning in the installation rooms, bringing the installation and operation costs down. The possibility to have totally enclosed cabinet structure makes the ACS800 liquid-cooled drive modules perfect for harsh environmental conditions.

The ACS800 liquid-cooled multidrive modules are available from 1.1 to 2240 kW at 380 to 690V supply voltage while the ACS800 liquid-cooled single drive modules from 200 kW up to 2,240 kW at 380 to 690V supply voltage.

Drive modules main features



Features	Benefits	Notes
Compact and complete		
Compact size, everything integrated	Less space and installation work required.	No need to install extra components such as input chokes or EMC filter. Possibility for side by side mounting.
Inbuilt harmonic filter in all ACS800 drives	Low harmonics, meaning less interference and less heating in cables and transformers. Filter also protects the drive from line side transients. Easier installation due to lower number of components.	
Wide range of options available	Standard solutions available from ABB that meets most of the customer needs.	
Versatile braking options	Always the optimal braking option available. In most types no need for external braking chopper thus reducing size and installation cost.	Brake chopper inbuilt in all frame sizes (standard/optional).
Optimised products for cabinet assembly	Possible to use any kind of customer specific cabinet. Easy to make the cabinet assembly saving time and money.	
User interface		
User-friendly customer interface	Easy and fast commissioning and operation.	Control panel has clear, alphanumeric display with start-up assistant that guides through the start-up procedure. Easy to use PC tools available for commissioning, maintenance, monitoring and programming.
Versatile connections and communications	Standard I/O covers most requirements. Connectable to commonly used fieldbuses.	Extensive standard and optional I/O. I/O fulfills PELV (EN 50178).
Extensive programmability	Flexibility. Possible to replace relays or even PLC in some applications.	Two levels of programmability: 1. Parameter programming (standard) 2. Adaptive programming (free block programming) <ul style="list-style-type: none"> - Standard feature - More blocks available as options - All I/Os are programmable
Industrial design		
Wide power and voltage range	One product series suits everywhere meaning less training and fewer spare parts, and a standardised interface to drives	

Drive modules main features



Features	Benefits	Notes
Industrial design		
Robust main circuit design	Suitable for heavy industrial use. Reliable. Long motor cables can be used without extra output filters.	Components dimensioned for heavy duty and long lifetime. Advanced thermal model allows high overloadability.
Extensive protections	Enhanced reliability, fewer process interruptions. Possibility to also protect motors and process.	Several adjustable limits to protect other equipment also.
Galvanic isolation of I/O	Safe and reliable operation without separate isolators and relays.	Isolated input signals and relay outputs as standard.
All terminals designed for industrial use	Adequate size even for large aluminium cables. No need for special tools in I/O cabling.	
Worldwide approvals: CE, UL, cUL, CSA, C-Tick, GOST R	Safe products that can be used everywhere in the world.	
Right performance for every application		
DTC, accurate dynamic and static speed and torque control	Excellent process control even without pulse encoder - improved product quality, productivity, reliability and lower investment cost.	
DTC - allows high overloadability and gives high starting torque	Reliable, smooth start without overdimensioning the drive.	
DTC, fast control	No unnecessary trips and process interruptions.	Fast reaction to load or voltage variations prevents tripping. Rides through power interruptions by using kinetic energy of the load.
DTC, flux optimization and sophisticated motor model	Excellent motor and drive efficiency - cost savings.	Optimal flux in the motor reduces losses.
DTC, mechanics friendly	Less stress for mechanics improves reliability..	No shock torques. No torque ripple - minimized risk for torsional vibration. Active oscillation damping.
Both positioning / synchronizing control and normal speed / torque control available in the same hardware	Same hardware and similar user interface for different applications meaning less training and fewer spare parts as well as easier system design and documentation.	
Made in ABB		
Global market leader in AC drives. Long experience.	Well proven, safe and reliable solutions. Application know-how.	
World wide service and support network	Professional support available around the world.	

Technical specification



Mains connection	
Voltage and power range	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)
Power factor 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
Motors 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 34
Frequency	0 to ± 300 Hz 0 to ± 300 Hz, also with inbuilt du/dt filters in R8i module. (0 to ± 120 Hz with external du/dt filters in R2i-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...1000 m	without derating
1000...4000 m	with derating ~ (1% / 100 m) (690 V units 1000 to 2000 m with derating)
Relative humidity	5 to 95%, no condensation allowed
Protection class	
IP00	standard for -04 and 04(M) frame sizes R7, R8 and nxR8i
IP20	Standard for -04 frame sizes R2-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 circuit boards	

Product compliance	
CE, UL, cUL, CSA; C-Tick and GOST R	
Low Voltage Directive 73/23/EEC with amendment 93/68/EEC	
Machinery Directive 98/37/EC	
EMC Directive 89/336/EEC with amendment 93/68/EEC	
Quality assurance system ISO 9001 and	
Environmental system ISO 14001	

EMC according to EN 61800-3	
2 nd environment, unrestricted distribution category C3 - as option in ACS800-04 up to frame size R8	
1 st 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 58-59.

Technical specification



Mains connection

3-Phase 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: $0 \dots U_{3IN} / U_{5IN} / U_{7IN}$
Frequency control	0 to ± 300 Hz
Field weakening point	8 to 300 Hz
Motor control software	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	$\pm 1\%$ 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

IP class	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 45 °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 2000 m without derating, 2000 to 4000 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 73/23/EEC with amendment 93/68/EEC
Machinery Directive 98/37/EC
EMC Directive 89/336/EEC with amendment 93/68/EEC
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



Single drive modules

ACS800-04/-04M

ACS800-04 single drive modules

ACS800-04 drives are single drive modules that are optimised for building into customers' own cabinets. They have been designed to minimise the cabinet space used, make cabinet assembly as easy as possible, and give maximum flexibility. The power range is from 0.55 kW up to 1900 kW. All the drives, regardless of the power and voltage, have the same customer interface and I/O making system design and training easier.

The units have everything necessary inbuilt. That includes, for example, inbuilt chokes for harmonic filtering as standard, inbuilt braking chopper and inbuilt EMC filtering (both are optional in some frame sizes), making cabinet assembly easier. There is also a wide selection of different I/O and communications options.

In addition to these there is a selection of external accessories available.

To optimise the use of the cabinet space, most of the ACS800-04 modules can be mounted side by side. The modules themselves are not only designed for cabinet assembly, but covering documentation is also available. This documentation provides examples of different cabinet installations and circuit drawings, and hints on the selection of auxiliary equipment.

Optimised for cabinet assembly - frame sizes R2 - R6

The R2 - R6 frame size units are designed for cabinet wall mounting. The power range starts from 0.55 kW and extends up to 200 kW. The voltage range is from 230 V up to 690 V. The enclosure class of the modules is IP20 as standard.

Flange mounting is available as an option. It separates the airflow to the control section and the heatsink, and makes it possible to mount the heatsink of the drive outside the enclosure. With this option the heatsink side of the module has IP55 enclosure class. Prevention of unexpected start-up (complies with EN 954- 1, category 3) is also available as an option.



Compact power - frame sizes R7 and R8

Frame size R7 and R8 modules have a very narrow bookshelf design. They are designed to be mounted either on the cabinet wall or floor. The power range is from 45 kW up to 560 kW and the voltage range is from 230 V up to 690 V. The enclosure class is IP00.

The modules have top entry for the input power connections to optimise the use of space and cable routing in the cabinet.

The output power connections are on the side to make access to the cables as easy as possible and to give sufficient space for cable bending. The outputs can be placed either on the left or right hand side of the module. I/O connections can be located in the most optimal place in the cabinet as they are in a separate unit.



Single drive modules

ACS800-04/-04M/-14



Ultimate flexibility - ACS800-04M variant with frame sizes R7 and R8

The ACS800-04M is similar in many respects to the frame size R7 and R8 ACS800-04, but it has even more variants available. For this reason the configuration rules are also different. In addition to the normal bookshelf mounting, the ACS800-04M also offers flat (sideways) mounting as an alternative for installations where the available depth inside the cabinet is limited. In frame size R7 the ACS800-04M also offers a version where the motor connections are from the bottom of the module. This makes it possible to use a narrower cabinet in some installations.

In addition to the normal IP00 enclosure, the ACS800-04M offers also IP20 as an option for some mounting variants. Prevention of unexpected start-up (complies with EN 954-1, category 3; SILCL 2, IEC 62061, table 5) is also available as an option.

High ratings - frame sizes D4-n*D4 supply side and n*R8i inverter units



The construction includes separate IP00 enclosure supply and inverter modules. The modules are of the extremely compact bookshelf design, making the width of the drive very competitive. The wheels in every module make manoeuvring very easy. Modules are also connected to the separate cabling part by quick connectors, enabling each module to be

pulled out quickly and easily by just disconnecting a couple of bolts without the need to disconnect any cables. The inverter modules and supply modules are parallel connected.

Supply units have load switch as standard; a contactor is also available as an inbuilt option. The supply module structure is designed to be either 6-pulse or 12-pulse.

The control unit and I/O connections can be located in the most optimal place in the cabinet as they are in a separate unit.

The power range for these higher rated ACS800-04 packages is from 400 kW up to 1900 kW, and the voltage range is from 380 V up to 690 V.

Main standard hardware features:

Common:

- Optimised design for cabinet assembly
- Easy access to power terminals
- Compact design
- Side by side mounting (excl. versions with side exit)
- Harmonic filtering choke inside
- Long lifetime cooling fan and capacitors
- Extensive, programmable I/O with galvanically isolated inputs
- Three I/O and fieldbus extension slots inside
- Large power terminals allowing use of a wide range of cable sizes
- Block programming possibility

Frame sizes R2 - R6:

- Power range 0.55 to 200 kW
- Voltage range 230 to 690 V
- Mounting on the cabinet wall
- IP20 enclosure class
- Inbuilt brake chopper (R2 - R3; at 690 V also R4)
- Easy access to I/O terminals (control board inside the module)

Frame sizes R7 & R8:

- Power range 45 to 560 kW
- Voltage range 230 to 690 V



- Mounting on the cabinet wall or floor
- IP00 enclosure class
- Input power cable connection from the top for optimising cabinet size and cabling inside cabinet
- Motor cable connection on the side of the module (side selectable) for maximized flexibility and optimised cabinet design (with ACS800-04M, frame size R7, bottom exit can also be selected)
- Modular design allowing a wide variety of variants
- Free location and easy access of I/O terminals (control board outside the module)
- Instructions available for installing modules in Rittal TS8 cabinet

Frame sizes nxD4 + nxR8i:

- Power range 400 to 1900 kW
- Voltage range 380 to 690 V
- Mounting on the cabinet floor
- IP00 enclosure class
- Wheels to make module manoeuvring easy
- Load switch
- du/dt filters inside of the module
- Common mode filters for motor protection
- Plug connector mechanical kits
- Free location and easy access of I/O terminals (control board outside the module)

Options for ACS800-04

Inbuilt options:

- Analogue and digital I/O extension modules
- Fieldbus modules
- Pulse encoder interface module
- Motion control and other control solution software
- Prevention of unexpected start-up (= safe torque off)
- Control panel

Options for frame sizes R2 - R6:

- Inbuilt brake chopper (R4 - R6)
- EMC filter for 2nd environment, unrestricted distribution according to EN 61800-3 (Category C3)
- EMC filter for 1st environment, restricted distribution according to EN 61800-3 (Category C2)
- Flange mounting (except not for -0205-3 and -0255-5)

Options for frame sizes R7 & R8:

- Inbuilt brake chopper
- IP20 enclosure class (for some -04M mounting variants)
- EMC filter for 2nd environment, unrestricted distribution according to EN 61800-3 (Category C3)
- EMC filter for 1st environment, restricted distribution according to EN 61800-3 (Category C2) (-04M only requires also EMC enclosure)
- Bottom exit of motor cables (frame size R7 -04M only)
- Flat (= sideways) mounting (-04M only)
- Various output busbar options (ACS800-04M)
- Common mode filters for motor protection

Options for frame sizes nxD4 + nxR8i:

- Brake chopper module
- Inbuilt contactor

Examples of external options:

- Control panel and mounting platform
- Brake resistor
- Output filters
- Ethernet module
- Control panel mounting platform for cabinet door or inside the cabinet
- Front-end AC fuses (n*R8i only)
- Air circuit breaker (n*R8i only)
- DC-fuses, fuse bases, mechanical kits (n*R8i only)
- Mechanical accessories in Rittal TS8 (n*R8i only)
 - IP21 - IP54 cabinet door / roof mechanical kits
 - Mechanical cabinet accessories kits



ACS800-14 single drives modules

The ACS800-14 drives are regenerative single drives modules equipped with active supply unit. They are full performance regenerative drives in a compact package. All important features and options including LCL line filter module(s), IGBT supply module(s), inverter module(s), common mode filters are in the package. The power range is from 75 kW up to 1700 kW. All the drives, regardless of the power and voltage, have the same customer interface and I/O, making system design and training easier.

Main standard hardware features

- Frame sizes R7i - n*R8i 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 R7i and on the cabinet floor for R8i
- Wheels and plug connectors in the R8i inverter, and
- Coated boards

Main optional hardware features

Inverter frame size R7i:

- Prevention of unexpected start-up
- DC fuses, fuse bases or DC-fuse switch
- Assembly plates for R7i units
- du/dt filters
- common mode filter for motor protection -on-off control for cooling fan with internal charging option

Inverter frame sizes R8i - n*R8i:

- Prevention of unexpected start-up
- 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 - IP54 cabinet door / roof mechanical kits
 - Accessories kits
- Common mode filters for motor protection



Ratings and dimensions

ACS800-04



ACS800 - 04 - 0XXX - 2 + XXXX

Nominal ratings		No-overload use	Light-overload use		Heavy-duty use		Noise level	Heat dissipation	Air flow	Type code	Frame size
$I_{cont,max}$ A	I_{max} A	$P_{cont,max}$ kW	I_N A	P_N kW	I_{hd} A	P_{hd} kW	dBA	W	m ³ /h		
$U_N = 230$ V (Range 208-240 V). The power ratings are valid at nominal voltage 230 V.											
5.1	6.5	1.1	4.7	0.75	3.4	0.55	62	100	35	ACS800-04-0001-2	R2
6.5	8.2	1.5	6	1.1	4.3	0.75	62	100	35	ACS800-04-0002-2	R2
8.5	10.8	1.5	7.7	1.5	5.7	1.1	62	100	35	ACS800-04-0003-2	R2
10.9	13.8	2.2	10.2	2.2	7.5	1.5	62	120	35	ACS800-04-0004-2	R2
13.9	17.6	3	12.7	3	9.3	2.2	62	140	35	ACS800-04-0005-2	R2
19	24	4	18	4	14	3	62	160	69	ACS800-04-0006-2	R3
25	32	5.5	24	5.5	19	4	62	200	69	ACS800-04-0009-2	R3
34	46	7.5	31	7.5	23	5.5	62	250	69	ACS800-04-0011-2	R3
44	62	11	42	11	32	7.5	62	340	103	ACS800-04-0016-2	R4
55	72	15	50	11	37	7.5	62	440	103	ACS800-04-0020-2	R4
72	86	18.5	69	18.5	49	11	65	530	250	ACS800-04-0025-2	R5
86	112	22	80	22	60	15	65	610	250	ACS800-04-0030-2	R5
103	138	30	94	22	69	18.5	65	810	250	ACS800-04-0040-2	R5
141	164	37	132	37	97	30	65	1190	405	ACS800-04-0050-2	R6
166	202	45	155	45	115	30	65	1190	405	ACS800-04-0060-2	R6
202	282	55	184	55	141	37	65	1440	405	ACS800-04-0070-2	R6
214	326	55	211	55	170	45	71	2900	540	ACS800-04(M)-0080-2	R7
253	404	75	248	75	202	55	71	3450	540	ACS800-04(M)-0100-2	R7
295	432	90	290	90	240 ⁴⁾	55	71	4050	540	ACS800-04(M)-0120-2	R7
405	588	110	396	110	316	90	72	5300	1220	ACS800-04(M)-0140-2	R8
447	588	132	440	132	340	90	72	6100	1220	ACS800-04(M)-0170-2	R8
528	588	160	516	160	370	110	72	6700	1220	ACS800-04(M)-0210-2	R8
613	840	160	598	160	480	132	72	7600	1220	ACS800-04(M)-0230-2	R8
693	1017	200	679	200	590 ²⁾	160	72	7850	1220	ACS800-04(M)-0260-2	R8
720	1017	200	704	200	635 ³⁾	200	72	8300	1220	ACS800-04(M)-0300-2	R8

Enclosure

Degree of Protection:

IP00 standard for 04 and 04(M) frame sizes R7, R8 and nxR8i
 IP20 standard for -04 frame sizes R2 - R6, option for some 04(M) variants
 Paint color: RAL 9002/PMS 420C

Frame size	Height mm	Width mm	Depth mm	Weight kg
R2	370	165	193 ⁶⁾	8
R3	420	173	232 ⁶⁾	13
R4	490	240	253 ⁶⁾	24
R5	602	265	276	32
R6	700	300	399	64
R7	1121/1152/1126 ⁷⁾	427/632/264 ⁷⁾	473/259/467 ⁷⁾	100
R8	1564/1596 ⁸⁾	562/779 ⁸⁾	568/403 ⁸⁾	205

Nominal ratings:

$I_{cont,max}$: rated current available continuously without overloadability at 40 °C.
 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} .

Typical ratings:

No-overload use

$P_{cont,max}$: typical motor 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 : 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.

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

The ratings apply at 40 °C ambient temperature.

At higher temperatures (up to 50 °C) the derating is 1% / 1 °C.

Notes:

- 1) 50% overload available if $T_{amb} < 25$ °C. If $T_{amb} = 40$ °C, max overload is 37%.
- 2) 50% overload available if $T_{amb} < 30$ °C. If $T_{amb} = 40$ °C, max overload is 40%.
- 3) 50% overload available if $T_{amb} < 20$ °C. If $T_{amb} = 40$ °C, max overload is 30%.
- 4) 50% overload available if $T_{amb} < 35$ °C. If $T_{amb} = 40$ °C, max overload is 45%.
- 5) Higher value available if output frequency is above 41 Hz.
- 6) Please note that use of control panel or I/O extension or communication options increases the depth.
- 7) Bookshelf (in ACS800-04M +H354) / flat (+H360) / bottom exit (+H352) version.
- 8) Bookshelf (in ACS800-04M +H354) / flat (+H360) mounting.
- 9) Single module only.
- 10) Cable connections need additional space (about 200 mm) behind the module.

Ratings and dimensions

ACS800-04



ACS800 - 04 - XXXX - 3 + XXXX

Nominal ratings		No-overload use	Light-overload use		Heavy-duty use		Noise level	Heat dissipation	Air flow	Type code	Frame size
$I_{cont,max}$ A	I_{max} A	$P_{cont,max}$ kW	I_N A	P_N kW	I_{hd} A	P_{hd} kW	dBA	W	m ³ /h		
$U_N = 400$ V (Range 380-415 V). The power ratings are valid at nominal voltage 400 V.											
5.1	6.5	1.5	4.7	1.5	3.4	1.1	62	100	35	ACS800-04-0003-3	R2
6.5	8.2	2.2	5.9	2.2	4.3	1.5	62	120	35	ACS800-04-0004-3	R2
8.5	10.8	3	7.7	3	5.7	2.2	62	140	35	ACS800-04-0005-3	R2
10.9	13.8	4	10.2	4	7.5	3	62	160	35	ACS800-04-0006-3	R2
13.9	17.6	5.5	12.7	5.5	9.3	4	62	200	35	ACS800-04-0009-3	R2
19	24	7.5	18	7.5	14	5.5	62	250	69	ACS800-04-0011-3	R3
25	32	11	24	11	19	7.5	62	340	69	ACS800-04-0016-3	R3
34	46	15	31	15	23	11	62	440	69	ACS800-04-0020-3	R3
40	46	22	39	18.5	28	15	62	520	69	ACS800-04-0023-3	R3
44	62	22	41	18.5	32	15	62	530	103	ACS800-04-0025-3	R4
55	72	30	50	22	37	18.5	62	610	103	ACS800-04-0030-3	R4
59	72	30	57	30	41	22	62	660	103	ACS800-04-0035-3	R4
72	86	37	69	30	49	22	65	810	250	ACS800-04-0040-3	R5
86	112	45	80	37	60	30	65	990	250	ACS800-04-0050-3	R5
103	138	55	100	55	69	37	65	1190	250	ACS800-04-0060-3	R5
145	170	75	141	75	100	45	65	1440	250	ACS800-04-0075-3	R5
166	202	90	155	75	115	55	65	1940	405	ACS800-04-0100-3	R6
202	282	110	184	90	141	75	65	2310	405	ACS800-04-0120-3	R6
225	326	110	220	110	163	90	65	2810	405	ACS800-04-0135-3	R6
260	326	132	254	132	215	110	65	3260	405	ACS800-04-0165-3	R6
290	351	160	285	160	234	132	65	4200	405	ACS800-04-0205-3	R6
206	326	110	202	110	163	90	71	3000	540	ACS800-04(M)-0140-3	R7
248	404	132	243	132	202	110	71	3650	540	ACS800-04(M)-0170-3	R7
289	432	160	284	160	240 ¹⁾	132	71	4300	540	ACS800-04(M)-0210-3	R7
445	588	200	440	200	340	160	72	6600	1220	ACS800-04(M)-0260-3	R8
521	588	250	516	250	370	200	72	7150	1220	ACS800-04(M)-0320-3	R8
602	840	315	590	315	477	250	72	8100	1220	ACS800-04(M)-0400-3	R8
693	1017	355	679	355	590 ²⁾	315	72	8650	1220	ACS800-04(M)-0440-3	R8
720	1017	400	704	400	635 ³⁾	355	72	9100	1220	ACS800-04(M)-0490-3	R8
879	1315	500	844	500	657	400	73	13000	3120	ACS800-04-0610-3	1xD4 + 2xR8i
1111	1521	630	1067	630	831	450	74	17200	3840	ACS800-04-0770-3	2xD4 + 2xR8i
1255	1877	710	1205	710	939	500	74	18500	3840	ACS800-04-0870-3	2xD4 + 2xR8i
1452	1988	800	1394	800	1086	630	74	23900	3840	ACS800-04-1030-3	2xD4 + 2xR8i
1770	2648	1000	1699	1000	1324	710	75	27500	5040	ACS800-04-1230-3	2xD4 + 3xR8i
2156	2951	1200	2070	1200	1613	900	76	35400	5760	ACS800-04-1540-3	3xD4 + 3xR8i
2663	3984	1450	2556	1450	1992	1120	76	42700	6960	ACS800-04-1850-3	3xD4 + 4xR8i

Enclosure

Degree of Protection:

IP00 standard for 04 and 04(M) frame sizes R7, R8 and nxR8i
 IP20 standard for -04 frame sizes R2 - R6, option for some 04(M) variants
 Paint color: RAL 9002/PMS 420C

Frame size	Height mm	Width mm	Depth mm	Weight kg
R2	370	165	193 ⁶⁾	8
R3	420	173	232 ⁶⁾	13
R4	490	240	253 ⁶⁾	24
R5	602	265	276	32
R6	700	300	399	64
R7	1121/1152/1126 ⁷⁾	427/632/264 ⁷⁾	473/259/467 ⁷⁾	100
R8	1564/1596 ⁸⁾	562/779 ⁸⁾	568/403 ⁸⁾	205
D4	1480	234	400 ¹⁰⁾	180
2xD4	1480	234 ⁹⁾	400 ¹⁰⁾	360
3xD4	1480	234 ⁹⁾	400 ¹⁰⁾	540
2xR8i	1397	245 ⁹⁾	596	300
3xR8i	1397	245 ⁹⁾	596	450
4xR8i	1397	245 ⁹⁾	596	600

Nominal ratings:

$I_{cont,max}$: rated current available continuously without overloadability at 40 °C.
 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} .

Typical ratings:

No-overload use

$P_{cont,max}$: typical motor power in no-overload use.

Light-overload use

I_N : continuous current allowing 110% I_N for 1min / 5 min at 40 °C.

P_N : typical motor power in light-overload use.

Heavy-duty use

I_{hd} : continuous current allowing 150% I_{hd} for 1min / 5 min at 40 °C.

P_{hd} : typical motor power in heavy-duty use.

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

The ratings apply at 40 °C ambient temperature.

At higher temperatures (up to 50 °C) the derating is 1% / 1 °C.

Notes:

¹⁾ 50% overload available if $T_{amb} < 25$ °C. If $T_{amb} = 40$ °C, max overload is 37%.

²⁾ 50% overload available if $T_{amb} < 30$ °C. If $T_{amb} = 40$ °C, max overload is 40%.

³⁾ 50% overload available if $T_{amb} < 20$ °C. If $T_{amb} = 40$ °C, max overload is 30%.

⁴⁾ 50% overload available if $T_{amb} < 35$ °C. If $T_{amb} = 40$ °C, max overload is 45%.

⁵⁾ Higher value available if output frequency is above 41 Hz.

⁶⁾ Please note that use of control panel or I/O extension or communication options increases the depth.

⁷⁾ Bookshelf (in ACS800-04M +H354) / flat (+H360) / bottom exit (+H352) version.

⁸⁾ Bookshelf (in ACS800-04M +H354) / flat (+H360) mounting.

⁹⁾ Single module only.

¹⁰⁾ Cable connections need additional space (about 200 mm) behind the module.

Ratings and dimensions

ACS800-04



ACS800 - 04 - XXXX - 5 + XXXX

Nominal ratings		No-overload use	Light-overload use		Heavy-duty use		Noise level	Heat dissipation	Air flow	Type code	Frame size
$I_{cont. max}$ A	I_{max} A	$P_{cont. max}$ kW	I_N A	P_N kW	I_{hd} A	P_{hd} kW	dBA	W	m ³ /h		
$U_N = 500$ V (Range 380-500 V). The power ratings are valid at nominal voltage 500 V.											
4.9	6.5	2.2	4.5	2.2	3.4	1.5	62	120	35	ACS800-04-0004-5	R2
6.2	8.2	3	5.6	3	4.2	2.2	62	140	35	ACS800-04-0005-5	R2
8.1	10.8	4	7.7	4	5.6	3	62	160	35	ACS800-04-0006-5	R2
10.5	13.8	5.5	10	5.5	7.5	4	62	200	35	ACS800-04-0009-5	R2
13.2	17.6	7.5	12	7.5	9.2	5.5	62	250	35	ACS800-04-0011-5	R2
19	24	11	18	11	13	7.5	62	340	69	ACS800-04-0016-5	R3
25	32	15	23	15	18	11	62	440	69	ACS800-04-0020-5	R3
34	46	18.5	31	18.5	23	15	62	530	69	ACS800-04-0025-5	R3
38	46	22	37	22.0	27	19	62	590	69	ACS800-04-0028-5	R3
42	62	22	39	22	32	18.5	62	610	103	ACS800-04-0030-5	R4
48	72	30	44	30	36	22	62	810	103	ACS800-04-0040-5	R4
56	72	37	54	37	39	22	62	950	103	ACS800-04-0045-5	R4
65	86	37	61	37	50	30	65	990	250	ACS800-04-0050-5	R5
79	112	45	75	45	60	37	65	1190	250	ACS800-04-0060-5	R5
96	138	55	88	55	69	45	65	1440	250	ACS800-04-0070-5	R5
145	170	90	141	90	100	55	65	2150	250	ACS800-04-0105-5	R5
157	202	90	145	90	113	75	65	2310	405	ACS800-04-0120-5	R6
180	282	110	163	110	141	90	65	2810	405	ACS800-04-0140-5	R6
225	326	132	220	132	163	110	65	3260	405	ACS800-04-0165-5	R6
260	326	160	254	160	215	132	65	3800	405	ACS800-04-0205-5	R6
290	351	200	285	200	234	160	65	4500	405	ACS800-04-0255-5	R6
196	326	132	192	132	162	110	71	3000	540	ACS800-04(M)-0170-5	R7
245	384	160	240	160	192	132	71	3800	540	ACS800-04(M)-0210-5	R7
289	432	200	284	200	224	160	71	4500	540	ACS800-04(M)-0260-5	R7
440	588	250	435	250	340	200	72	6850	1220	ACS800-04(M)-0320-5	R8
515	588	315	510	315	370	250	72	7800	1220	ACS800-04(M)-0400-5	R8
550	840	355	545	355	490	315	72	7600	1220	ACS800-04(M)-0440-5	R8
602	840	400	590	400	515 ²⁾	355	72	8100	1220	ACS800-04(M)-0490-5	R8
684	1017	450	670	450	590 ²⁾	400	72	9100	1220	ACS800-04(M)-0550-5	R8
718	1017	500	704	500	632 ³⁾	450	72	9700	1220	ACS800-04(M)-0610-5	R8
883	1321	630	848	630	660	500	73	14000	3120	ACS800-04-0760-5	1xD4 + 2xR8i
1050	1524	710	1008	710	785	560	74	17200	3840	ACS800-04-0910-5	2xD4 + 2xR8i
1258	1882	900	1208	900	941	630	74	19900	3840	ACS800-04-1090-5	2xD4 + 2xR8i
1372	1991	1000	1317	1000	1026	710	74	23800	3840	ACS800-04-1210-5	2xD4 + 2xR8i
1775	2655	1250	1704	1200	1328	900	75	29400	5040	ACS800-04-1540-5	2xD4 + 3xR8i
2037	2956	1450	1956	1400	1524	1120	76	35000	5760	ACS800-04-1820-5	3xD4 + 3xR8i
2670	3901	1900	2563	1850	1997	1400	76	45400	6960	ACS800-04-2310-5	3xD4 + 4xR8i

Enclosure

Degree of Protection:

IP00 standard for 04 and 04(M) frame sizes R7, R8 and nxR8i

IP20 standard for -04 frame sizes R2 - R6, option for some 04(M) variants

Paint color: RAL 9002/PMS 420C

Frame size	Height mm	Width mm	Depth mm	Weight kg
R2	370	165	193 ⁶⁾	8
R3	420	173	232 ⁶⁾	13
R4	490	240	253 ⁶⁾	24
R5	602	265	276	32
R6	700	300	399	64
R7	1121/1152/1126 ⁷⁾	427/632/264 ⁷⁾	473/259/467 ⁷⁾	100
R8	1564/1596 ⁸⁾	562/779 ⁸⁾	568/403 ⁸⁾	205
D4	1480	234	400 ¹⁰⁾	180
2xD4	1480	234 ⁹⁾	400 ¹⁰⁾	360
3xD4	1480	234 ⁹⁾	400 ¹⁰⁾	540
2xR8i	1397	245 ⁹⁾	596	300
3xR8i	1397	245 ⁹⁾	596	450
4xR8i	1397	245 ⁹⁾	596	600

Ratings and dimensions

ACS800-04



ACS800 - 04 - XXXX - 7 + XXXX

Nominal ratings		No-overload use	Light-overload use		Heavy-duty use		Noise level	Heat dissipation	Air flow	Type code	Frame size
$I_{cont,max}$ A	I_{max} A	$P_{cont,max}$ kW	I_N A	P_N kW	I_{hd} A	P_{hd} kW	dBA	W	m ³ /h		
$U_N = 690$ V (Range 525-690 V). The power ratings are valid at nominal voltage 690 V.											
13	14	11	11.5	7.5	8.5	5.5	62	300	103	ACS800-04-0011-7	R4
17	19	15	15	11	11	7.5	62	340	103	ACS800-04-0016-7	R4
22	28	18.5	20	15	15	11	62	440	103	ACS800-04-0020-7	R4
25	38	22	23	18.5	19	15	62	530	103	ACS800-04-0025-7	R4
33	44	30	30	22	22	18.5	62	610	103	ACS800-04-0030-7	R4
36	54	30	34	30	27	22	62	690	103	ACS800-04-0040-7	R4
51	68	45	46	37	34	30	65	840	250	ACS800-04-0050-7	R5
57	84	55	52	45	42	37	65	1010	250	ACS800-04-0060-7	R5
79	104	75	73	55	54	45	65	1220	405	ACS800-04-0070-7	R6
93	124	90	86	75	62	55	65	1650	405	ACS800-04-0100-7	R6
113	172	110	108	90	86	75	65	1960	405	ACS800-04-0120-7	R6
134	190	132	125	110	95	90	65	2660	405	ACS800-04-0145-7	R6
166	245	160	155	132	131	110	65	3470	405	ACS800-04-0175-7	R6
190	245	160	180	160	147	132	65	4180	405	ACS800-04-0205-7	R6
134	190	132	125	110	95	90	71	2800	540	ACS800-04(M)-0140-7	R7
166	263	160	155	132	131	110	71	3550	540	ACS800-04(M)-0170-7	R7
166/203 ⁹⁾	294	160	165/195 ⁹⁾	160	147	132	71	4250	540	ACS800-04(M)-0210-7	R7
175/230 ⁹⁾	326	160/200 ⁹⁾	175/212 ⁹⁾	160/200 ⁹⁾	163	160	71	4800	540	ACS800-04(M)-0260-7	R7
315	433	315	290	250	216	200	72	6150	1220	ACS800-04(M)-0320-7	R8
353	548	355	344	315	274	250	72	6650	1220	ACS800-04(M)-0400-7	R8
396	656	400	387	355	328	315	72	7400	1220	ACS800-04(M)-0440-7	R8
445	775	450	426	400	387	355	72	8450	1220	ACS800-04(M)-0490-7	R8
488	853	500	482	450	426	400	72	8300	1220	ACS800-04(M)-0550-7	R8
560	964	560	537	500	482	450	72	9750	1220	ACS800-04(M)-0610-7	R8
628	939	630	603	630	470	500	73	13900	3120	ACS800-04-0750-7	1xD4 + 2xR8i
729	1091	710	700	710	545	560	73	17100	3120	ACS800-04-0870-7	1xD4 + 2xR8i
885	1324	800	850	800	662	630	73	18400	3120	ACS800-04-1060-7	1xD4 + 2xR8i
953	1426	900	915	900	713	710	74	20800	3840	ACS800-04-1160-7	2xD4 + 2xR8i
1258	1882	1200	1208	1200	941	900	75	27000	5040	ACS800-04-1500-7	2xD4 + 3xR8i
1414	2115	1400	1357	1400	1058	1000	75	32500	5040	ACS800-04-1740-7	2xD4 + 3xR8i
1774	2654	1700	1703	1700	1327	1250	76	40100	6240	ACS800-04-2120-7	2xD4 + 4xR8i
1866	2792	1900	1791	1800	1396	1400	76	43300	6960	ACS800-04-2320-7	3xD4 + 4xR8i

Enclosure

Degree of Protection:

IP00 standard for 04 and 04(M) frame sizes R7, R8 and nxR8i
 IP20 standard for -04 frame sizes R2 - R6, option for some 04(M) variants
Paint color: RAL 9002/PMS 420C

Frame size	Height mm	Width mm	Depth mm	Weight kg
R2	370	165	193 ⁶⁾	8
R3	420	173	232 ⁶⁾	13
R4	490	240	253 ⁶⁾	24
R5	602	265	276	32
R6	700	300	399	64
R7	1121/1152/1126 ⁷⁾	427/632/264 ⁷⁾	473/259/467 ⁷⁾	100
R8	1564/1596 ⁸⁾	562/779 ⁸⁾	568/403 ⁸⁾	205
D4	1480	234	400 ¹⁰⁾	180
2xD4	1480	234 ⁹⁾	400 ¹⁰⁾	360
3xD4	1480	234 ⁹⁾	400 ¹⁰⁾	540
2xR8i	1397	245 ⁹⁾	596	300
3xR8i	1397	245 ⁹⁾	596	450
4xR8i	1397	245 ⁹⁾	596	600

Nominal ratings:

$I_{cont,max}$: rated current available continuously without overloadability at 40 °C.

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} .

Typical ratings:

No-overload use

$P_{cont,max}$: typical motor power in no-overload use.

Light-overload use

I_N : continuous current allowing 110% I_N for 1min / 5 min at 40 °C.

P_N : typical motor power in light-overload use.

Heavy-duty use

I_{hd} : continuous current allowing 150% I_{hd} for 1min / 5 min at 40 °C.

P_{hd} : typical motor power in heavy-duty use.

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

The ratings apply at 40 °C ambient temperature.

At higher temperatures (up to 50 °C) the derating is 1% / 1 °C.

Notes:

- 50% overload available if $T_{amb} < 25$ °C. If $T_{amb} = 40$ °C, max overload is 37%.
- 50% overload available if $T_{amb} < 30$ °C. If $T_{amb} = 40$ °C, max overload is 40%.
- 50% overload available if $T_{amb} < 20$ °C. If $T_{amb} = 40$ °C, max overload is 30%.
- 50% overload available if $T_{amb} < 35$ °C. If $T_{amb} = 40$ °C, max overload is 45%.
- Higher value available if output frequency is above 41 Hz.
- Please note that use of control panel or I/O extension or communication options increases the depth.
- Bookshelf (in ACS800-04M +H354) / flat (+H360) / bottom exit (+H352) version.
- Bookshelf (in ACS800-04M +H354) / flat (+H360) mounting.
- Single module only.
- Cable connections need additional space (about 200 mm) behind the module.

Ratings and dimensions

ACS800-14



ACS800 - 14 - XXXX - **3** + XXXX
5
7

Nominal ratings		No overload use	Light overload use		Heavy-duty use		Noise level	Heat dissipation	Air flow	Type code	Frame size
$I_{cont,max}$ A (AC)	$I_{cont,max}$ A (DC)	$P_{cont,max}$ kW (DC)	I_N A	P_N kW	I_{hd} A	P_{hd} kW					
$U_N = 400\text{ V (Range 380-415 V)}$											
202	293	110	194	90	151	75	74	6.3	1300	ACS800-14-0140-3	R7i + R7i + ALCL-04-5
250	363	132	240	132	187	90	74	6.9	1300	ACS800-14-0170-3	R7i + R7i + ALCL-05-5
292	400	160	280	160	218	110	75	7	3160	ACS800-14-0210-3	R8i + R8i + ALCL-12-5
370	506	200	244	200	277	132	75	9	3160	ACS800-14-0260-3	R8i + R8i + ALCL-13-5
469	642	250	450	250	351	200	75	11	3160	ACS800-14-0320-3	R8i + R8i + ALCL-14-5
565	773	315	542	315	423	250	75	14	3160	ACS800-14-0390-3	R8i + R8i + ALCL-15-5
704	963	400	675	355	526	250	75	19	3160	ACS800-14-0490-3	R8i + R8i + ALCL-15-5
919	1258	500	882	500	688	355	77	22	6400	ACS800-14-0640-3	2xR8i + 2xR8i + ALCL-24-5
1111	1521	630	1067	630	831	450	77	28	6400	ACS800-14-0770-3	2xR8i + 2xR8i + ALCL-25-5
1379	1888	800	1324	710	1037	560	77	36	6400	ACS800-14-0960-3	2xR8i + 2xR8i + ALCL-25-5
1535	2102	900	1474	800	1149	630	78	39	10240	ACS800-14-1070-3	3xR8i + 3xR8i + 2xALCL-24-5
1978	2707	1200	1899	1100	1479	800	78	51	10240	ACS800-14-1380-3	3xR8i + 3xR8i + 2xALCL-24-5
2610	3573	1600	2506	1400	1953	1100	79	67	12800	ACS800-14-1810-3	4xR8i + 4xR8i + 2xALCL-24-5
$U_N = 500\text{ V (Range 380-500 V)}$											
200	291	132	192	132	150	90	74	6	1300	ACS800-14-0170-5	R7i + R7i + ALCL-04-5
245	356	160	235	160	183	110	74	8	1300	ACS800-14-0210-5	R7i + R7i + ALCL-05-5
302	347	200	289	200	226	132	75	8	3160	ACS800-14-0260-5	R8i + R8i + ALCL-12-5
365	457	250	350	250	273	160	75	10	3160	ACS800-14-0320-5	R8i + R8i + ALCL-13-5
455	530	315	437	315	340	200	75	12	3160	ACS800-14-0400-5	R8i + R8i + ALCL-14-5
525	660	355	504	355	393	250	75	14	3160	ACS800-14-0460-5	R8i + R8i + ALCL-15-5
595	648	400	571	400	445	315	75	16	3160	ACS800-14-0510-5	R8i + R8i + ALCL-15-5
670	972	500	643	450	501	315	75	19	3160	ACS800-14-0580-5	R8i + R8i + ALCL-15-5
892	1294	630	856	630	667	450	77	24	6400	ACS800-14-0780-5	2xR8i + 2xR8i + ALCL-24-5
1005	1458	710	956	630	752	500	77	28	6400	ACS800-14-0870-5	2xR8i + 2xR8i + ALCL-25-5
1313	1906	900	1261	900	982	710	77	36	6400	ACS800-14-1140-5	2xR8i + 2xR8i + ALCL-25-5
1528	2217	1120	1467	1120	1143	800	78	41	10240	ACS800-14-1330-5	3xR8i + 3xR8i + 2xALCL-24-5
1884	2734	1400	1809	1300	1409	1000	78	52	10240	ACS800-14-1640-5	3xR8i + 3xR8i + 2xALCL-24-5
2486	3608	1800	2387	1700	1860	1300	79	68	12800	ACS800-14-2160-5	4xR8i + 4xR8i + 2xALCL-25-5
$U_N = 690\text{ V (Range 525-690 V)}$											
132	192	110	127	110	99	90	74	7	1300	ACS800-14-0160-7	R7i + R7i + ALCL-04-7
150	218	132	144	132	112	90	74	8	1300	ACS800-14-0200-7	R7i + R7i + ALCL-05-7
201	238	200	193	160	150	132	75	11	3160	ACS800-14-0260-7	R8i + R8i + ALCL-12-7
279	311	250	268	250	209	200	75	12	3160	ACS800-14-0320-7	R8i + R8i + ALCL-13-7
335	431	315	322	250	251	200	75	16	3160	ACS800-14-0400-7	R8i + R8i + ALCL-14-7
382	503	355	367	355	286	270	75	17	3160	ACS800-14-0440-7	R8i + R8i + ALCL-15-7
447	525	450	429	400	334	315	75	18	3160	ACS800-14-0540-7	R8i + R8i + ALCL-15-7
659	727	630	632	630	493	450	77	32	6400	ACS800-14-0790-7	2xR8i + 2xR8i + ALCL-24-7
729	985	710	700	710	545	500	77	33	6400	ACS800-14-0870-7	2xR8i + 2xR8i + ALCL-25-7
896	1002	900	840	800	655	350	77	36	6400	ACS800-14-1050-7	2xR8i + 2xR8i + ALCL-25-7
1112	1425	1120	1037	1120	831	800	78	48	10240	ACS800-14-1330-7	3xR8i + 3xR8i + 2xALCL-24-7
1256	1477	1250	1206	1200	940	900	78	51	10240	ACS800-14-1510-7	3xR8i + 3xR8i + 2xALCL-24-7
1657	1879	1700	1591	1600	1240	1200	79	67	12800	ACS800-14-1980-7	4xR8i + 4xR8i + 2xALCL-25-7

Dimensions

Frame size	Height mm	Width mm	Depth ¹⁾ mm	Weight kg
R7i ¹⁾	744	228	367	37
R8i	1397	235	596	150
2xR8i	1397	245 ²⁾	596	300
3xR8i	1397	245 ²⁾	596	450
4xR8i	1397	245 ²⁾	596	600

¹⁾ Dimensions do not include cooling fan

²⁾ Single module only

Frame size	Height mm	Width mm	Depth mm	Weight kg
ALCL-0x-x	810	304	292	72
ALCL-1x-x	1397	240	499	180
ALCL-2x-x	1397	240	573	305

Nominal ratings:

$I_{cont,max}$: rated current available continuously without overloadability at 40 °C.

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} .

Typical ratings:

No-overload use

$P_{cont,max}$: typical motor power in no-overload use.

Light-overload use

I_N : continuous current allowing 110% I_N for 1min / 5 min at 40 °C.

P_N : typical motor power in light-overload use.

Heavy-duty use

I_{hd} : continuous current allowing 150% I_{hd} for 1min / 5 min at 40 °C.

P_{hd} : typical motor power in heavy-duty use.

The current ratings are the same regardless of the supply voltage within one voltage range. The ratings apply at 40 °C ambient temperature.

At higher temperatures (up to 50 °C) the derating is 1% / 1 °C.



The ACS800 multidrive module product series includes rectifier- and DC-supplied inverter modules and accessories especially designed for integrators, OEMs and panel builders.

The ACS800 multidrive principle based on a common DC bus arrangement enables single power entry and common braking resources for several drives. Common braking includes the possibility for regenerative braking and motor-to-motor braking depending on the motor loads in the line-up.

Special design for system integrators

The design of these modules is based on much smaller inverter modules.

The modules have a plug-in connector, meaning fast and easy assembling. The modules are also equipped with wheels, so they can easily be pulled out of the cabinet and pushed back for maintenance purposes.

This concept also allows pre-installation of the power cables in the empty cabinet.

Inverter and diode modules can be freely connected parallel for higher output current. This means a limited number of different module sizes and fewer spare parts.

The modularity, compact size and simplicity of the modules means a lot of savings for cabinet builders in terms of minimizing the number of cabinets and the widths.

Besides the compact design, the new ACS800 DC-supplied inverter and rectifier units include an extensive selection of options.

Product range

Inverter modules

Inverter modules are available in 7 different frame sizes. Frame sizes R2i - R7i start from 1.1 kW up to 110 kW, and all the powers from 90 to 2000 kW are different configurations of R8i units, single or in parallel. The voltage range covers 380 V, 500 V and 690 V.

Supply modules

Supply modules are available as diode-, thyristor- or IGBT- based solutions.

In the diode supply units (DSU) only four different types of unit, either in single or parallel, cover the power range of 145 to 4200 kW in 380 - 690 V.

The basic features of the diode rectifier unit include automatic adaptation to 6 or 12-pulse operation and automatic control to charge the inverter capacitor banks during start-up.

The mechanical dimensions are the same in each module, making engineering and assembling very easy.

The thyristor supply unit (TSU) is used in regenerative drive systems. It contains two 6-pulse thyristor bridges in antiparallel connections. 12-pulse units can also be configured. The power range is from 470 kW up to 3150 kW in 380 - 690 V.

An IGBT Supply unit (ISU) is used in fully regenerative drive systems. In power control it gives the same firm and gentle performance as DTC gives in motor control. The power module is hardware compatible with the inverter module. In passive mode the converter operates as the rectifier. In the active mode the IGBTs are controlled to keep the DC voltage constant and the line current sinusoidal.

Harmonic content remains extremely low due to DTC control and LCL filtering.

The power range is from 60 kW up to 1975 kW in 380 - 690 V. Modules are single or parallel connected.

Braking choppers and resistors

In resistor braking whenever the voltage in the intermediate circuit of a frequency converter exceeds a certain limit, a braking chopper connects the circuit to a braking resistor.

Standard resistors are also available, but non-standard resistors can be used, however they must be checked case-by-case.

Multidrive modules, ACS800



The power range is from 230 kW up to 2400 kW in 380 - 690 V.

Main standard hardware features

- Frame sizes R2i - R5i control board inside of the module
- Frame sizes R7i - n*R8i 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 - 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 - R7i:

- Prevention of unexpected start-up
- DC fuses, fuse bases or DC-fuse switch
- Mechanics for tilted position assembly in R2i - 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 - IP54 cabinet door / roof mechanical kits
 - Accessories kits

Inverter frame sizes R8i - n*R8i:

- Prevention of unexpected start-up
- 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 - IP54 cabinet door / roof mechanical kits
 - Accessories kits
- Common mode filters for motor protection

DSU frame sizes D3 - n*D4:

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





Ratings and dimensions

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

ACS800 - X04 - XXXX - 3 + XXXX

Nominal ratings		No-overload use	Light-overload use		Heavy-duty use		Heat dissipation kW	Module type	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			
$U_N = 400\text{ V}$ (Range 380 - 415 V). The power ratings are valid at nominal voltage 400 V.									
5.1	6.5	1.5	4.7	1.5	3.4	1.1	0.1	ACS800-104-0003-3	R2i
6.5	8.2	2.2	5.9	2.2	4.3	1.5	0.1	ACS800-104-0004-3	R2i
8.5	10.8	3	7.7	3	5.7	2.2	0.1	ACS800-104-0005-3	R2i
10.9	13.8	4	10.2	4	7.5	3	0.1	ACS800-104-0006-3	R2i
13.9	17.6	5.5	12.7	5.5	9.3	4	0.2	ACS800-104-0009-3	R2i
19	24	7.5	18	7.5	14	5.5	0.3	ACS800-104-0011-3	R3i
25	32	11	24	11	19	7.5	0.3	ACS800-104-0016-3	R3i
34	46	15	31	15	23	11	0.4	ACS800-104-0020-3	R3i
44	62	22	41	18.5	32	15	0.5	ACS800-104-0025-3	R4i
55	72	30	50	22	37	18.5	0.6	ACS800-104-0030-3	R4i
72	86	37	69	30	49	22	0.8	ACS800-104-0040-3	R5i
86	112	45	80	37	60	30	1	ACS800-104-0050-3	R5i
103	138	55	94	45	69	37	1.2	ACS800-104-0060-3	R5i
147	220	75	141	75	110	55	1.4	ACS800-104-0105-3	R7i
178	252	90	171	90	133	55	1.7	ACS800-104-0125-3	R7i
208	312	110	200	110	156	75	1.9	ACS800-104-0145-3	R7i
250	374	132	240	132	187	90	2.1	ACS800-104-0175-3	R7i
292	400	160	280	160	218	110	2.7	ACS800-104-0210-3	R8i
370	506	200	355	200	277	132	3.7	ACS800-104-0260-3	R8i
469	642	250	450	250	351	200	4.9	ACS800-104-0320-3	R8i
565	773	315	542	315	423	220	6.1	ACS800-104-0390-3	R8i
741	1014	400	711	400	554	315	8	ACS800-104-0510-3	R8i
1111	1521	630	1067	630	831	450	12	ACS800-104-0770-3	2xR8i
1452	1988	800	1394	800	1086	630	15	ACS800-104-1030-3	2xR8i
2156	2951	1200	2070	1200	1613	900	23	ACS800-104-1540-3	3xR8i
2845	3894	1600	2731	1600	2128	1120	30	ACS800-104-2050-3	4xR8i
3537	4842	2000	3396	2000	2646	1400	37	ACS800-104-2570-3	5xR8i
4223	5780	2400	4054	2400	3159	1600	44	ACS800-104-3080-3	6xR8i

Dimensions

Frame size	Height mm	Width mm	Depth mm	Weight kg	Noise level dB(A)	Air flow m ³ /h
R2i	401	165	193 ³⁾	9	62	35
R3i	466	173	232 ³⁾	12	62	69
R4i	525	240	252 ³⁾	15	62	103
R5i	673	265	276 ³⁾	23	65	168
R7i ¹⁾	963	170	404	37	64	800
R8i	1397	235	596	130	72	1280
2xR8i	1397	245 ²⁾	596	260	74	2560
3xR8i	1397	245 ²⁾	596	390	76	3840
4xR8i	1397	245 ²⁾	596	520	76	5120
5xR8i	1397	245 ²⁾	596	650	77	65
6xR8i	1397	245 ²⁾	596	780	78	66

¹⁾ Dimensions do not include cooling fan.

²⁾ Single module only.

³⁾ The depth is without control panels and options.

Type	Height mm	Width mm	Depth mm
RDCU control unit *)	282	126	41

*) Delivered with R7i to nxR8i

Nominal ratings:

$I_{\text{cont. max}}$: rated current available continuously without overloadability at 40 °C.

I_{max} : maximum output current. Available for 10 s at start, otherwise as long as allowed by drive temperature.

Typical ratings:

No-overload use

$P_{\text{cont. max}}$: typical motor 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 : 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.

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}).

The rated current of the ACS800 must be higher than or equal to the rated motor current to achieve the rated motor power given in the table.



Ratings and dimensions

ACS800-X04, drive module, $U_N = 500\text{ V}$

ACS800 - X04 - XXXX - 5 + XXXX

Nominal ratings		No-overload use	Light-overload use		Heavy-duty use		Heat dissipation kW	Module type	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			
$U_N = 500\text{ V}$ (Range 380 - 500 V) . The power ratings are valid at nominal voltage 500 V.									
4.9	7	2.2	4.5	2.2	3.4	1.5	0.1	ACS800-104-0004-5	R2i
6.2	8	3	5.6	3	4.2	2.2	0.1	ACS800-104-0005-5	R2i
8.1	11	4	7.7	4	5.6	3	0.2	ACS800-104-0006-5	R2i
11	14	5.5	10	5.5	7.5	4	0.2	ACS800-104-0009-5	R2i
13	18	7.5	12	7.5	9.2	5.5	0.3	ACS800-104-0011-5	R2i
19	24	11	18	11	13	7.5	0.3	ACS800-104-0016-5	R3i
25	32	15	23	15	18	11	0.4	ACS800-104-0020-5	R3i
34	46	18.5	31	18.5	23	15	0.5	ACS800-104-0025-5	R3i
42	62	22	39	22	32	18.5	0.6	ACS800-104-0030-5	R4i
48	72	30	44	30	36	22	0.8	ACS800-104-0040-5	R4i
65	86	37	61	37	50	30	1	ACS800-104-0050-5	R5i
79	112	45	75	45	60	37	1.2	ACS800-104-0060-5	R5i
96	138	55	88	55	69	45	1.4	ACS800-104-0070-5	R5i
115	172	75	110	55	86	55	1.1	ACS800-104-0105-5	R7i
135	202	90	130	90	101	55	1.3	ACS800-104-0125-5	R7i
166	248	110	159	110	124	75	1.7	ACS800-104-0145-5	R7i
208	312	132	200	132	156	90	2	ACS800-104-0175-5	R7i
250	374	160	240	160	187	110	2.2	ACS800-104-0215-5	R7i
315	457	200	302	200	236	132	3.2	ACS800-104-0260-5	R8i
365	530	250	350	250	273	160	4	ACS800-104-0320-5	R8i
455	660	315	437	315	340	200	5.4	ACS800-104-0400-5	R8i
525	762	355	504	355	393	250	5.9	ACS800-104-0460-5	R8i
700	1016	500	672	500	524	355	7.8	ACS800-104-0610-5	R8i
1050	1524	710	1008	710	785	560	12	ACS800-104-0910-5	2xR8i
1372	1991	1000	1317	1000	1026	710	15	ACS800-104-1210-5	2xR8i
2037	2956	1450	1956	1450	1524	1120	22	ACS800-104-1820-5	3xR8i
2688	3901	2000	2580	1850	2011	1400	29	ACS800-104-2430-5	4xR8i
3343	4850	2400	3209	2400	2500	1600	36	ACS800-104-3030-5	5xR8i
3990	5790	2900	3830	2900	2985	2000	43	ACS800-104-3640-5	6xR8i

Dimensions

Frame size	Height mm	Width mm	Depth mm	Weight kg	Noise level dB(A)	Air flow m ³ /h
R2i	401	165	193 ³⁾	9	62	35
R3i	466	173	232 ³⁾	12	62	69
R4i	525	240	252 ³⁾	15	62	103
R5i	673	265	276 ³⁾	23	65	168
R7i ¹⁾	963	170	404	37	64	800
R8i	1397	235	596	130	72	1280
2xR8i	1397	245 ²⁾	596	260	74	2560
3xR8i	1397	245 ²⁾	596	390	76	3840
4xR8i	1397	245 ²⁾	596	520	76	5120
5xR8i	1397	245 ²⁾	596	650	77	65
6xR8i	1397	245 ²⁾	596	780	78	66

- ¹⁾ Dimensions do not include cooling fan.
- ²⁾ Single module only.
- ³⁾ The depth is without control panels and options.

Type	Height mm	Width mm	Depth mm
RDCU control unit *)	282	126	41

*) Delivered with R7i to nxR8i

Nominal ratings:

$I_{\text{cont. max}}$: rated current available continuously without overloadability at 40 °C.

I_{max} : maximum output current. Available for 10 s at start, otherwise as long as allowed by drive temperature.

Typical ratings:

No-overload use

$P_{\text{cont. max}}$: typical motor 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 : 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.

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}).

The rated current of the ACS800 must be higher than or equal to the rated motor current to achieve the rated motor power given in the table.



Ratings and dimensions

ACS800-X04, drive module, $U_N = 690\text{ V}$

ACS800 - X04 - XXXX - 7 + XXXX

Nominal ratings		No-overload use	Light-overload use		Heavy-duty use		Heat dissipation kW	Module type	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			
$U_N = 690\text{ V}$ (Range 525 - 690 V). The power ratings are valid at nominal voltage 690 V.									
13	14	11	12	7.5	8.5	5.5	0.3	ACS800-104-0011-7	R4i
17	19	15	16	11	11	7.5	0.3	ACS800-104-0016-7	R4i
22	28	18.5	21	15	15	11	0.4	ACS800-104-0020-7	R4i
25	38	22	24	18.5	19	15	0.5	ACS800-104-0025-7	R4i
33	44	30	32	22	22	18.5	0.6	ACS800-104-0030-7	R4i
36	54	30	35	30	27	22	0.7	ACS800-104-0040-7	R4i
51	68	45	49	37	34	30	0.8	ACS800-104-0050-7	R5i
57	84	55	55	45	42	37	1	ACS800-104-0060-7	R5i
69	104	55	66	55	52	45	1.1	ACS800-104-0075-7	R7i
88	132	75	84	75	66	55	1.3	ACS800-104-0105-7	R7i
105	158	90	101	90	79	75	1.6	ACS800-104-0125-7	R7i
132	198	110	127	110	99	90	2	ACS800-104-0145-7	R7i
150	224	132	144	132	112	90	2.3	ACS800-104-0175-7	R7i
170	254	160	163	160	127	110	2	ACS800-104-0215-7	R7i
215	322	200	206	200	161	160	3.6	ACS800-104-0260-7	R8i
289	432	250	277	250	216	200	4.8	ACS800-104-0320-7	R8i
336	503	315	323	315	251	240	6.1	ACS800-104-0400-7	R8i
382	571	355	367	355	286	270	7	ACS800-104-0440-7	R8i
486	727	450	467	450	364	355	7.5	ACS800-104-0580-7	R8i
729	1091	710	700	710	545	500	13	ACS800-104-0870-7	2xR8i
953	1425	900	914	900	713	710	15	ACS800-104-1160-7	2xR8i
1414	2116	1400	1358	1400	1058	1000	22	ACS800-104-1740-7	3xR8i
1866	2792	1900	1792	1800	1396	1400	29	ACS800-104-2320-7	4xR8i
2321	3472	2300	2228	2200	1736	1600	35	ACS800-104-2900-7	5xR8i
2770	4144	2800	2659	2700	2072	2000	42	ACS800-104-3490-7	6xR8i

Dimensions

Frame size	Height mm	Width mm	Depth mm	Weight kg	Noise level dB(A)	Air flow m ³ /h
R2i	401	165	193 ³⁾	9	62	35
R3i	466	173	232 ³⁾	12	62	69
R4i	525	240	252 ³⁾	15	62	103
R5i	673	265	276 ³⁾	23	65	168
R7i ¹⁾	963	170	404	37	64	800
R8i	1397	235	596	130	72	1280
2xR8i	1397	245 ²⁾	596	260	74	2560
3xR8i	1397	245 ²⁾	596	390	76	3840
4xR8i	1397	245 ²⁾	596	520	76	5120
5xR8i	1397	245 ²⁾	596	650	77	65
6xR8i	1397	245 ²⁾	596	780	78	66

- ¹⁾ Dimensions do not include cooling fan.
- ²⁾ Single module only.
- ³⁾ The depth is without control panels and options.

Type	Height mm	Width mm	Depth mm
RDCU control unit *)	282	126	41

*) Delivered with R7i to nxR8i

Nominal ratings:

$I_{\text{cont. max}}$: rated current available continuously without overloadability at 40 °C.

I_{max} : maximum output current. Available for 10 s at start, otherwise as long as allowed by drive temperature.

Typical ratings:

No-overload use

$P_{\text{cont. max}}$: typical motor 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 : 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.

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}).

The rated current of the ACS800 must be higher than or equal to the rated motor current to achieve the rated motor power given in the table.



Ratings and dimensions

ACS800-X04, supply module, $U_N = 690\text{ V}$

ACS800 - X04 - XXXX - 7 + XXXX

Nominal ratings				No-overload use	Light-overload use		Heavy-duty use		Heat dissipation kW	Name / module type	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)	P_{hd} kW (DC)			
$U_N = 690\text{ V}$ (Range 525 - 690 V). The power ratings are valid at nominal voltage 690 V.											
IGBT supply module (ISU)											
119	144	216	142	141	139	135	108	105	4.6	ACS800-204-0155-7	R7i + ALCL-04-7
135	164	245	161	160	157	153	122	119	5.2	ACS800-204-0175-7	R7i + ALCL-05-7
180	218	327	215	213	210	204	163	159	8.3	ACS800-204-0220-7	R8i + ALCL-12-7
250	303	453	299	296	291	284	227	221	9.4	ACS800-204-0300-7	R8i + ALCL-13-7
300	364	544	359	355	349	341	272	266	13.3	ACS800-204-0360-7	R8i + ALCL-14-7
400	485	726	478	473	466	454	363	354	14.6	ACS800-204-0480-7	R8i + ALCL-15-7
600	727	1088	717	710	698	682	544	531	26.6	ACS800-204-0720-7	2xR8i + ALCL-24-7
784	951	1422	937	928	913	890	711	694	28.5	ACS800-204-0940-7	2xR8i + ALCL-25-7
1164	1411	2111	1391	1377	1355	1322	1056	1030	42.3	ACS800-204-1390-7	3xR8i + 2xALCL-24-5
1536	1862	2786	1836	1817	1788	1745	1393	1359	55.7	ACS800-204-1840-7	4xR8i + 2xALCL-25-7
2280	2764	4136	2725	2698	2654	2590	2068	2018	83	ACS800-204-2730-7	6xR8i + 3xALCL-25-7
6-pulse diode (DSU)											
286	350	462	341	316	335	303	280	253	1.5	ACS800-304-0320-7	D3
408	500	700	488	452	480	434	400	361	2.4	ACS800-304-0450-7	D3
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
6-pulse regenerative (TSU)											
711	871	1411	850	784	824	742	637	574	6.3	ACS800-404-0850-7	2xB4 + choke
1171	1435	2325	1400	1292	1353	1219	1050	946	10.2	ACS800-404-1400-7	2xB4 + choke
2176	2664	4316	2600	2399	2519	2269	1993	1795	16.5	ACS800-404-2600-7	2xB5 + choke
2858	3500	5670	3415	3152	3311	2982	2618	2358	20.8	ACS800-404-3600-7	2xB5 + choke
12-pulse diode (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

Nominal ratings:
 $I_{\text{cont. max}}$: rated current available continuously without overloadability at 40 °C.
 I_{max} : maximum output current.
 S_N : nominal apparent power.
Typical ratings:
No-overload use
 $P_{\text{cont. max}}$: 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}).

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	404	37	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⁾	68
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 (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

Frame size	Height mm	Width mm	Depth mm	Weight kg	Noise level dB(A)	Air flow m ³ /h
6-pulse regenerative (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 (TSU)						
choke B4	771	348	449	110	-	600
choke B5	991	348	449	150	-	700
12-pulse diode (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.

Liquid-cooled modules, ACS800



Solutions for high power drives

The new 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 multidrive utilizes 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 LC modules are available in both multidrive and single drive modules.





Ratings and dimensions

ACS800-04LC, drive module, $U_N = 400$ to 690 V



Nominal ratings		No-overload use	Light-overload use		Heavy-duty use		Liquid dissipation kW	Mass flow ¹⁾ l/min	Type code	Frame size
$I_{cont.max}$ A	I_{max} A	$P_{cont.max}$ kW	I_N A	P_N kW	I_{hd} A	P_{hd} kW				
$U_N = 400$ V (Range 380 - 415 V). The power ratings are valid at nominal voltage 400 V.										
563	674	315	540	315	421	200	8.7	32	ACS800-04LC-0390-3	1xD3 + 1xR8i
678	837	355	651	355	507	250	10	32	ACS800-04LC-0470-3	1xD3 + 1xR8i
889	1037	500	853	400	665	355	14	32	ACS800-04LC-0620-3	1xD3 + 1xR8i
1103	1279	630	1059	560	825	450	16	45	ACS800-04LC-0760-3	1xD4 + 2xR8i
1329	1590	710	1276	710	994	500	21	45	ACS800-04LC-0920-3	1xD4 + 2xR8i
1742	1994	900	1673	900	1303	710	26	45	ACS800-04LC-1210-3	1xD4 + 2xR8i
1973	2347	1120	1894	1120	1476	900	28	77	ACS800-04LC-1370-3	2xD4 + 3xR8i
2587	2941	1400	2484	1400	1935	1120	37	77	ACS800-04LC-1790-3	2xD4 + 3xR8i
3414	3906	2000	3277	2000	2553	1400	51	90	ACS800-04LC-2370-3	2xD4 + 4xR8i
$U_N = 500$ V (Range 380-500 V). The power ratings are valid at nominal voltage 500 V.										
546	673	355	524	355	408	315	8.7	32	ACS800-04LC-0470-5	1xD3 + 1xR8i
630	838	400	605	400	471	355	10	32	ACS800-04LC-0550-5	1xD3 + 1xR8i
840	1042	560	806	560	628	400	13	32	ACS800-04LC-0730-5	1xD3 + 1xR8i
1070	1280	710	1027	710	800	560	16	45	ACS800-04LC-0930-5	1xD4 + 2xR8i
1235	1589	900	1185	900	924	630	19	45	ACS800-04LC-1070-5	1xD4 + 2xR8i
1646	1996	1120	1581	1120	1232	710	25	45	ACS800-04LC-1430-5	1xD4 + 2xR8i
1833	2344	1250	1760	1250	1371	900	29	58	ACS800-04LC-1590-5	1xD4 + 3xR8i
2444	2943	1600	2347	1600	1828	1250	36	77	ACS800-04LC-2120-5	2xD4 + 3xR8i
3226	3885	2240	3097	2240	2413	1600	49	90	ACS800-04LC-2790-5	2xD4 + 4xR8i
$U_N = 690$ V (Range 525-690 V). The power ratings are valid at nominal voltage 690 V.										
583	872	560	560	500	436	400	12	32	ACS800-04LC-0700-7	1xD3 + 1xR8i
790	1182	710	759	710	591	560	17	45	ACS800-04LC-0940-7	1xD3 + 2xR8i
898	1344	900	863	900	672	630	19	45	ACS800-04LC-1070-7	1xD3 + 2xR8i
1143	1710	1120	1097	1120	855	710	22	45	ACS800-04LC-1370-7	1xD4 + 2xR8i
1334	1996	1250	1281	1250	998	900	28	58	ACS800-04LC-1590-7	1xD4 + 3xR8i
1697	2538	1600	1629	1600	1269	1250	34	58	ACS800-04LC-2030-7	1xD4 + 3xR8i
2239	3350	2240	2150	2000	1675	1600	44	90	ACS800-04LC-2680-7	2xD4 + 4xR8i

¹⁾ Pressure loss 100 kPa. Hydrostatic pressure loss 120 kPa due to 2 m height difference.

Dimensions

Frame size	Height mm	Width mm	Depth mm	Weight kg
D3	975	311	474	140
D4	975	311	474	210
R8i	918	214	478	115

Nominal ratings:

$I_{cont.max}$: rated current available continuously without overloadability at 42 °C liquid temperature.

I_{max} : maximum output current. Available for 10 seconds at start, otherwise as long as allowed by drive temperature.

Note: max. motor shaft power is 150% P_{hd} .

Typical ratings:

No-overload use

$P_{cont.max}$: typical motor power in no-overload use.

Light-overload use

I_N : continuous base current allowing 110% overload for 1 minute/5 minutes.

P_N : typical motor power in light-overload use.

Heavy-duty use

I_{hd} : continuous base current allowing 150% overload for 1 minute/5 minutes.

P_{hd} : typical motor power in heavy-duty use.

Losses

P_{loss} : power loss conducted to coolant.

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

Ratings

ACS800-X04LC, drive module, $U_N = 400$ 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⁾ l/min	Type code	Frame size
$I_{cont,max}$ A	I_{max} A	$P_{cont,max}$ kW	I_N A	P_N kW	I_{hd} A	P_{hd} kW	P_{loss} kW						
$U_N = 400$ V (Range 380 - 415 V). The power ratings are valid at nominal voltage 400 V.													
5.1	6.5	1.5	4.7	1.5	3.4	1.1	0.1			6	ACS800-104LC-0003-3	R2i	
6.5	8.2	2.2	5.9	2.2	4.3	1.5	0.1			6	ACS800-104LC-0004-3	R2i	
8.5	10.8	3	7.7	3	5.7	2.2	0.1			6	ACS800-104LC-0005-3	R2i	
10.9	13.8	4	10.2	4	7.5	3	0.1			6	ACS800-104LC-0006-3	R2i	
13.9	17.6	5.5	12.7	5.5	9.3	4	0.2			6	ACS800-104LC-0009-3	R2i	
19	24	7.5	18	7.5	14	5.5	0.3			6	ACS800-104LC-0011-3	R3i	
25	32	11	24	11	19	7.5	0.3			6	ACS800-104LC-0016-3	R3i	
34	46	15	31	15	23	11	0.4			6	ACS800-104LC-0020-3	R3i	
44	62	22	41	18.5	32	15	0.5			6	ACS800-104LC-0025-3	R4i	
55	72	30	50	22	37	18.5	0.6			6	ACS800-104LC-0030-3	R4i	
72	86	37	69	30	49	22	0.8			6	ACS800-104LC-0040-3	R5i	
86	112	45	80	37	60	30	1.0			6	ACS800-104LC-0050-3	R5i	
103	138	55	94	45	69	37	1.2			6	ACS800-104LC-0060-3	R5i	
176	251	90	169	90	132	55	1.6			13	ACS800-104LC-0120-3	R7i	
214	251	110	205	110	160	75	2.1			13	ACS800-104LC-0150-3	R7i	
250	335	132	240	132	187	90	2.3			13	ACS800-104LC-0170-3	R7i	
300	448	160	288	160	224	110	2.6			13	ACS800-104LC-0210-3	R7i	
350	524	200	336	200	262	132	3.8			13	ACS800-104LC-0240-3	R8i	
444	558	250	426	250	332	160	5.0			13	ACS800-104LC-0310-3	R8i	
563	674	315	540	315	421	200	5.9			13	ACS800-104LC-0390-3	R8i	
678	837	355	651	355	507	250	7.3			13	ACS800-104LC-0470-3	R8i	
889	1037	500	853	400	665	355	9.2			13	ACS800-104LC-0620-3	R8i	
1103	1279	630	1059	560	825	450	11.4			26	ACS800-104LC-0760-3	2xR8i	
1329	1590	710	1276	710	994	500	14.2			26	ACS800-104LC-0920-3	2xR8i	
1742	1994	900	1673	900	1303	710	17.9			26	ACS800-104LC-1210-3	2xR8i	
1973	2347	1120	1894	1120	1476	900	20.9			39	ACS800-104LC-1370-3	3xR8i	
2587	2941	1400	2484	1400	1935	1120	26.6			39	ACS800-104LC-1790-3	3xR8i	
3414	3906	2000	3277	2000	2553	1400	34.8			52	ACS800-104LC-2370-3	4xR8i	

Nominal ratings				No-overload use		Light-overload use		Heavy-duty use		Losses ¹⁾				Mass flow ²⁾ l/min	Type code	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	I_{hd} A (DC)	P_{hd} kW	P_{loss} kW	P_{lossSU} kW	$P_{lossLCL}$ kW	$P_{loss tot}$ kW				
$U_N = 400$ V (Range 380 - 415 V). The power ratings are valid at nominal 400 V.																
IGBT supply unit modules (ISU)																
341	413	471	245	243	397	233	309	181	-	4.4	3.0	7.4	22	ACS800-204LC-0240-3	R8i	
454	550	627	326	323	528	310	411	241	-	5.6	3.1	8.7	22	ACS800-204LC-0330-3	R8i	
567	687	784	408	403	660	387	514	302	-	6.7	3.4	10.1	22	ACS800-204LC-0410-3	R8i	
756	917	1046	543	538	880	516	686	402	-	8.9	4.0	12.9	22	ACS800-204LC-0540-3	R8i	
1134	1375	1568	815	807	1320	775	1028	604	-	13.5	5.6	19.1	40	ACS800-204LC-0820-3	2xR8i	
1482	1797	2049	1065	1054	1725	1012	1344	789	-	17.3	7.9	25.3	40	ACS800-204LC-1070-3	2xR8i	
2200	2667	3042	1581	1565	2560	1503	1995	1171	-	25.7	12.0	37.8	66	ACS800-204LC-1580-3	3xR8i	
2903	3520	4015	2087	2066	3379	1983	2633	1545	-	33.8	15.8	49.7	80	ACS800-204LC-2090-3	4xR8i	
6-pulse, Diode supply units modules (DSU)																
572	700	980	396	378	672	363	560	303	3.6	-	-	-	19	ACS800-304LC-0680-7	1xD3	
898	1100	1540	622	594	1056	570	880	475	5.9	-	-	-	19	ACS800-304LC-1070-7	1xD3	
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	
12-pulse, Diode supply units 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:
 $I_{cont,max}$: rated current available continuously without overloadability at 42 °C liquid temperature.
 I_{max} : maximum output current. Available for 10 seconds 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
 $P_{cont,max}$: typical motor power in no-overload use.

Light-overload use
 I_N : continuous base current allowing 110% overload for 1 minute/5 minutes.
 P_N : typical motor power in light-overload use.

Heavy-duty use
 I_{hd} : continuous base current allowing 150% overload for 1 minute/5 minutes.
 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.
 $P_{loss tot}$: sum of P_{lossSU} and $P_{lossLCL}$.
 The current ratings are the same regardless of the supply voltage within one voltage range.

Ratings

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 code	Frame size
$I_{cont,max}$ A	I_{max} A	$P_{cont,max}$ kW	I_N A	P_N kW	I_{hd} A	P_{hd} kW	P_{loss} kW				l/min		
$U_N = 690\text{ V}$ (Range 525 - 690 V). The power ratings are valid at nominal voltage 690 V.													
13	14	11	12	7.5	8.5	5.5	0.3				6	ACS800-104LC-0011-7	R4i
17	19	15	16	11	11	7.5	0.3				6	ACS800-104LC-0016-7	R4i
22	28	18.5	21	15	15	11	0.4				6	ACS800-104LC-0020-7	R4i
25	38	22	24	18.5	19	15	0.5				6	ACS800-104LC-0025-7	R4i
33	44	30	32	22	22	18.5	0.6				6	ACS800-104LC-0030-7	R4i
36	54	30	35	30	27	22	0.7				6	ACS800-104LC-0040-7	R4i
51	68	45	49	37	34	30	0.8				6	ACS800-104LC-0050-7	R5i
57	84	55	55	45	42	37	1.0				6	ACS800-104LC-0060-7	R5i
83	124	75	79	55	62	55	1.2				13	ACS800-104LC-0100-7	R7i
106	158	90	101	90	79	75	1.6				13	ACS800-104LC-0130-7	R7i
126	188	110	121	110	94	90	1.8				13	ACS800-104LC-0150-7	R7i
158	236	132	152	132	118	110	2.4				13	ACS800-104LC-0190-7	R7i
180	270	160	173	160	135	132	2.7				13	ACS800-104LC-0220-7	R7i
204	306	200	196	200	153	160	2.4				13	ACS800-104LC-0240-7	R7i
258	386	250	248	250	193	200	4.8				13	ACS800-104LC-0310-7	R8i
347	518	315	333	315	259	250	5.5				13	ACS800-104LC-0410-7	R8i
403	604	355	387	355	302	315	6.4				13	ACS800-104LC-0480-7	R8i
458	686	450	440	400	343	355	8.2				13	ACS800-104LC-0550-7	R8i
583	872	560	560	500	436	400	8.9				13	ACS800-104LC-0700-7	R8i
790	1182	710	759	710	591	560	12.7				26	ACS800-104LC-0940-7	2xR8i
898	1344	900	863	900	672	630	15.9				26	ACS800-104LC-1070-7	2xR8i
1143	1710	1120	1097	1120	855	710	17.4				26	ACS800-104LC-1370-7	2xR8i
1334	1996	1250	1281	1250	998	900	24.0				39	ACS800-104LC-1590-7	3xR8i
1697	2538	1600	1629	1600	1269	1250	25.8				39	ACS800-104LC-2030-7	3xR8i
2239	3350	2240	2150	2000	1675	1600	34.3				52	ACS800-104LC-2680-7	4xR8i

Nominal ratings				No-overload use	Light-overload use		Heavy-duty use		Losses ¹⁾				Mass flow ²⁾	Type code	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	I_{hd} A (DC)	P_{hd} kW	P_{loss} kW	P_{lossSU} kW	$P_{lossLCL}$ kW	$P_{loss tot}$ kW	l/min		
$U_N = 690\text{ V}$ (Range 525 - 690 V). The power ratings are valid at nominal 690 V.															
IGBT supply unit modules (ISU)															
216	262	386	258	256	251	245	196	191	-	5.0	2.6	7.6	22	ACS800-204LC-0260-7	R8i
300	364	604	359	355	349	341	272	266	-	5.6	3.1	8.7	22	ACS800-204LC-0360-7	R8i
360	436	686	430	426	419	409	327	319	-	7.6	3.4	11.0	22	ACS800-204LC-0430-7	R8i
480	582	872	574	568	559	545	435	425	-	8.3	4.3	12.6	22	ACS800-204LC-0570-7	R8i
720	873	1344	860	852	838	818	653	637	-	15.2	4.4	19.6	40	ACS800-204LC-0860-7	2xR8i
941	1141	1710	1124	1113	1095	1069	853	833	-	16.2	6.7	22.9	40	ACS800-204LC-1120-7	2xR8i
1397	1694	2538	1669	1653	1626	1587	1267	1236	-	24.1	7.4	31.5	58	ACS800-204LC-1670-7	3xR8i
1843	2235	3350	2203	2181	2145	2094	1672	1631	-	31.8	13.4	45.2	80	ACS800-204LC-2200-7	4xR8i
6-pulse, Diode supply units modules (DSU)															
572	700	980	683	652	672	626	560	522	3.6	-	-	-	19	ACS800-304LC-0680-7	1xD3
898	1100	1540	1073	1025	1056	984	880	820	5.9	-	-	-	19	ACS800-304LC-1070-7	1xD3
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
12-pulse, Diode supply units 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:

$I_{cont,max}$: rated current available continuously without overloadability at 42 °C liquid temperature.

I_{max} : maximum output current. Available for 10 seconds 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

$P_{cont,max}$: typical motor power in no-overload use.

Light-overload use

I_N : continuous base current allowing 110% overload for 1 minute/5 minutes.

P_N : typical motor power in light-overload use.

Heavy-duty use

I_{hd} : continuous base current allowing 150% overload for 1 minute/5 minutes.

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.

$P_{loss tot}$: sum of P_{lossSU} and $P_{lossLCL}$.

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

Ratings and dimensions



Dimensions (INU, ISU, DSU)

Frame size	Height mm	Width mm	Depth mm	Weight kg
D3	975	311	474	140
D4	975	311	474	210
R2i	401	165	193 ¹⁾	9
R3i	466	173	232 ¹⁾	12
R4i	535	240	252 ¹⁾	15
R5i	673	265	276 ¹⁾	23
R7i	880	210	475	85
R8i	880	210	475	127
2xR8i	880	210	475	127
3xR8i	880	210	475	127
4xR8i	880	210	475	127

¹⁾ The depth is without control panels and options.

Liquid cooling unit

Nominal ratings				Cooling information / Losses			Cooling media		Type code
P_{max} kW	Internal massflow at 120 kPa l/min	External massflow l/min	External pressure loss kPa	P_{loss} kW	$P_{loss\ coolant}$ kW	$P_{loss\ air}$ kW	Internal liquid qty l	External liquid qty l	
Range 380 - 690 V									
70	100	103	125	0.4	0.3	0.1	8	3	ACS800-1007LC-0070
195	300	384	130	0.9	0.7	0.2	28	8	ACS800-1007LC-0195

As standard, liquid-cooling unit includes: industrial cabinet construction, IEC standard compatibility, pipe connections on right hand side with DIN flanges and industrial water heat exchanger.

P_{max} : maximum nominal cooling power.

Internal massflow: coolant massflow when cooling circuit is internal.

External massflow: coolant massflow when cooling circuit uses an external cooling method.

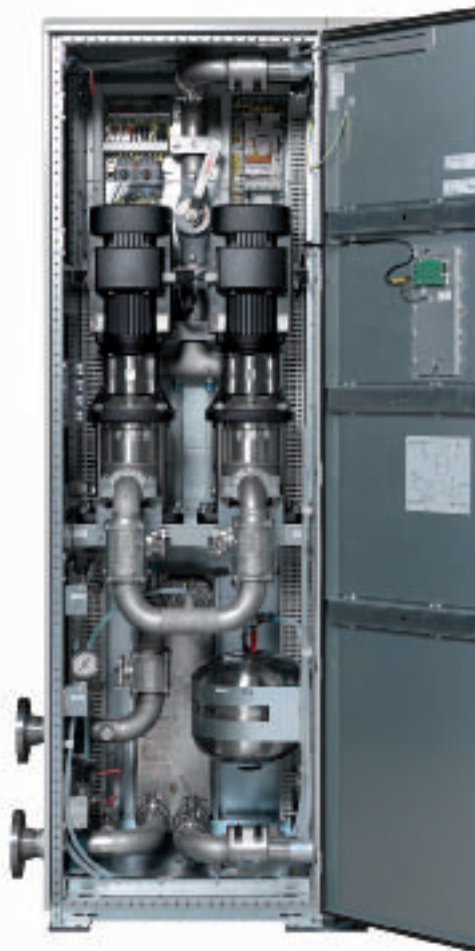
P_{loss} : power loss conducted to coolant.

$P_{loss\ coolant}$: power loss conducted to coolant.

$P_{loss\ air}$: power loss emitted to air (ambient space).

Dimensions

Height mm	Width mm	Depth mm	Weight kg	Type code
2003	330	644	200	ACS800-1007LC-0070
2003	630	644	400	ACS800-1007LC-0195





Brake options

Brake chopper

The ACS800 series has inbuilt brake choppers up to frame size R8 (up to 560 kW at 690 V) Above this brake choppers are available as separate brake chopper modules. The brake chopper is part of the standard delivery for the frame sizes R2 and R3 and at 690 V also R4. For the other frames a brake chopper is a selectable option.

Braking control is integrated into the ACS800 series. It controls the braking, supervises the system status and detects failures such as brake resistor and resistor cable short circuits, chopper short circuit, and calculated resistor overtemperature.

Brake resistor

The SACE/SAFUR brake resistors are separately available for all ACS800 types. Resistors other than the standard resistors may be used providing the specified resistance value is not decreased, and the heat dissipation capacity of the resistor is sufficient for the drive application.

For ACS800 units, no separate fuses in the brake circuit are required if the following conditions are met:

- The ACS800 mains cable is protected with fuses
- No mains cable/fuse overrating takes place

$U_N = 230\text{ V}$ (Range 208 to 240 V)

ACS800 type	Brake chopper power	Brake resistor(s)			
	Continuous P_{brcont} [kW]	Type	R [Ohm]	E_r [kJ]	P_{rcont} [kW]
ACS800-04-0001-2	0.6	SACE08RE44	44	210	1
ACS800-04-0002-2	0.8	SACE08RE44	44	210	1
ACS800-04-0003-2	1.1	SACE08RE44	44	210	1
ACS800-04-0004-2	1.5	SACE08RE44	44	210	1
ACS800-04-0005-2	2.2	SACE15RE22	22	420	2
ACS800-04-0006-2	3	SACE15RE22	22	420	2
ACS800-04-0009-2	4	SACE15RE22	22	420	2
ACS800-04-0011-2	5.5	SACE15RE13	13	435	2
ACS800-04-0016-2	11	SAFUR90F575	8	1800	4.5
ACS800-04-0020-2	17	SAFUR90F575	8	1800	4.5
ACS800-04-0025-2	23	SAFUR80F500	6	2400	6
ACS800-04-0030-2	28	SAFUR125F500	4	3600	9
ACS800-04-0040-2	33	SAFUR125F500	4	3600	9
ACS800-04-0050-2	45	2 x SAFUR125F500	2	7200	18
ACS800-04-0060-2	56	2 x SAFUR125F500	2	7200	18
ACS800-04-0070-2	68	2 x SAFUR125F500	2	7200	18

ACS800 type	Brake chopper power				Brake resistor(s)			
	5 / 60 s P_{br5} [kW]	10 / 60 s P_{br10} [kW]	30 / 60 s P_{br30} [kW]	Continuous P_{brcont} [kW]	Type	R [Ohm]	E_r [kJ]	P_{rcont} [kW]
ACS800-04(M)-0080-2	68	68	68	54	SAFUR 160F380	1.78	3600	9
ACS800-04(M)-0100-2	83	83	83	54	SAFUR 160F380	1.78	3600	9
ACS800-04(M)-0120-2	105	67	60	40	2xSAFUR200F500	1.35	10800	27
ACS800-04(M)-0140-2	135	135	135	84	2xSAFUR160F380	0.89	7200	18
ACS800-04(M)-0170-2	135	135	135	84	2xSAFUR160F380	0.89	7200	18
ACS800-04(M)-0210-2	165	165	165	98	2xSAFUR160F380	0.89	7200	18
ACS800-04(M)-0230-2	165	165	165	113	2xSAFUR160F380	0.89	7200	18
ACS800-04(M)-0260-2	223	170	125	64	4xSAFUR160F380	0.45	14400	36
ACS800-04(M)-0300-2	223	170	125	64	4xSAFUR160F380	0.45	14400	36

$U_N = 400\text{ V}$ (Range 380 to 415 V)

ACS800 type	Brake chopper power	Brake resistor(s)			
	Continuous P_{brcont} [kW]	Type	R [Ohm]	E_r [kJ]	P_{rcont} [kW]
ACS800-04-0003-3	1.1	SACE08RE44	44	210	1
ACS800-04-0004-3	1.5	SACE08RE44	44	210	1
ACS800-04-0005-3	2.2	SACE08RE44	44	210	1
ACS800-04-0006-3	3	SACE08RE44	44	210	1
ACS800-04-0009-3	4	SACE08RE44	44	210	1
ACS800-04-0011-3	5.5	SACE15RE22	22	420	2
ACS800-04-0016-3	7.5	SACE15RE22	22	420	2
ACS800-04-0020-3	11	SACE15RE22	22	420	2
ACS800-04-0023-3	11	SACE15RE22	22	420	2
ACS800-04-0025-3	23	SACE15RE13	13	435	2
ACS800-04-0030-3	28	SACE15RE13	13	435	2
ACS800-04-0035-3	28	SACE15RE13	13	435	2
ACS800-04-0040-3	33	SAFUR90F575	8	1800	4.5
ACS800-04-0050-3	45	SAFUR90F575	8	1800	4.5
ACS800-04-0060-3	56	SAFUR90F575	8	1800	4.5
ACS800-04-0075-3	70	SAFUR80F500	6	2400	6
ACS800-04-0100-3	83	SAFUR125F500	4	3600	9
ACS800-04-0120-3	113	SAFUR125F500	4	3600	9
ACS800-04-0135-3	132	SAFUR200F500	2.7	5400	13.5
ACS800-04-0165-3	132	SAFUR200F500	2.7	5400	13.5
ACS800-04-0205-3	160	SAFUR200F500	2.7	5400	13.5

ACS800 type	Brake chopper power				Brake resistor(s)			
	5 / 60 s P_{br5} [kW]	10 / 60 s P_{br10} [kW]	30 / 60 s P_{br30} [kW]	Continuous P_{brcont} [kW]	Type	R [Ohm]	E_r [kJ]	P_{rcont} [kW]
ACS800-04(M)-0140-3	135	135	100	80	SAFUR200F500	2.70	5400	13.5
ACS800-04(M)-0170-3	165	150	100	80	SAFUR200F500	2.70	5400	13.5
ACS800-04(M)-0210-3	165	150	100	80	SAFUR200F500	2.70	5400	13.5
ACS800-04(M)-0260-3	240	240	240	173	2XSAFUR210F575	1.70	8400	21
ACS800-04(M)-0320-3	300	300	300	143	2xSAFUR200F500	1.35	10800	27
ACS800-04(M)-0400-3	375	375	273	130	4xSAFUR125F500	1.00	14400	36
ACS800-04(M)-0440-3	473	355	237	120	4xSAFUR210F575	0.85	16800	42
ACS800-04(M)-0490-3	500	355	237	120	4xSAFUR210F575	0.85	16800	42



Brake options

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

ACS800 type	Brake chopper power	Brake resistor(s)			
	Continuous P_{brcont} [kW]	Type	R [Ohm]	E_r [kJ]	P_{rcont} [kW]
ACS800-04-0004-5	1.5	SACE08RE44	44	210	1
ACS800-04-0005-5	2.2	SACE08RE44	44	210	1
ACS800-04-0006-5	3	SACE08RE44	44	210	1
ACS800-04-0009-5	4	SACE08RE44	44	210	1
ACS800-04-0011-5	5.5	SACE08RE44	44	210	1
ACS800-04-0016-5	7.5	SACE15RE22	22	420	2
ACS800-04-0020-5	11	SACE15RE22	22	420	2
ACS800-04-0025-5	15	SACE15RE22	22	420	2
ACS800-04-0028-5	15	SACE15RE22	22	420	2
ACS800-04-0030-5	28	SACE15RE13	13	435	2
ACS800-04-0040-5	33	SACE15RE13	13	435	2
ACS800-04-0045-5	33	SACE15RE13	13	435	2
ACS800-04-0105-5	83	SAFUR80F500	6	2400	6
ACS800-04-0050-5	45	SAFUR90F575	8	1800	4.5
ACS800-04-0060-5	56	SAFUR90F575	8	1800	4.5
ACS800-04-0070-5	68	SAFUR90F575	8	1800	4.5
ACS800-04-0105-5	83	SAFUR80F500	6	2400	6
ACS800-04-0120-5	113	SAFUR125F500	4	3600	9
ACS800-04-0140-5	135	SAFUR125F500	4	3600	9
ACS800-04-0165-5	160	SAFUR125F500	4	3600	9
ACS800-04-0205-5	160	SAFUR125F500	4	3600	9
ACS800-04-0255-5	200	SAFUR200F500	2.7	5400	13.5

ACS800 type	Brake chopper power				Brake resistor(s)			
	5 / 60 s P_{br5} [kW]	10 / 60 s P_{br10} [kW]	30 / 60 s P_{br30} [kW]	Continuous P_{brcont} [kW]	Type	R [Ohm]	E_r [kJ]	P_{rcont} [kW]
ACS800-04(M)-0170-5	165	132 ²⁾	120	80	SAFUR200F500	2.70	5400	13.5
ACS800-04(M)-0210-5	198	132 ²⁾	120	80	SAFUR200F500	2.70	5400	13.5
ACS800-04(M)-0260-5	198 ¹⁾	132 ²⁾	120	80	SAFUR200F500	2.70	5400	13.5
ACS800-04(M)-0320-5	300	300	300	300	2xSAFUR125F500	2.00	7200	18
ACS800-04(M)-0400-5	375	375	375	234	2xSAFUR210F575	1.70	8400	21
ACS800-04(M)-0440-5	473	473	450	195	2xSAFUR200F500	1.35	10800	27
ACS800-04(M)-0490-5	480	480	470	210	2xSAFUR200F500	1.35	10800	27
ACS800-04(M)-0550-5	600	400 ⁴⁾	300	170	4xSAFUR125F500	1.00	14400	36
ACS800-04(M)-0610-5	600 ³⁾	400 ⁴⁾	300	170	4xSAFUR125F500	1.00	14400	36

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

ACS800 type	Brake chopper power	Brake resistor(s)			
	Continuous P_{brcont} [kW]	Type	R [Ohm]	E_r [kJ]	P_{rcont} [kW]
ACS800-04-0011-7	8	SACE08RE44	44	210	1
ACS800-04-0016-7	11	SACE08RE44	44	210	1
ACS800-04-0020-7	16	SACE08RE44	44	210	1
ACS800-04-0025-7	22	SACE15RE44	44	210	1
ACS800-04-0030-7	28	SACE15RE22	22	420	2
ACS800-04-0040-7	22/33 ⁶⁾	SACE15RE22	22	420	2
ACS800-04-0050-7	45	SACE15RE13	13	435	2
ACS800-04-0060-7	56	SACE15RE13	13	435	2
ACS800-04-0070-7	68	SAFUR90F575	8	1800	4.5
ACS800-04-0100-7	83	SAFUR90F575	8	1800	4.5
ACS800-04-0120-7	113	SAFUR90F575	6	2400	6
ACS800-04-0145-7	160	SAFUR80F500	6	2400	6
ACS800-04-0175-7	160	SAFUR80F500	6	2400	6
ACS800-04-0205-7	160	SAFUR80F500	6	2400	6

ACS800 type	Brake chopper power				Brake resistor(s)			
	5 / 60 s P_{br5} [kW]	10 / 60 s P_{br10} [kW]	30 / 60 s P_{br30} [kW]	Continuous P_{brcont} [kW]	Type	R [Ohm]	E_r [kJ]	P_{rcont} [kW]
ACS800-04(M)-0140-7	125 ⁵⁾	110	90	75	SAFUR80F500	6.00	2400	6
ACS800-04(M)-0170-7	125 ⁵⁾	110	90	75	SAFUR80F500	6.00	2400	6
ACS800-04(M)-0210-7	125 ⁶⁾	110	90	75	SAFUR80F500	6.00	2400	6
ACS800-04(M)-0260-7	135 ⁷⁾	120	100	80	SAFUR80F500	6.00	2400	6
ACS800-04(M)-0320-7	300	300	300	260	SAFUR200F500	2.70	5400	13.5
ACS800-04(M)-0400-7	375	375	375	375	SAFUR200F500	2.70	5400	13.5
ACS800-04(M)-0440-7	430	430	430	385	SAFUR200F500	2.70	5400	13.5
ACS800-04(M)-0490-7	550	400	315	225	2xSAFUR125F500	2.00	7200	18
ACS800-04(M)-0550-7	550	400	315	225	2xSAFUR125F500	2.00	7200	18
ACS800-04(M)-0610-7	550	400	315	225	2xSAFUR125F500	2.00	7200	18

Brake resistor	Height mm	Width mm	Depth mm	Weight kg
SACE08RE44	365	290	131	6.1
SACE15RE22	365	290	131	6.1
SACE15RE13	365	290	131	6.8
SAFUR80F500	600	300	345	14
SAFUR90F575	600	300	345	12
SAFUR160F380	1320	300	345	25
SAFUR180F460	1320	300	345	32
SAFUR125F500	1320	300	345	25
SAFUR200F500	1320	300	345	30
SAFUR210F575	1320	300	345	27



SACE 15 RE 13

Maximum braking power of the ACS800 equipped with the standard chopper and the standard resistor.

- P_{br5} = 5 s / 1 min.
- P_{br10} = 10 s / 1 min.
- P_{br30} = 30 s / 1 min.

The drive and the chopper will withstand this braking power for 5/10/30 seconds every one minute. **Note:** The braking energy transmitted to the resistor during any period shorter than 400 seconds may not exceed E_r (E_r varies depending on the resistor).

P_{brcont} = Continuous brake chopper power. The value applies to the minimum resistance value. With a higher resistance value the P_{brcont} may increase in some ACS800-04 units.

R = Resistance value for the listed resistor type. **Note:** This is also the minimum allowable resistance value for the brake resistor.

E_r = Energy pulse that the resistor assembly will withstand (400 s duty cycle). This energy will heat the resistor element from 40 °C to the maximum allowable temperature.

P_{rcont} = Continuous power (heat) dissipation of the resistor when placed correctly. Energy E_r dissipates in 400 seconds.

- ¹⁾ 240 kW possible if ambient below 33 °C.
- ²⁾ 160 kW possible if ambient below 33 °C.
- ³⁾ 630 kW possible if ambient below 33 °C.
- ⁴⁾ 450 kW possible if ambient below 33 °C.
- ⁵⁾ 135 kW possible if ambient below 33 °C.
- ⁶⁾ 148 kW possible if ambient below 33 °C.
- ⁷⁾ 160 kW possible if ambient below 33 °C.
- ⁸⁾ 22 kW with standard 22 ohm resistor, 33 kW with 32-37 ohm resistor.

All brake resistors are to be installed outside the converter module. The SACE brake resistors are inbuilt an IP21 metal housing. The SAFUR brake resistors are inbuilt an IP00 metal frame.

Brake options



Brake chopper and resistor options for ACS800-04 in frame sizes 2xR8i

Type	Nominal ratings					Duty cycle (1 min / 5 min)		Duty cycle (10 s / 60 s)		E_r kJ	Brake chopper type	Resistor type
	$P_{br,max}$ kW	R ohm	I_{max} A	I_{rms} A	$P_{cont.}$ kW	P_{br} kW	I_{rms} A	P_{br} kW	I_{rms} A			
$U_N = 400\text{ V}$ (Range 380 - 415 V)												
ACS800-04-0610-3	706	2x1.2	1090	298	192	606	936	706	1090	-	2xNBRA659	-
ACS800-04-0770-3	706	2x1.2	1090	298	192	606	936	706	1090	-	2xNBRA659	-
ACS800-04-0870-3	1058	3x1.2	1635	447	288	909	1404	1059	1635	-	3xNBRA659	-
ACS800-04-1030-3	1058	3x1.2	1635	447	288	909	1404	1059	1635	-	3xNBRA659	-
ACS800-04-0610-3	706	2x1.2	1090	168	108	333	514	575	888	24000	2xNBRA659	2x(2xSAFUR180F460)
ACS800-04-0770-3	706	2x1.2	1090	168	108	333	514	575	888	24000	2xNBRA659	2x(2xSAFUR180F460)
ACS800-04-0870-3	1058	3x1.2	1635	252	162	500	771	862	1332	36000	3xNBRA659	3x(2xSAFUR180F460)
ACS800-04-1030-3	1058	3x1.2	1635	252	162	500	771	862	1332	36000	3xNBRA659	3x(2xSAFUR180F460)
$U_N = 500\text{ V}$ (Range 380 - 500 V)												
ACS800-04-0760-5	806	2x1.43	1142	272	218	634	782	806	996	-	2xNBRA659	-
ACS800-04-0910-5	806	2x1.43	1142	272	218	634	782	806	996	-	2xNBRA659	-
ACS800-04-1090-5	1208	3x1.43	1713	408	327	951	1173	1209	1494	-	3xNBRA659	-
ACS800-04-1210-5	1208	3x1.43	1713	408	327	951	1173	1209	1494	-	3xNBRA659	-
ACS800-04-0760-5	806	2x1.35	1210	134	108	333	412	575	710	21600	2xNBRA659	2x(2xSAFUR200F500)
ACS800-04-0910-5	806	2x1.35	1210	134	108	333	412	575	710	21600	2xNBRA659	2x(2xSAFUR200F500)
ACS800-04-1090-5	1208	3x1.35	1815	201	162	500	618	862	1065	32400	3xNBRA659	3x(2xSAFUR200F500)
ACS800-04-1210-5	1208	3x1.35	1815	201	162	500	618	862	1065	32400	3xNBRA659	3x(2xSAFUR200F500)
$U_N = 690\text{ V}$ (Range 525 - 690 V)												
ACS800-04-0750-7	807	2x2.72	828	214	238	596	534	808	722	-	2xNBRA669	-
ACS800-04-0870-7	807	2x2.72	828	214	238	596	534	808	722	-	2xNBRA669	-
ACS800-04-1060-7	1211	3x2.72	1242	321	357	894	801	1212	1083	-	3xNBRA669	-
ACS800-04-1160-7	1211	3x2.72	1242	321	357	894	801	1212	1083	-	3xNBRA669	-
ACS800-04-0750-7	807	2x1.35	1670	194	108	333	298	575	514	21600	2xNBRA669	2x(2xSAFUR200F500)
ACS800-04-0870-7	807	2x1.35	1670	194	108	333	298	575	514	21600	2xNBRA669	2x(2xSAFUR200F500)
ACS800-04-1060-7	1211	3x1.35	2505	291	162	500	447	862	771	32400	3xNBRA669	3x(2xSAFUR200F500)
ACS800-04-1160-7	1211	3x1.35	2505	291	162	500	447	862	771	32400	3xNBRA669	3x(2xSAFUR200F500)

Frame size	Height	Width	Depth	Weight
Brake Chopper Modules				
NBRA659	584	334	240	26
NBRA669	584	334 ¹⁾	240	26 ¹⁾
SAFUR180F460	1320	300 ¹⁾	345	32 ¹⁾
SAFUR125F500	1320	300 ¹⁾	345	25 ¹⁾
SAFUR200F500	1320	300 ¹⁾	345	30 ¹⁾
SAFUR210F575	1320	300 ¹⁾	345	27 ¹⁾

$P_{br,max}$ = Maximum braking power of the NBRA-6xx chopper and SAFUR resistor combination. The chopper will withstand this braking power for one minute every ten minutes.

P_{br} = Maximum braking power of the drive with the specified resistor(s). The drive and the chopper will withstand this braking power for a period of time indicated by the duty cycle.

E_r = Short energy pulse that the resistor assembly withstands every 400 seconds. This energy will heat the resistor element from 40 °C (104 °F) to the maximum allowable temperature.

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

The standard resistor therefore withstands continuous braking of $P_{br,max}$ typically 20 to 40 seconds ($t = E_r / P_{br,max}$).

R = Recommended brake resistor resistance. Also nominal resistance of corresponding SAFUR resistor.

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.

¹⁾ Single drive module only.

Brake options



3-phase high power brake units

Resistors values		Ratings R_{min}							Ratings R_{max}							Type code	Frame size
R_{min} Ohm	R_{max} Ohm	No-overload use			Cycle load (1min/5min)				No-overload use			Cycle load (1min/5min)					
		I_{dc} A DC	I_{rms} A DC	$P_{contmax}$ kW	I_{max} A DC	I_{dc} A DC	$I_{rms}-R_{min}$ A DC	$P_{br}-R_{min}$ kW	I_{dc} A DC	I_{rms} A DC	$P_{contmax}$ kW	I_{max} A DC	I_{dc} A DC	$I_{rms}-R_{max}$ A DC	$P_{br}-R_{max}$ kW		
$U_N = 400 V$																	
3.5	4.1	390	155	250	185	500	176	320	390	143	250	156	422	148	270	ACS800-604-0250-3	R7i
1.7	2.1	781	310	500	370	999	351	640	781	282	500	312	827	291	530	ACS800-604-0500-3	R8i
1.2	1.4	1171	465	750	555	1499	527	960	1171	424	750	468	1241	436	800	ACS800-604-0750-3	R8i
1.7	2.1	1562	621	1000	740	1998	702	1290	1562	565	1000	625	1655	581	1060	ACS800-604-1000-3	2xR8i
1.2	1.4	2342	931	1510	1110	2997	1053	1930	2342	847	1510	937	2482	872	1600	ACS800-604-1510-3	2xR8i
1.2	1.4	3514	1396	2260	1665	4496	1580	2890	3514	1271	2260	1405	3723	1308	2400	ACS800-604-2260-3	3xR8i
1.2	1.4	4685	1862	3010	2220	5994	2106	3860	4685	1694	3010	1874	4964	1744	3190	ACS800-604-3010-3	4xR8i
1.2	1.4	5856	2327	3770	2775	7493	2633	4820	5856	2118	3770	2342	6205	2180	3990	ACS800-604-3770-3	5xR8i
$U_N = 500 V$																	
4.3	5.2	390	155	310	185	500	176	400	390	143	310	156	422	148	340	ACS800-604-0310-5	R7i
2.2	2.6	781	310	630	370	999	351	800	781	284	630	312	835	293	670	ACS800-604-0630-5	R8i
1.4	1.7	1171	465	940	555	1499	527	1210	1171	430	940	468	1277	449	1030	ACS800-604-0940-5	R8i
2.2	2.6	1562	621	1260	740	1998	702	1610	1562	568	1260	625	1671	587	1340	ACS800-604-1260-5	2xR8i
1.4	1.7	2342	931	1880	1110	2997	1053	2410	2342	860	1880	937	2555	898	2060	ACS800-604-1880-5	2xR8i
1.4	1.7	3514	1396	2830	1665	4496	1580	3620	3514	1289	2830	1405	3832	1347	3080	ACS800-604-2830-5	3xR8i
1.4	1.7	4685	1862	3770	2220	5994	2106	4820	4685	1719	3770	1874	5110	1795	4110	ACS800-604-3770-5	4xR8i
1.4	1.7	5856	2327	4710	2775	7493	2633	6030	5856	2149	4710	2342	6387	2244	5140	ACS800-604-4710-5	5xR8i
$U_N = 690 V$																	
6.0	7.1	390	155	430	185	500	176	550	390	143	430	156	422	148	470	ACS800-604-0430-7	R7i
3.0	3.6	781	310	870	370	999	351	1110	781	283	870	312	833	293	920	ACS800-604-0870-7	R8i
2.0	2.4	1171	465	1300	555	1499	527	1660	1171	425	1300	468	1249	439	1390	ACS800-604-1300-7	R8i
3.0	3.6	1562	621	1730	740	1998	702	2220	1562	567	1730	625	1665	585	1850	ACS800-604-1730-7	2xR8i
2.0	2.4	2342	931	2600	1110	2997	1053	3330	2342	850	2600	937	2498	878	2770	ACS800-604-2600-7	2xR8i
2.0	2.4	3514	1396	3900	1665	4496	1580	4990	3514	1275	3900	1405	3746	1316	4160	ACS800-604-3900-7	3xR8i
2.0	2.4	4685	1862	5200	2220	5994	2106	6650	4685	1700	5200	1874	4995	1755	5540	ACS800-604-5200-7	4xR8i
2.0	2.4	5856	2327	6500	2775	7493	2633	8320	5856	2125	6500	2342	6244	2194	6930	ACS800-604-6500-7	5xR8i

Resistor

R_{min} : Minimum allowed resistance value of the brake resistor for one phase of the brake module.

R_{max} : Resistance value of the brake resistor for one phase of the brake module corresponding to the maximum achieved continuous braking power.

Note: Connect one resistor per brake module phase.

For example, a brake unit of frame size 2xR8i including two brake modules -> 2 x 3 resistors are needed.

Typical ratings for no-overload use

I_{dc} : Total input DC current of brake unit.

I_{rms} : Total rms DC output phase current of brake unit.

I_{max} : Peak brake current (DC) per chopper module phase.

$P_{cont,max}$: Maximum continuous braking power per brake unit.

Cyclic load (1 min / 5 min)

I_{dc} : Total input DC current of brake unit during a period of 1 minute with braking power P_{br} .

I_{rms} : Total rms DC current per brake unit phase during a period of 1 minute with braking power P_{br} .

P_{br} : Short term braking power per brake unit allowed for one minute every 5 minutes.

Dimensions

Frame size	Height mm	Width mm	Depth mm	Weight kg	Noise level dB(A)	Air flow m ³ /h
R2i	401	165	193 ³⁾	9	62	35
R3i	466	173	232 ³⁾	12	62	69
R4i	525	240	252 ³⁾	15	62	103
R5i	673	265	276 ³⁾	23	65	168
R7i ¹⁾	963	170	404	37	64	800
R8i	1397	235	596	130	72	1280
2xR8i	1397	245 ²⁾	596	260	74	2560
3xR8i	1397	245 ²⁾	596	390	76	3840
4xR8i	1397	245 ²⁾	596	520	76	5120
5xR8i	1397	245 ²⁾	596	650	77	6400

¹⁾ Dimensions do not include cooling fan.

²⁾ Single module only.

³⁾ The depth is without control panels and options.

Brake options



Multidrive module brake units

Brake unit type	Nominal ratings					Duty cycle (1 min / 5 min)		Duty cycle (10 s / 60 s)		Noise dB(A)	Air flow m³/h	Resistor type
	$P_{br. max}$ kW	R ohm	I_{max} A	I_{rms} A	$P_{cont.}$ kW	$P_{br.}$ kW	I_{rms} A	$P_{br.}$ kW	I_{rms} A			
$U_N = 400 V$ (Range 380 - 415 V)												
Only the chopper												
Chopper-0210-3 (NBRA658)	230	1.7	384	109	70	230	355	230	355	64	660	-
Chopper-0320-3 (NBRA659)	353	1.2	545	149	96	303	468	353	545	64	660	-
Chopper-0640-3 (2xNBRA659)	706	0.6	1090	298	192	606	936	706	1090	67	1320	-
Chopper-0960-3 (3xNBRA659)	1058	0.4	1635	447	288	909	1404	1059	1635	68	1980	-
Chopper-1280-3 (4xNBRA659)	1411	0.3	2180	596	384	1212	1872	1412	2180	69	2640	-
Chopper-1600-3 (5xNBRA659)	1764	0.24	2725	745	480	1515	2340	1765	2725	70	3300	-
Chopper-1920-3 (6xNBRA659)	2117	0.2	3270	894	576	1818	2808	2118	3270	71	3960	-
Chopper with the resistor												
Chopper-0210-3 (NBRA658)	230	1.7	384	65	42	130	200	224	346	66	2500	2 x SAFUR210F575
Chopper-0320-3 (NBRA659)	353	1.2	545	84	54	167	257	287	444	66	2500	2 x SAFUR180F460
Chopper-0640-3 (2xNBRA659)	706	0.6	1090	168	108	333	514	575	888	69	5000	2 x (2 x SAFUR180F460)
Chopper-0960-3 (3xNBRA659)	1058	0.4	1635	252	162	500	771	862	1332	70	7500	3 x (2 x SAFUR180F460)
Chopper-1280-3 (4xNBRA659)	1411	0.3	2180	336	216	667	1028	1150	1776	71	10000	4 x (2 x SAFUR180F460)
Chopper-1600-3 (5xNBRA659)	1764	0.24	2725	420	270	833	1285	1437	2220	72	12500	5 x (2 x SAFUR180F460)
Chopper-1920-3 (6xNBRA659)	2117	0.2	3270	504	324	1000	1542	1724	2664	73	15000	6 x (2 x SAFUR180F460)
$U_N = 500 V$ (Range 380 - 500 V)												
Only the chopper												
Chopper-0260-5 (NBRA658)	268	2.15	380	101	81	268	331	268	331	64	660	-
Chopper-0400-5 (NBRA659)	403	1.43	571	136	109	317	391	403	498	64	660	-
Chopper-0800-5 (2xNBRA659)	806	0.72	1142	272	218	634	782	806	996	67	1320	-
Chopper-1200-5 (3xNBRA659)	1208	0.48	1713	408	327	951	1173	1209	1494	68	1980	-
Chopper-1600-5 (4xNBRA659)	1611	0.36	2284	544	436	1268	1564	1612	1992	69	2640	-
Chopper-2000-5 (5xNBRA659)	2014	0.29	2855	680	545	1585	1955	2015	2490	70	3300	-
Chopper-2400-5 (6xNBRA659)	2417	0.24	3426	816	654	1902	2346	2418	2988	71	3960	-
Chopper with the resistor												
Chopper-0260-5 (NBRA658)	268	2.00	408	45	36	111	137	192	237	66	2500	2 x SAFUR125F500
Chopper-0400-5 (NBRA659)	403	1.35	605	67	54	167	206	287	355	66	2500	2 x SAFUR200F500
Chopper-0800-5 (2xNBRA659)	806	0.68	1210	134	108	333	412	575	710	69	5000	2 x (2 x SAFUR200F500)
Chopper-1200-5 (3xNBRA659)	1208	0.45	1815	201	162	500	618	862	1065	70	7500	3 x (2 x SAFUR200F500)
Chopper-1600-5 (4xNBRA659)	1611	0.34	2420	268	216	667	824	1150	1420	71	10000	4 x (2 x SAFUR200F500)
Chopper-2000-5 (5xNBRA659)	2014	0.27	3025	335	270	833	1030	1437	1775	72	12500	5 x (2 x SAFUR200F500)
Chopper-2400-5 (6xNBRA659)	2417	0.23	3630	402	324	1000	1236	1724	2130	73	15000	6 x (2 x SAFUR200F500)
$U_N = 690 V$ (Range 525 - 690 V)												
Only the chopper												
Chopper-0400-6 (NBRA 669)	414	1.07	119	298	267	404	361	64	660	-		
Chopper-0800-6 (2xNBRA669)	807	1.36	828	214	238	596	534	808	722	67	660	-
Chopper-1200-6 (3xNBRA669)	1211	0.91	1242	321	357	894	801	1212	1083	68	1320	-
Chopper-1600-6 (4xNBRA669)	1615	0.68	1656	428	476	1192	1068	1616	1444	69	1980	-
Chopper-2000-6 (5xNBRA669)	2019	0.54	2070	535	595	1490	1335	2020	1805	70	2640	-
Chopper-2400-6 (6xNBRA669)	2422	0.45	2484	642	714	1788	1602	2424	2166	71	3300	-
Chopper with the resistor												
Chopper-0400-6 (NBRA 669)	404	1.35	835	97	54	167	149	287	257	66	2500	2 x SAFUR200F500
Chopper-0800-6 (2xNBRA669)	807	0.68	1670	194	108	333	298	575	514	69	5000	2 x (2 x SAFUR200F500)
Chopper-1200-6 (3xNBRA669)	1211	0.45	2505	291	162	500	447	862	771	70	7500	3 x (2 x SAFUR200F500)
Chopper-1600-6 (4xNBRA669)	1615	0.34	3340	388	216	667	596	1150	1028	71	10000	4 x (2 x SAFUR200F500)
Chopper-2000-6 (5xNBRA669)	2019	0.27	4175	485	270	833	745	1437	1285	72	12500	5 x (2 x SAFUR200F500)
Chopper-2400-6 (6xNBRA669)	2422	0.23	5010	582	324	2000	894	1724	1542	73	15000	6 x (2 x SAFUR200F500)

Frame size	Height	Width	Depth	Weight
Brake Chopper Modules				
NBRA658	584	334	240	26
NBRA659	584	334 ¹⁾	240	26 ¹⁾
NBRA669	584	334 ¹⁾	240	26 ¹⁾
SAFUR180F460	1320	300 ¹⁾	345	32 ¹⁾
SAFUR125F500	1320	300 ¹⁾	345	25 ¹⁾
SAFUR200F500	1320	300 ¹⁾	345	30 ¹⁾
SAFUR210F575	1320	300 ¹⁾	345	27 ¹⁾

1) Single module only.

Brake options



Liquid cooled 3-phase high power brake modules

Resistor data		Nominal ratings		No-overload use	Cycle load (1min/5min)			Noise level	Losses ¹⁾	Mass flow	Type code	Frame size
R_{min} Ω	R_{max} Ω	I_{dc} A DC	I_{rms} A DC	$P_{cont,max}$ kW	I_{dc} A DC	I_{rms} A DC	P_{br} kW	dB(A)	P_{loss} kW	l/min		INU
$U_N = 400\text{ V (Range 380 - 415 V)}$												
3 x 3,5	3 x 4,1	390	155	250	500	176	320	62	2.5	13	ACS800-604LC-0250-3	R7i
3 x 1,7	3 x 2,1	781	310	500	999	351	640	62	5.0	13	ACS800-604LC-0500-3	R8i
3 x 1,2	3 x 1,4	1171	465	750	1499	527	960	62	7.5	13	ACS800-604LC-0750-3	R8i
2 x (3 x 1,7)	2 x (3 x 2,1)	1562	621	1000	1998	702	1290	64	10.0	26	ACS800-604LC-1000-3	2xR8i
2 x (3 x 1,2)	2 x (3 x 1,4)	2342	931	1510	2997	1053	1930	64	15.1	26	ACS800-604LC-1510-3	2xR8i
3 x (3 x 1,2)	3 x (3 x 1,4)	3514	1396	2260	4496	1580	2890	66	22.6	39	ACS800-604LC-2260-3	3xR8i
4 x (3 x 1,2)	4 x (3 x 1,4)	4685	1862	3010	5994	2106	3860	67	30.1	52	ACS800-604LC-3010-3	4xR8i
$U_N = 500\text{ V (Range 380 - 500 V)}$												
3 x 4,3	3 x 5,2	390	155	310	500	176	400	62	2.5	13	ACS800-604LC-0310-5	R7i
3 x 2,2	3 x 2,6	781	310	630	999	351	800	62	5.0	13	ACS800-604LC-0630-5	R8i
3 x 1,4	3 x 1,7	1171	465	940	1499	527	1210	62	7.5	13	ACS800-604LC-0940-5	R8i
2 x (3 x 2,2)	2 x (3 x 2,6)	1562	621	1260	1998	702	1610	64	10.0	26	ACS800-604LC-1260-5	2xR8i
2 x (3 x 1,4)	2 x (3 x 1,7)	2342	931	1880	2997	1053	2410	64	15.1	26	ACS800-604LC-1880-5	2xR8i
3 x (3 x 1,4)	3 x (3 x 1,7)	3514	1396	2830	4496	1580	3620	66	22.6	39	ACS800-604LC-2830-5	3xR8i
4 x (3 x 1,4)	4 x (3 x 1,7)	4685	1862	3770	5994	2106	4820	67	30.1	52	ACS800-604LC-3770-5	4xR8i
$U_N = 690\text{ V (Range 525 - 690 V)}$												
3 x 6	3 x 7,1	390	155	430	500	176	550	62	2.8	13	ACS800-604LC-0430-7	R7i
3 x 3	3 x 3,6	781	310	870	999	351	1110	62	5.7	13	ACS800-604LC-0870-7	R8i
3 x 2	3 x 2,4	1171	465	1300	1499	527	1660	62	8.5	13	ACS800-604LC-1300-7	R8i
2 x (3 x 3)	2 x (3 x 3,6)	1562	621	1730	1998	702	2220	64	11.3	26	ACS800-604LC-1730-7	2xR8i
2 x (3 x 2)	2 x (3 x 2,4)	2342	931	2600	2997	1053	3330	64	17.0	26	ACS800-604LC-2600-7	2xR8i
3 x (3 x 2)	3 x (3 x 2,4)	3514	1396	3900	4496	1580	4990	66	25.4	39	ACS800-604LC-3900-7	3xR8i
4 x (3 x 2)	4 x (3 x 2,4)	4685	1862	5200	5994	2106	6650	67	33.9	52	ACS800-604LC-5200-7	4xR8i

Resistor data

R_{min} : minimum allowed resistance value of the brake resistor for one phase of the brake module.

R_{max} : resistance value of the brake resistor for one phase of the brake module corresponding to the maximum achieved continuous braking power.

Nominal ratings

I_{dc} : total input DC current of brake unit.

I_{rms} : total rms DC output phase current of brake unit.

No-overload use

$P_{cont,max}$: typical motor power in no-overload use.

Cycle load

I_{dc} : total input DC current of brake unit during a period of 1 minute with braking power P_{br} .

I_{rms} : corresponding RMS current per chopper during load cycle.

P_{br} : short term braking power per brake unit allowed for one minute every 5 minutes.

Losses

P_{loss} : power loss conducted to coolant.

Frame Size	Dimensions			
	Height ¹⁾ mm	Width ²⁾ mm	Depth mm	Weight kg
R7i	2003	400/700	644	300
R8i	2003	400/700	644	300
2xR8i	2003	800/1400	644	600
3xR8i	2003	1200/2100	644	900
4xR8i	2003	1600/2800	644	1200

¹⁾ Pressure release lids require an additional 400 mm.

²⁾ First values for bottom exit and latter values for top exit.



1st environment vs 2nd environment

1st environment (category C1 & 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 & 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.”

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 an inbuilt 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.

Selecting an EMC filter

The following table gives the correct filter selection.

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

Type	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)
800-04	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)
800-04(M)	400-500	R7-R8	+E202 ¹⁾	+E210	+E210
	690	R7-R8	-	+E210	+E210
800-04	400-500	R7-R8	-	+E210	+E210
	690	R7-R8	-	+E210	+E210

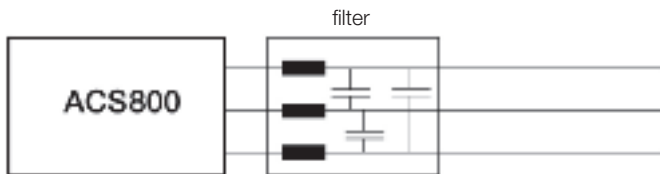
¹⁾ Includes externally mounted components.
 *) These drives are category C4 equipment and EMC plan for installation is required.



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.

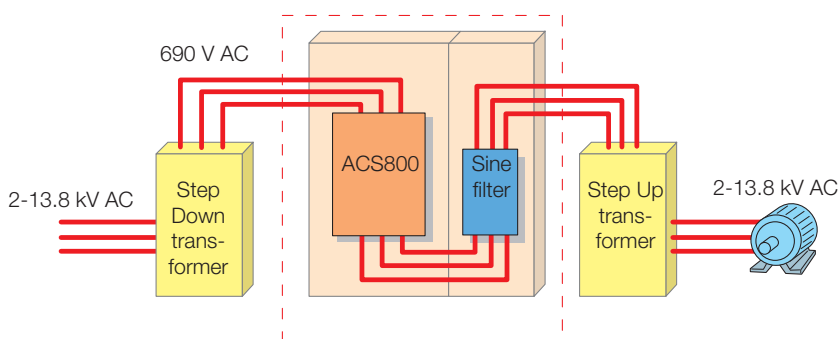
The ABB sine filter solution can be used in a variety of applications:

- 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.	Usually the motor fan is the biggest noise source with sine filter solutions.
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.





Du/dt filtering suppresses inverter output voltage spikes and rapid voltage changes that stress motor insulation. Additionally, du/dt filtering reduces capacitive leakage currents and high frequency emission of the motor cable as well as high frequency losses and bearing currents in the motor.

The need for du/dt filtering depends on the motor insulation. For information on the construction of

the motor insulation, consult the manufacturer. If the motor does not fulfil the following requirements, the lifetime of the motor might decrease.

Insulated N-end (non-driven end) bearings and / or common mode filters are also required for motor bearing currents with motors bigger than 100 kW. For more information please see the ACS800 hardware manuals.

Filter selection table for ACS800

Motor type	Nominal mains voltage (U_N)	Motor insulation requirement
ABB M2 and M3 motors	$U_N \leq 500 \text{ V}$	Standard insulation system.
	$500 \text{ V} < U_N \leq 600 \text{ V}$	Standard insulation system in conjunction with du/dt filtering or reinforced insulation.
	$600 \text{ V} < U_N \leq 690 \text{ V}$	Reinforced insulation system in conjunction with du/dt filtering.
ABB form-wound HXR and AM motors	$380 \text{ V} < U_N \leq 690 \text{ V}$	Standard insulation system.
ABB random-wound HXR and AM motors	$380 \text{ V} < U_N \leq 690 \text{ V}$	Check motor insulation system with the motor manufacturer. du/dt filtering with voltages over 500 V.
Non-ABB Random-wound and Form-wound	$U_N \leq 420 \text{ V}$	Insulation system must withstand $\hat{U}_{LL}=1300 \text{ V}$.
	$420 \text{ V} < U_N \leq 500 \text{ V}$	If the insulation system withstands $\hat{U}_{LL}=1600 \text{ V}$ and $\Delta t=0.2 \mu\text{s}$, du/dt filtering is not required. With du/dt filtering, the insulation system must withstand $\hat{U}_{LL}=1300 \text{ V}$.
	$500 \text{ V} < U_N \leq 600 \text{ V}$	If the insulation system withstands $\hat{U}_{LL}=1800 \text{ V}$, du/dt filtering is not required. With du/dt filtering, the insulation system must withstand $\hat{U}_{LL}=1600 \text{ V}$.
	$600 \text{ V} < U_N \leq 690 \text{ V}$	If the motor insulation system withstands $\hat{U}_{LL}=2000 \text{ V}$ and $\Delta t=0.3 \mu\text{s}$, du/dt filtering is not required. With du/dt filtering, the insulation system must withstand $\hat{U}_{LL}=1800 \text{ V}$.

Symbol	Explanation
U_N	Nominal mains voltage.
\hat{U}_{LL}	Peak line to line voltage at motor terminals.
Δt	Rise time, i.e. interval during which line to line voltage at motor terminals changes from 10% to 90% of full voltage range.



External du/dt filters for ACS800-04(M)

ACS800			du/dt filter type (3 filters included in kits marked *)					
			Unprotected (IP00)					
			NOCH0016-60	NOCH0030-60	NOCH0070-60	*NOCH0120-60	*NOCH0260-60	FOCH0260-70
400 V	500 V	690 V						
-0003-3								
-0004-3								
-0005-3	-0004-5							
-0006-3	-0005-5							
-0009-3	-0006-5							
-0011-3	-0009-5							
	-0011-5	-0011-7	1					
	-0016-5							
-0016-3	-0020-5	-0016-7						
-0020-3		-0020-7	1					
-0023-3		-0025-7						
-0025-3	-0025-5	-0030-7						
	-0028-5							
-0030-3	-0030-5	-0040-7						
-0035-3								
-0040-3	-0040-5	-0050-7			1			
	-0045-5							
-0050-3	-0050-5	-0060-7						
	-0060-5							
-0060-3	-0070-5	-0070-7						
		-0100-7			1			
-0075-3	-0105-5							
		-0120-7						
-0100-3	-0120-5				1			
-0120-3	-0140-5					1		
-0135-3	-0165-5	-0140-7						
-0140-3	-0170-5	-0145-7						
	-0205-5	-0170-7						
		-0175-7						
		-0205-7						
-0165-3								
-0170-3	-0210-5	-0210-7						
-0205-3	-0255-5							
-0210-3	-0260-5	-0260-7						
-0260-3	-0320-5							
-0320-3	-0400-5	-0320-7						
		-0400-7						
-0400-3	-0440-5	-0440-7						
-0440-3	-0490-5	-0490-7						
-0490-3	-0550-5	-0550-7						
	-0610-5	-0610-7						
0610-3 ²⁾	-0760-5 ²⁾	-0750-7 ²⁾						
-0770-3 ²⁾	-0910-5 ²⁾	-0870-7 ²⁾						
-0870-3 ²⁾	-1090-5 ²⁾	-1060-7 ²⁾						
-1030-3 ²⁾	-1210-5 ²⁾	-1160-7 ²⁾						
-1230-3 ²⁾	-1540-5 ²⁾	-1500-7 ²⁾						
-1540-3 ²⁾	-1820-5 ²⁾	-1740-7 ²⁾						
-1850-3 ²⁾	-2310-5 ²⁾	-2120-7 ²⁾						
		-2320-7 ²⁾						

²⁾ du/dt filters are inbuilt as standard

Applicability

Separate filters need to be mounted separately. Unprotected IP00 filters must be placed into an enclosure of adequate degree of protection.

External du/dt filters for multidrive modules

ACS800			du/dt filter type (3 filters included in kits marked *)				
			Unprotected (IP00)				
			NOCH0016-60	NOCH0030-60	NOCH0070-60	*NOCH0120-60	FOCH0260-70
400 V	500 V	690 V					
-0003-3							
-0004-3	-0004-5						
-0005-3	-0005-5						
-0006-3	-0006-5						
-0009-3	-0009-5						
-0011-3	-0011-5	-0011-7	1				
	-0016-5						
-0016-3	-0020-5	-0016-7					
-0020-3		-0020-7	1				
		-0025-7					
-0025-3	-0025-5	-0030-7					
-0030-3	-0030-5	-0040-7					
-0040-3	-0040-5	-0050-7					
	-0045-5						
-0050-3	-0050-5	-0060-7					
	-0060-5						
-0060-3	-0070-5						
-0105-3 ¹⁾							
-0125-3 ¹⁾							
-0145-3 ¹⁾							1
-0175-3 ¹⁾							
	-0105-5 ¹⁾						1
	-0125-5 ¹⁾						
	-0145-5 ¹⁾						
	-0175-5 ¹⁾						1
	-0215-5 ¹⁾						
		-0075-7 ¹⁾					
		-0105-7 ¹⁾					1
		-0125-7 ¹⁾					
		-0145-7 ¹⁾					
		-0175-7 ¹⁾					1
		-0215-7 ¹⁾					
-0210-3 ¹⁾							
-0260-3 ¹⁾	-0260-5 ¹⁾	-0260-7 ²⁾					
-0320-3 ¹⁾	-0320-5 ¹⁾	-0320-7 ²⁾					
-0390-3 ¹⁾	-0400-5 ¹⁾	-0400-7 ²⁾					
-0510-3 ¹⁾	-0460-5 ¹⁾	-0440-7 ²⁾					
	-0610-5 ¹⁾	-0580-7 ²⁾					
-0770-3 ²⁾	-0910-5 ²⁾	-0870-7 ²⁾					
-1030-3 ²⁾	-1210-5 ²⁾	-1160-7 ²⁾					
-1540-3 ²⁾	-1820-5 ²⁾	-1740-7 ²⁾					
-2050-3 ²⁾	-2430-5 ²⁾	-2320-7 ²⁾					

¹⁾ du/dt filters are inbuilt as option

²⁾ du/dt filters are inbuilt as standard

In ACS800-14 du/dt filters as standard in parallel connected R8i and in single on parallel connected 690 V inverter units.

Dimensions and weights of the du/dt filters

du/dt filter	Height mm	Width mm	Depth mm	Weight kg
NOCH0016-60	195	140	115	2.4
NOCH0030-60	215	165	130	4.7
NOCH0070-60	261	180	150	9.5
NOCH0120-60**	200	154	106	7
NOCH0260-60**	383	185	111	12
FOCH0260-70**	382	190	254	47
FOCH0320-50**	662	319	282	65
FOCH0610-70**	662	319	282	65

** 3 filters included, dimensions apply for one filter.

Standard user interface

Standard I/O

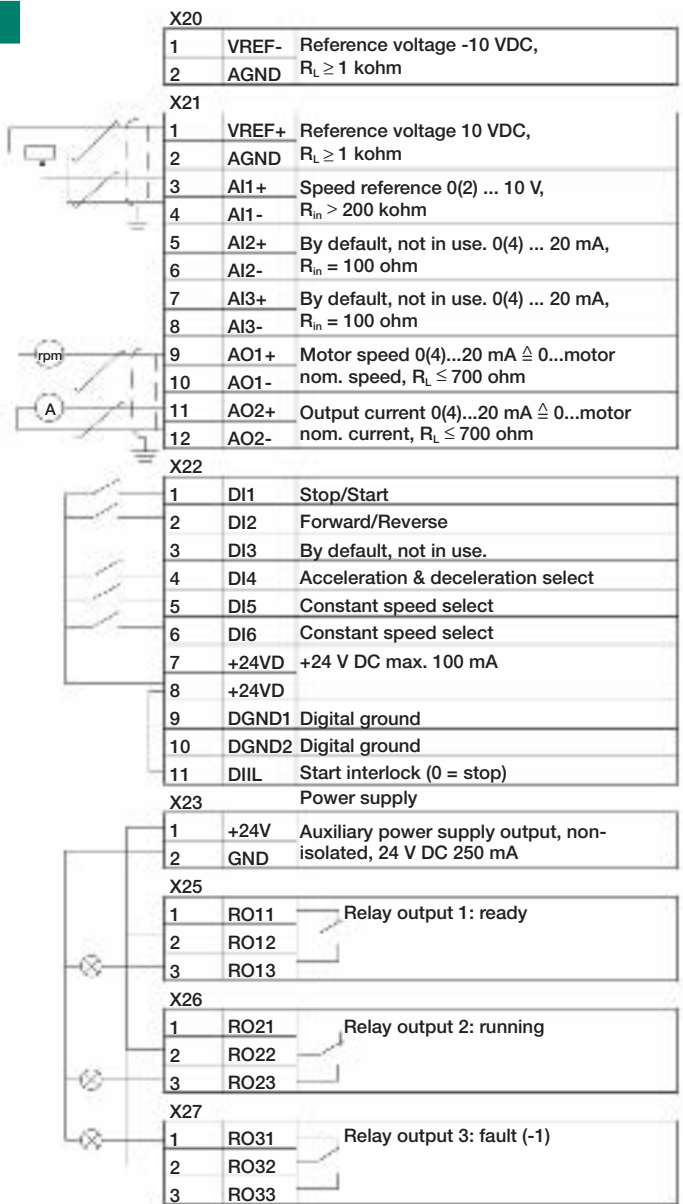


Analog and digital I/O channels are used for different functions such as control, monitoring and measurement purposes (e.g. motor temperature). In addition, optional I/O extension modules are available providing additional analog or digital I/O connections.

Below are the standard drive control I/O of the ABB industrial drive with Factory Macro. For other ACS800 application macros the functions may be different.

Standard I/O on RMIO-11 board

- **3 analog inputs:** differential, common mode voltage ± 15 V, galvanically isolated as a group.
 - One $\pm 0(2) \dots 10$ V, resolution 12 bit
 - Two $0(4) \dots 20$ mA, resolution 11 bit
 - **2 analog outputs:**
 - $0(4) \dots 20$ mA, resolution 10 bit
 - **7 digital inputs:** galvanically isolated as a group (can be split in two groups)
 - Input voltage 24 V DC
 - Filtering (HW) time 1 ms
 - **3 digital (relay) outputs:**
 - Changeover contact
 - 24 V DC or 115/230 V AC
 - Max. continuous current 2 A
- Reference voltage output:**
- ± 10 V $\pm 0.5\%$, max. 10 mA
- **Auxiliary power supply output:**
- +24 V $\pm 10\%$, max. 250 mA





Options

Control panel

Control panel mounting platforms

The industrial drive control panel (+J400) has a multilingual alphanumeric display (4 lines x 20 characters) with plain text messages in 14 languages.

The control panel is removable and can be mounted on the drive enclosure or remotely.

```
1 L -> 1242.0 RPM 1
SPEED 1242.0 RPM
CURRENT 76.00 A
TORQUE 86.00 %
```



Start-up assistant

Easy commissioning with the start-up assistant. The start-up assistant actively guides you through the commissioning procedure step by step. It also has a unique on-line help function.

```
MOTOR SETUP 4/10
MOTOR NOM CURRENT ?
(75.5 A)
ENTER: OK RESET: BACK
```

Parameter copying

The parameter copy feature allows all drive parameters to be copied from one frequency converter to another to simplify commissioning.

```
1 L-> 1242.0 RPM 1
UPLOAD <=<=<
DOWNLOAD =>=>=>
CONTRAST 4
```

Actual value display

The control panel can display three separate actual values simultaneously.

Examples of these are:

- Motor speed
- DC bus voltage
- Frequency
- Output voltage
- Current
- Heatsink temperature
- Torque
- Operating hours
- Power
- Kilowatt hours
- References

Centralised control

One panel can control up to 31 drives.

```
-> -> <- ->
1 21 40 100
->
111
```

Fault memory

An inbuilt fault memory stores information relating to the latest 64 faults, each with a time stamp.

```
1 L-> 1242.0 RPM 1
2 LAST FAULT
OVERVOLTAGE
1121 H 1 MIN
```

Easy programming

Parameters are organised into groups for easy programming.

```
1 L-> 1242.0 RPM 1
11 REFERENCE SELECT
3 EXT REF 1 SELECT
A11
```

Control panel mounting platforms (+J410 and +J413)

On the reverse of the control panel are screw holes from where the control panel can be fixed to a cabinet door. Panel-mounting platforms, which allow the panel to be removed, are also available. There are two variants of the panel-mounting platform:

RPMP-11 (+J410) for door mounting

RPMP-21 (+J413) for panel mounting inside the cabinet

Options

Optional I/O



Standard I/O can be extended by using analog and digital extension modules or pulse encoder interface modules which are mounted in the slots on the ASC800 control board. The control board has two slots available for extension modules. More extension

modules can be added with the I/O extension adapter which has three slots. The available number and combination of I/O's depends on the control software used. The standard application software supports 1 analog and 3 digital extension modules.

Optional I/O

Analog I/O extension module RAIO-01 (+L500)

- **2 analog inputs:** galvanically isolated from 24 V supply and ground
 - $\pm 0(2)\dots 10$ V, $0(4)\dots 20$ mA or $\pm 0\dots 2$ V, resolution 12 bits
- **2 analog outputs:** galvanically isolated from 24 V supply and ground
 - $0(4)\dots 20$ mA, resolution 12 bit

Digital I/O extension module RDIO-01 (+L501)

- **3 digital inputs:** individually galvanically isolated
 - Signal level 24 to 250 V DC or 115/230 V AC
- **2 relay (digital) outputs:**
 - Change contact
 - 24 V DC or 115/230 V AC
 - Max. 2 A

Pulse encoder interface module RTAC-01 (+L502)

- **1 incremental encoder input:**
 - Channels A, B and Z (zero pulse)
 - Signal level and power supply for the encoder is 24 or 15 V
 - Single ended or differential inputs
 - Maximum input frequency 200 kHz



I/O extension adapter AIMA-01

- Three slots for I/O extension modules
- Connection to the ACS800 control board through optic link
- Dimensions: $78 \times 325 \times 28$ mm
- Mounting: onto 35×7.5 mm DIN rail
- External power supply connection
- Supply voltage: 24 V DC $\pm 10\%$
- Current consumption: depends on connected I/O extension modules



Options

Fieldbus control

ABB industrial drives have connectivity to major automation systems. This is achieved with a dedicated gateway concept between the fieldbus systems and ABB drives.

The fieldbus gateway module can easily be mounted inside the drive. Because of the wide range of fieldbus gateways, your choice of automation system is independent of your decision to use first-class ABB AC drives.

Manufacturing flexibility

Drive control

The drive control word (16 bit) provides a wide variety of functions from start, stop and reset to ramp generator control. Typical setpoint values such as speed, torque and position can be transmitted to the drive with 15 bit accuracy.

Drive monitoring

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

Drive diagnostics

Accurate and reliable diagnostic information can be obtained via the alarm, limit and fault words, reducing the drive downtime and therefore also the downtime of the manufacturing process.

Drive parameter handling

Total integration of the drives in the production process is achieved by single parameter read/write up to complete parameter set-up or download.



Reduced installation and engineering effort

Cabling

Substituting the large amount of conventional drive control cabling with a single twisted pair reduces costs and increases system reliability.

Design

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

Commissioning and assembly

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

Currently available gateways

Fieldbus	Protocol	Device profile	Baud rate
PROFIBUS (+K454)	DP, DPV1	PROFdrive ABB Drives*)	9.6 kbit/s - 12 Mbit/s
DeviceNet (+K451)	-	AC/DC drive ABB Drives*)	125 kbit/s - 500 kbit/s
CANopen (+K457)	-	Drives and motion control ABB Drives*)	10 kbit/s - 1 Mbit/s
ControlNet (+K462)	-	AC/DC drive ABB Drives*)	5 Mbit/s
Modbus (+K458)	RTU	ABB Drives*)	600 bit/s - 19.2 kbit/s
Ethernet (+K466)	Ethernet IP Modbus/TCP	ABB Drives*), AC/DC drive ABB Drives*)	10 Mbit/s / 100 Mbit/s
Ethernet (+K467)	PROFINET IO Modbus/TCP	PROFdrive ABB Drives*)	10 Mbit/s / 100 Mbit/s
InterBUS-S (+K453)	I/O, PCP	ABB Drives*)	500 kbit/s
LONWORKS® (+K452)	LONTALK®	Variable speed motor drive	78 kbit/s
EtherCAT® (+K469)	EtherCAT®	Drive and motion control ABB Drives *)	100 Mbit/s
EthernetPOWERLINK (+K470)	EthernetPOWERLINK	Drive and motion control ABB Drives *)	100 Mbit/s

*) Vendor specific profile



Options

Remote monitoring and diagnostics tool

Browser-based, user-friendly

The intelligent ethernet NETA-01 module gives simple access to the drive via the internet, communicating via a standard web browser. The user can set up a virtual monitoring room wherever there is a PC with an Internet connection or via a simple dial-up modem connection. This enables remote monitoring, configuration, diagnostics and, when needed, control. The drive can also provide process related information, such as load level, run time, energy consumption and I/O data, the bearing temperature of the driven machine, for instance.

This opens up new possibilities for the monitoring and maintenance of unmanned applications across a range of industries, for instance water, wind power, building services and oil & gas, as well as any application where the user needs access to the drives from more than one location. It also provides an opportunity for OEMs and system integrators to support their installed base globally.

No PC needed at local end

The intelligent ethernet module has an embedded server with the necessary software for the user interface, communication and data storage. This gives ease of access, realtime information and the possibility for two-way communication with the drive, enabling immediate response and actions, saving time and money. This is possible without using a PC at the local end, as required by other remote solutions.

Powerful and versatile

Up to nine drives can be connected to the intelligent ethernet module via fiber optic links. It is available as an option for new drives, as well as an upgrade for existing systems. Access to the module is secured by user ID and passwords.

With an additional Modbus TCP/OPC server the information provided by NETA-01 can be integrated with the monitoring systems.

Features

- Virtual monitoring room for
 - Monitoring
 - Configuration of parameters
 - Diagnostics
 - Control, if needed
- Browser-based access via
 - Intra-/extra-/internet or
 - Simple dial-up modem connection
- No PC needed at the local end
- Can be used as a Modbus/TCP bridge for process control
- Supports integration with SCADA systems





Standard control program

Based on Direct Torque Control technology, the ACS800 offers highly advanced features as standard. The ACS800 standard control program provides solutions to virtually all AC drives applications such as pumps, fans, extruders and conveyors to name few.

Adaptive programming

In addition to parameters, industrial drives have the possibility for function block programming as standard. Adaptive programming with 15 programmable function blocks makes it possible to replace e.g. relays or even a PLC in some applications. Adaptive programming can be done either by standard control panel or DriveAP, a user-friendly PC tool.

Standard application macros

The ACS800 features inbuilt, pre-programmed application macros for configuration of such parameters as inputs, outputs and signal processing.

- **FACTORY SETTINGS** for basic industrial applications
- **HAND/AUTO CONTROL** for local and remote operation
- **PID CONTROL** for closed loop processes
- **SEQUENTIAL CONTROL** for repetitive cycles
- **TORQUE CONTROL** for processes where torque control is required
- **USER MACRO 1 & 2** for user's own parameter settings

Software features

A complete set of standard software features offers premium functionality and flexibility.

- Accurate speed control
- Accurate torque control without speed feedback
- Adaptive programming
- Automatic reset
- Automatic start
- Constant speeds
- Controlled torque at zero speed
- DC hold
- DC magnetizing

- Energy efficiency counters
- Diagnostics
- Flux braking
- Flux optimization
- IR compensation
- Master/follower control
- Mechanical brake control
- Motor identification
- Parameter lock
- Power loss ride-through
- Process PID control
- Programmable I/O
- Scalar control
- Speed controller tuning
- Start-up assistant
- Support for sine filter in the drive output
- Trim function
- User-selectable acceleration and deceleration ramps
- User adjustable load supervision/limitation

Pre-programmed protection functions

A wide range of features provides protection for the drive, motor and the process.

- Ambient temperature
- DC overvoltage
- DC undervoltage
- Drive temperature
- Input phase loss
- Overcurrent
- Power limits
- Short circuit

Programmable protection functions

- Adjustable power limits
- Control signal supervision
- Critical frequencies lock-out
- Current and torque limits
- Earth fault protection
- External fault
- Motor phase loss
- Motor stall protection
- Motor thermal protection
- Motor underload protection
- Panel loss



Optional control programs

Control solutions for different applications

ABB provides a set of ready-made control solutions for specific industrial drive applications. Such software adds application-dedicated features and protection without an external PLC - improving productivity and reducing costs. Function blocks are easy to program using the DriveAP PC tool.

Main advantages of ABB's control solutions

- Application-dedicated features
- Improved production
- No external PLC
- User-friendly
- Easy to use
- Energy savings
- Smooth power loss ride-through
- Reduced costs
- Adaptive protection

Multiblock control program

The multiblock control program has been specially designed for system integrators and local engineering because of its flexibility, easy programming, large number of I/O, master-follower link and fieldbus interfaces. Integrated into the drive control board there are over 200 function blocks on 3 time levels: 20 ms, 100 ms and 500 ms. These benefits mean that it is not always necessary to have separate PLC for drive and process control. Function blocks are easy to program using the DriveAP PC tool.

Extended I/O

An analog and digital I/O extension is typically installed on the AIMA-01 I/O extension adapters. Three extension modules can be installed on each I/O extension adapter. The maximum number of I/O connections is 62.

Motion control program

The motion control program is a cost-effective solution for precision positioning and synchronization. Intelligent integrated motion control functions and versatile controllability eliminate the need for an external motion controller, even in the most

demanding applications, such as materials handling, packaging, printing and the plastics industry.

Motion control program has four operating modes – speed, torque, positioning and synchronization – and also provides the possibility for switching online between two selected modes.

Pump control program

Incorporating all functions commonly required at pumping facilities, pump control program eliminates the need for an external PLC and can help to save energy, reduce downtime, and prevent pump jamming and pipeline blocking. It is easy-to-use software, designed to meet the needs of water and waste utilities, industrial plants and other pump users.

Application base control program

The application base control program is a simple, ready-made application that can easily be modified using a special function block programming tool. The application engineer can easily modify the time levels and insert new functions to control the I/O, start/stop commands, and references etc. This is the most flexible software product for tailor-made customer applications.

Winder and inline control program

Winder and inline control programs utilize the accurate speed and torque control of the drive in controlling product tension within a process by adjusting the speed or torque, based on the dancer or tension feedback. This precise control ensures high-quality handling of web material. The result is a straightforward, cost-effective solution in web handling applications. Winder control program supports adaptive programming with 15 blocks.

Rod pump and PCP/ESP pump control program

These pump control programs products have been specially developed in close cooperation with the oil industry for artificial oil lifting applications. The



Optional control programs

Control solutions for different applications

products not only increase the production and pump efficiency, but also reduce the stress on the complete pump system. The benefits provided include enhanced equipment protection, optimised fluid production, and overall improvement of system performance.

Permanent magnet synchronous motor (PMSM) control program

This control program is available with standard control application and system control application. The motor control software is specially made for permanent magnet low-speed – high-torque motors. This offers precise and reliable control at low speed without speed feedback. Permanent magnet control program supports adaptive programming with 15 blocks using standard program and 26 with the system program.

Centrifuge control program

- Practical programmable sequences for conventional centrifuges.
- Integrated decanter control for the accurate speed difference control of two shafts, where direct communication via the fibre optic link between bowl and scroll is used.
- Centrifuge control program supports adaptive programming with 15 blocks.

Crane control program

This control program is designed for different kinds of crane motions - mainly for hoist, trolley and long travel motions.

The ABB crane control program is a flexible control platform, which enables a wide range of connectivity for start, stop and reference logic. Adaptive programming with 15 blocks gives additional flexibility for tailor-made modifications outside the ready-made parameter structure. This is like having a small PLC inside the drive.

Reliable, integrated brake control logic for smooth open and close logic without jerks improves operational

safety and performance. Brake acknowledge, torque memory and pre-magnetisations are the key software elements that ensure reliable control.

Different functions as standard increase the safety level of the crane. These include integrated speed match, speed monitor, fast stop, slowdown and end limit logic.

The master-follower logic for up to five motors enables common drum or separate motors with load sharing, or with separate drums and separate motors with shaft synchro control. Fast switchover logic between stand-alone and master-follower logic increases the operational productivity. Internal homing control logic for position-controlled cranes can also be done with ready-made parameters. The position measurement enables position actual signals in millimeters for further logic.

The load speed control enables optimization of the hoist speed for different loads.

The integrated service counters for maintenance logic enable the different counters to provide information.

An easy-to-use, ready-made solution specifically for cranes.





Crane drive control program

Crane drive control with optimal operational safety and performance built into the drive.

- Fixed, standard and ready made crane application for different crane applications like harbour cranes.
- Optimal operational safety and performance built into the drive.
- Ready to use with proven crane functionality
- Available as single-drive or multi-drive with dynamic and regenerative braking

Standard ready-to-use crane solution.

Master/follower control program

Reliable control via the fibre optic link of several drives controlled by one master. This is needed if the motor shafts are coupled together, for example. The master/follower function enables the load to be evenly distributed between the drives.

Spinning control & traverse control program

Spinning control and traverse control program make a perfect pair for the precise control of spinning and traverse drives in textile machines.

System control program

This control program is aimed at multi-motor machines producing or processing metal, paper, plastics, textile, rubber and cement, and for numerous other demanding applications. Fast communication with the overriding controller can exchange operative data (references, command words) and support data (configuration data, diagnostics). Proprietary (DDCS, Drive bus) and generic (PROFIBUS, InterBUS-S, DeviceNet) protocols enable linking of drives to controllers, PLC and PCs.



Dimensioning tool

DriveSize

Quality dimensioning

DriveSize is a PC program for helping the user to select the optimal motor, frequency converter and transformer, especially in those cases where a straightforward selection from a catalogue is not possible. Additionally it can be used to compute currents, network harmonics and to create documents about the dimensioning based on actual load. DriveSize contains the current versions of the ABB motor and frequency converter catalogues.

The default values make DriveSize simple to use, but the user is provided with ample options for drive selection. The shortcut keys make drive selection easy while giving the optimal dimensioning result. A manual selection mode is also supported.

DriveSize is currently used by more than 1,000 engineers globally.

DriveSize is for drive system components

- 3-phase standard, customized, Ex and user defined motors
- ABB low voltage AC drives
- Transformers

DriveSize features

- Selects the optimal motor, drive unit, supply unit and transformer
 - Calculates network harmonics for a single supply unit or for the whole system
 - Allows importation of own motor database
 - Supplies dimensioning results in graphical and numerical format
 - Prints and saves the results
- The DriveSize PC program can be downloaded from www.abb.com/drives
- ➔ Drive PC Tools
 - ➔ DriveSize





Programming tool

DriveAP

Programming tool

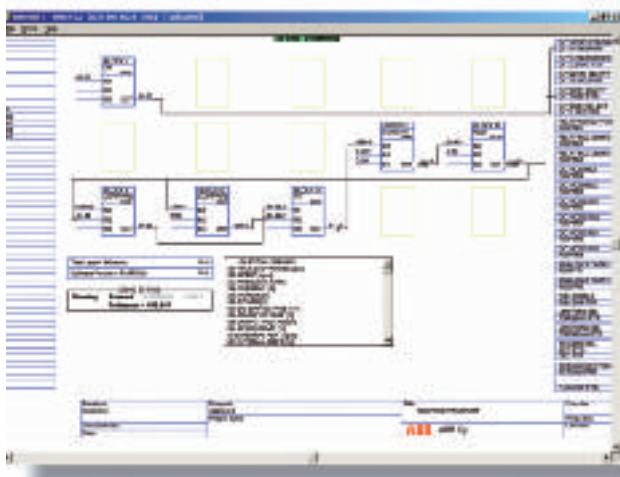
DriveAP is a PC software tool for creating, documenting, editing and downloading adaptive programs and multiblock programming programs. DriveAP 1.1 supports adaptive programming, whereas DriveAP 2 supports both adaptive programming and multiblock programming applications. The adaptive programming contains 15 function blocks and is available in a standard application. The multiblock programming application contains over 200 function blocks, and also includes PROFIBUS fieldbus and drive I/O blocks. DriveAP offers a clear and easy way to develop, test and document these programs with a PC.

It is a user-friendly tool for modifying function blocks and their connections. No special programming skills are required, a basic knowledge about block programming is enough. DriveAP supports IEC 61131.

The adaptive programs are easy to document as hard copies or store as PC files. The multiblock programming with all related information is saved directly to the drive.

Upload or download

Both program types can be uploaded from connected drives and displayed graphically on a PC screen for



DriveAP with adaptive program of standard application.

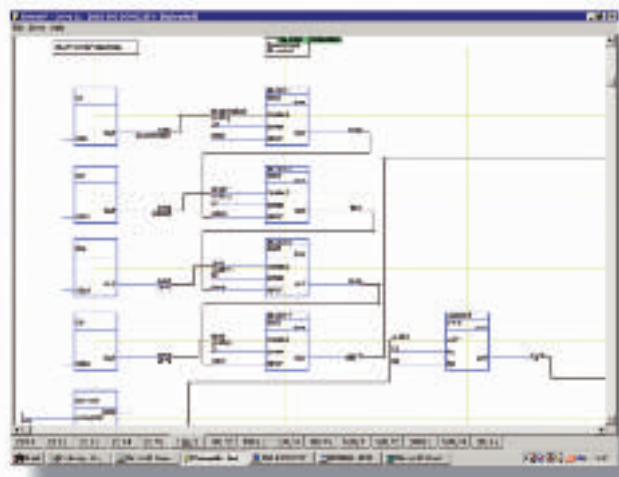
service or documentation purposes, for example. The adaptive programs and multiblock programming programs made off-line can be downloaded to any of the connected drives that support corresponding programs.

Three operating modes

- Stand-alone mode - DriveAP is not connected to a drive. The adaptive programming and multiblock programming can be carried out in the office, for example, and later downloaded to a drive.
- Off-line mode - DriveAP is connected to a drive. The adaptive programming and multiblock programming can be carried out in batch mode.
- On-line mode - DriveAP is connected to a drive. Changes to the adaptive programs and multiblock programs are written immediately to the drive and actual values are shown on the screen in real-time.

DriveAP features

- Easy-to-use tool, no special skills required
- Create and download new programs
- Document programs
- Upload existing programs from the drive
- Operating modes
 - Stand-alone
 - Off-Line
 - On-Line



DriveAP with multiblock programming application.

Start-up and maintenance tool

DriveWindow 2



Start-up and maintenance tool

ABB's DriveWindow is an advanced, easy-to-use PC software tool for the start-up and maintenance of ABB industrial drives. Its host of features and clear, graphical presentation of the operation make it a valuable addition to your system, providing information necessary for troubleshooting, maintenance and service, as well as training.

With DriveWindow the user is able to follow the operation of several drives simultaneously by collecting the actual values from the drives onto a single screen or printout.

Additionally, the client part of DriveWindow may reside on one intranet PC, and the server on another PC closer to the drives. This enables easy plant-wide monitoring with two PCs.

High speed communication

DriveWindow uses the DDCS communication protocol on a high-speed fibre optic network, enabling very fast communication between the PC and drives. The fibre optic network is safe and highly immune to external disturbances. The fibre optic network can be connected to the PC's USB port using the RUSB-02 adapter or directly to a NDPA-02 fibre optic communications card in the PC.

Monitoring drives

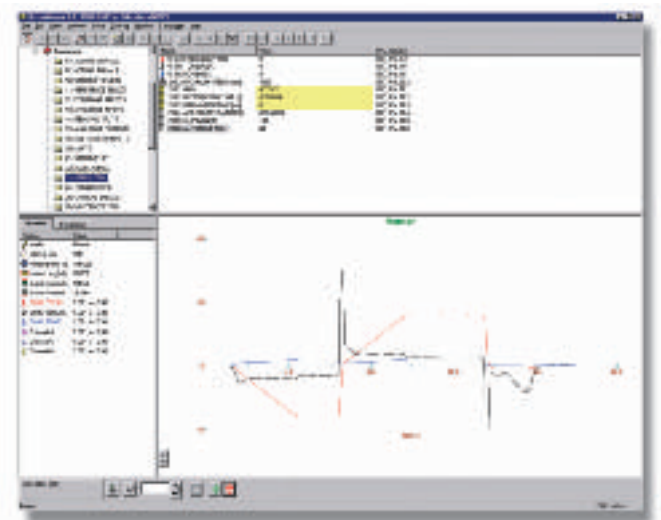
With DriveWindow you can monitor several drives simultaneously. The history buffer makes it possible to record a large amount of data in the PC's memory. The drive's data logger can be accessed with DriveWindow and viewed in graphical form. The fault logger inside the drive automatically documents every fault, warning and event which occurs. The fault history stored in the drive can be uploaded to your computer.

Versatile back-up functions

Drive parameters can be saved to the PC with DriveWindow, and can easily be downloaded back to the drive whenever needed. The same goes for the software. DriveWindow allows the entire control board software to be saved and restored later, if needed. This makes it possible to use one control board as a spare part for many different sizes of drives.

DriveWindow 2 features

- Easy-to-use tool for commissioning and maintenance
- Several drives connected and monitored at the same time
- Monitor, edit or save signals and parameters, clear graphical presentation
- High speed communication between PC and drive
- Versatile back-up functions
- View data collected and stored in the drive
- Fault diagnostics; DriveWindow indicates the status of drives, and also reads fault history data from the drive
- RUSB-02 and Windows Vista support





Start-up and maintenance tool

DriveWindow Light 2

Start-up and maintenance tool

DriveWindow Light 2 is an easy-to-use start-up and maintenance tool for ACS800 drives. It supports the following software: standard application, pump control and spinning and traverse control.

DriveWindow Light uses the drive's panel connector for communication, which makes communication setup very easy.

Light software with heavy features

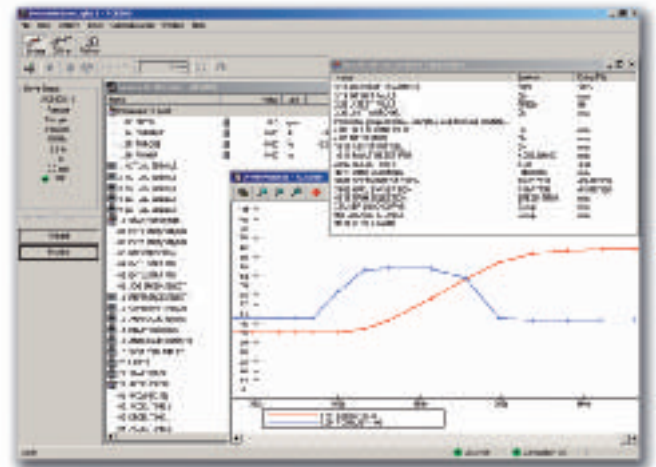
DriveWindow Light offers many functions in an easy-to-use package. It can be used in an offline mode, which enables parameter setting at the office even before going to the actual site. The parameter browser enables viewing, editing and saving of parameters. The parameter comparison feature makes it possible to compare parameter values between the drive and the file. With the parameter subset you can create your own parameter sets. Controlling of the drive is naturally one of the features in DriveWindow Light. With DriveWindow Light, you can monitor up to four signals simultaneously. This can be done in both graphical and numerical format. Any signal can be set to stop the monitoring from a predefined level.

Highlights

- Viewing and setting parameters in offline mode
- Editing, saving and downloading parameters
- Comparing parameters
- Graphical and numerical signal monitoring
- Drive control

DriveWindow Light requirements

- Windows NT/2000/XP/Vista
- Free serial port from a PC
- Free control panel connector
- NPCU-01 PC connection unit





Maintenance and integration tools

DriveAnalyzer and DriveOPC

DriveAnalyzer

DriveAnalyzer is an optional add-on tool for DriveWindow 2 that is designed to collect operational data from up to 200 drives from periods of 1 hour up to periods of 2 weeks. The data is used as the basis for operational analysis of the drive and motor. The collected data can be displayed graphically, helping users to:

- Analyze motor use, load, torque and power versus speed
- Display inverter peak value and amplitude logger data
- Create inverter current versus frequency plots
- Analyze electrical supply and network
- Assess energy use and savings
- Optimize an individual drive and motors performance
- Generate an energy savings report

Energy conservation report		ABB	
Test_one_full_ea			
Measurement started	August 26 2007 03:34:50 PM		
Measurement ended	August 27 2007 10:12:42 AM		
Total length of measurement	18 hr 37 min 52 sec		
Drives included:			
ACS 800 0025_35H			
Energy cost:			
Day Time	0,96	EUR/kWh	
Night Time	0,93	EUR/kWh	
ACS 800 0025_35H			
Actual Energy Consumed			
Energy consumed at day time	21206,77	kWh	
Energy consumed at night time	10567,31	kWh	
Energy Total	31774,08	kWh	
Energy cost day	1212,41	EUR	
Energy cost night	917,62	EUR	
Energy cost total	2130,03	EUR	
Estimated Energy Consumed in Throttle control			
Energy consumed at day time	7590,13	kWh	
Energy consumed at night time	70405,88	kWh	
Energy Total	146396,01	kWh	
Energy cost day	469,81	EUR	
Energy cost night	2112,18	EUR	
Energy cost total	2681,99	EUR	

DriveAnalyzer energy conservation report

DriveOPC

DriveOPC is an integration tool which allows OLE for Process Control (OPC) communication between Windows applications and ABB industrial drives allowing for PC based drive control and monitoring.

DriveOPC features

Provides read access to:

- Drive status: local, running, direction, fault, warning and reference
- Drive signals and parameters
- Fault logger content
- Event logger content
- General drive information
- Data logger settings, status and content

Provides write access to:

- Drive control: local start, stop, forward, reverse, coast stop, reset fault, home, contactor on/off, reference
- Parameters
- Clear fault logger
- Data logger initialization, starting, clearing and triggering

Supports OPC's data access standard 1.0A.

High speed communication

DriveAnalyzer and DriveOPC use the DDCS communication protocol on a high-speed fibre optic network, enabling very fast communication between the PC and drives. The fibre optic network is safe and highly immune to external disturbances. The fibre optic network can be connected to the PC's USB port using the RUSB-02 adapter or directly to a NDPA-02 fibre optic communications card in the PC.

Summary of features and options



Power & voltage range	Ordering Code	- 04	- 04 (M)	- 04	- 14	- 104 (inverters)	- 204 (ISU)	- 304 and - 704 (supply units)
		Frame sizes R2 - R6	Frame sizes R7 - R8	Frame sizes nxR8i	Frame sizes R7i-nxR8i	Frame sizes R2i - 4*R8i	Frame sizes R2i - 4*R8i	Frame sizes D3 - 5*D4
		230 V: 0.55-55 kW 400 V: 1.1-160 kW 500 V: 1.5-200 kW 690 V: 5.5-160 kW	230 V: 45-200 kW 400 V: 90-400 kW 500 V: 110-500 kW 690 V: 90-560 kW	400 V: 400-1450 kW 500 V: 500-1900 kW 690 V: 500-1900 kW	400 V: 75-1600 kW 500 V: 90-1800 kW 690 V: 90-1700 kW	400 V: 1.1-1600 kW 500 V: 1.5-2000 kW 690 V: 5.5-1800 kW	400 V: 2.7-1740 kW 500 V: 3.1-1975 kW 690 V: 60-1820 kW	400 V: 145-2435 kW 500 V: 185-3045 kW 690 V: 250-4200 kW
Mounting								
Wall mounting		●	●	-	● 19)	● 10)	● 10)	-
Free-standing		-	● 1)	●	● 15)	● 15)	● 15)	●
Two mounting directions: bookshelf / flat (=sideways)	H354 or H360	-	○	-	-	-	-	-
Side by side mounting		●	●	●	●	●	●	●
Flange mounting	C135	□ 20)	-	-	-	-	-	-
Separate drive control unit (RDCU)		-	●	●	●	● 11)	●	-
Wheels for easy manoeuvring of the module		-	-	●	● 12)	● 12)	● 12)	● 12)
Cabling								
Supply bottom entry (module terminals)		●	-	●	●	● 10)	●	●
Supply top entry (module terminals)		-	●	-	-	● 12)	-	-
Bottom exit (module terminals)	H352	●	○ 2)	●	●	●	-	-
Side exit (module terminals)	H354 or H360	-	● 3)	-	-	-	-	-
Top exit in the module		-	-	-	-	-	●	●
DC and brake chopper output busbars	H356	●	○	-	-	-	-	-
DC and brake chopper outputs on different sides of the module	H363	-	○	-	-	-	-	-
Vertical busbars for easy motor cable connection	(H355)	-	● 3)	-	-	-	-	-
Vertical busbars for easy DC/brake chopper cable connection	(H362)	-	● 3)	-	-	-	-	-
Enclosure class								
IP00 (UL open chassis)		-	●	●	●	●	●	●
IP20 (UL open chassis)	B060	●	○ 4)	-	-	-	-	-
DTC motor control								
DTC		●	●	●	●	●	●	-
Software 5)								
Start-up assistant		● 6)	● 6)	● 6)	● 6)	● 6)	-	-
Adaptive programming		● 6)	● 6)	● 6)	● 6)	● 6)	-	-
Motion control	N685	□	□	□	□	□	-	-
Optional software optimized for different applications or for enhanced programmability: for more details see section "Application software and programming"		□	□	□	□	□	-	-
Control panel								
Alphanumeric 4*20 character control panel	J400	X	X	■	■	■	■	-
Control panel mounting platform	J410 or J413	■	X	■	■	■	■	-
Control connections (I/O) and communications								
3 pcs analog inputs, programmable, galvanically isolated		●	●	●	● 9)	●	● 9)	● 9)
2 pcs analog outputs, programmable		●	●	●	● 9)	●	● 9)	● 9)
7 pcs digital inputs, programmable, galvanically isolated - can be divided into two groups		●	●	●	● 9)	●	● 9)	● 9)
3 pcs relay outputs, programmable		●	●	●	● 9)	●	● 9)	● 9)
Possibility for external control voltage		●	●	●	●	●	●	●
Inbuilt I/O extension and speed feedback modules: for more details see section "Control connections and communications"		□	□	□	□	□	-	-
Inbuilt adapters for several fieldbuses: for more details see section "Control connections and communications"		□	□	□	□	□	□	-

Summary of features and options



Power & voltage range	Ordering Code	- 04	- 04 (M)	- 04	- 14	- 104 (inverters)	- 204 (ISU)	- 304 and - 704 (supply units)
		Frame sizes R2 - R6	Frame sizes R7 - R8	Frame sizes nxR8i	Frame sizes R7i-nxR8i	Frame sizes R2i - 4*R8i	Frame sizes R2i - 4*R8i	Frame sizes D3 - 5*D4
		230 V: 0.55-55 kW 400 V: 1.1-160 kW 500 V: 1.5-200 kW 690 V: 5.5-160 kW	230 V: 45-200 kW 400 V: 90-400 kW 500 V: 110-500 kW 690 V: 90-560 kW	400 V: 400-1450 kW 500 V: 500-1900 kW 690 V: 500-1900 kW	400 V: 75-1600 kW 500 V: 90-1800 kW 690 V: 90-1700 kW	400 V: 1.1-1600 kW 500 V: 1.5-2000 kW 690 V: 5.5-1800 kW	400 V: 2.7-1740 kW 500 V: 3.1-1975 kW 690 V: 60-1820 kW	400 V: 145-2435 kW 500 V: 185-3045 kW 690 V: 250-4200 kW
EMC filters								
EMC 1 st environment (Category C2)	E202	□ 7)	X 7)	-	-	-	-	-
EMC 2 nd environment, earthed networks only (Category C3)	E200	□ 16)	-	-	-	-	-	-
EMC 2 nd environment, earthed and unearthed networks (Category C3)	E210	□ 17)	□	-	-	-	-	-
Line filter								
AC or DC choke		●	●	●	-	-	-	●
LCL		-	-	-	●	-	●	-
Output filters								
Common mode filter	E208	-	□	●	●	■ 15)	■ 15)	-
du/dt filters		■	■	●	● 18)	● 13)	-	-
Braking								
Brake chopper	D150	□ 8)	□	■	■	■	-	-
Brake resistor		■	■	■	■	■	-	-
Regenerative braking		-	-	-	●	-	●	-
Rectifier bridge								
6-pulse that can be connected as a 12-pulse one also		-	-	●	-	-	-	● 14)
Line side apparatus								
In-built load switch		-	-	●	-	-	-	●
In-built contactor	F250	-	-	-	-	-	-	□
Safety option								
Prevention of unexpected start-up	Q950	X	□ 3)	□	□	□	-	-
Earth fault monitoring, earthed mains		●	●	●	●	●	●	●
Earth fault monitoring, unearthed mains		●	●	●	■	●	■	■
Approvals								
CE		●	●	●	●	●	●	●
UL, cUL, CSA		● 21)	●	●	●	●	●	●
GOST R		●	●	●	●	●	● /-	●
C-Tick		●	●	-	-	-	-	-
Auxiliary option kits								
Fuses, fuse bases		-	-	■	■	■	■	■
DC-fuse switch		-	-	-	-	■	-	-
Contactors or breakers		-	-	■	■	-	■	■
Assembly kits for Rittal TS8 cabinets		-	-	■	■	■	■	■
IP21 - IP54 door / roof kits		-	-	■	■	■	■	■

- Standard
- Option inbuilt
- X External accessory, with plus code
- External accessory, no plus code
- ACS800-04M option
- Not available

- 1) R7 frame size -04M: bottom exit version (+H352) has only wall mounting possibility.
- 2) R7 frame size only.
- 3) Option in ACS800-04M.
- 4) Not available for all variants.
- 5) Software compatibility with different option modules must be checked from ACS800 software compatibility (doc no. 64638211) in ABB Library.
- 6) Only in standard software.
- 7) Not for 690V.
- 8) Standard in frame sizes R2 and R3 and at 690 V also in R4.
- 9) Fixed I/O in ISU and DSU.
- 10) Frame sizes R2i-R7i.
- 11) Frame sizes R2i-R5i inside of the module.

- 12) Frame sizes R8i-4xR8i D3-5xD4.
- 13) Optional in frame sizes R2i-R7i and 400 V/500 V R8i.
- 14) Not in frame size D3.
- 15) R8i-4xR8i.
- 16) R6 frame size: +E210.
- 17) R6 frame size only.
- 18) Standard in frame sizes nxR8i and R8i 690 V. Optional in frame sizes R7i (400 V, 500 V, 690 V) and R8i (400 V, 500 V).
- 19) Frame size R7i.
- 20) Not for -0205-3 and -0255-5.
- 21) Pending for -0205-3 and -0255-5.

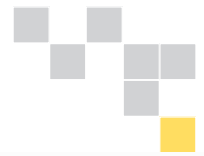
Summary of features and options



Power & voltage range	Ordering Code	- 04LC	- 104LC (inverters)	- 204LC (ISU)	- 304LC and - 704LC (supply units)
		Frame sizes D3+R8i - 2xD4+4xR8i	Frame sizes R2i - 4xR8i	Frame sizes R8i - 4xR8i	Frame sizes D3 - 2xD4
		400 V: 200-2000 kW 500 V: 315-2240 kW 690 V: 400-2240 kW	400 V: 1.1-2000 kW 500 V: 1.5-2240 kW 690 V: 5.5-2240 kW	400 V: 180-2000 kW 500 V: 200-2370 kW 690 V: 191-2181 kW	400 V: 300-2100 kW 500 V: 200-2370 kW 690 V: 520-3650 kW
Mounting					
Cabinet mounting		■	■	■	■
Separate drive control unit (RDCU)		●	● 1)	●	●
Cabling					
Supply bottom entry (module terminals)		●	-	-	●
Supply top entry (module terminals)		-	●	●	-
Bottom exit (module terminals)		●	●	-	-
Side exit (module terminals)		-	-	-	-
Top exit in the module		-	-	●	●
Enclosure class					
IP00 (UL open chassis)		●	●	●	●
DTC motor control					
DTC		●	●	●	-
Software					
Start-up assistant		● 2)	●	-	-
Adaptive programming		□	□	-	-
Optional software optimized for different applications or for enhanced programmability: for more details see section "Application software and programming"		□	□	-	-
Control panel					
Alphanumeric 4*20 character control panel		□	□	□	□
Control panel mounting platform		□	□	□	□
Control connections (I/O) and communications					
3 pcs analog inputs, programmable, galvanically isolated		●	●	● 3)	● 3)
2 pcs analog outputs, programmable		●	●	● 3)	● 3)
7 pcs digital inputs, programmable, galvanically isolated - can be divided into two groups		●	●	● 3)	● 3)
3 pcs relay outputs, programmable		●	●	● 3)	● 3)
Possibility for external control voltage		●	●	●	●
Inbuilt I/O extension and speed feedback modules: for more details see section "Control connections and communications"		□	□	-	-
Inbuilt adapters for several fieldbuses: for more details see section "Control connections and communications"		□	□	□	-
Line filter					
AC or DC choke		●	-	-	●
LCL		-	-	●	-
Output filters					
Common mode filter		●	● 4)	● 3)	-
du/dt filters		●	● 5) ■ 6) □ 7)	-	-
Braking					
Brake chopper		■	■	-	-
Brake resistor		-	-	-	-
Regenerative braking		-	-	●	-
Rectifier bridge					
6-pulse that can be connected as a 12-pulse one also		-	-	-	● 8)
Safety option					
Prevention of unexpected start-up		□	□	-	-
Approvals					
CE		●	●	●	●
UL, cUL, CSA		●	●	●	●
GOST R		●	●	●	●
Auxiliary option kits					
Fuses, fuse bases		■	■	■	■
DC-fuse switch		-	■	-	-
Contactors or breaker		■	-	■	■
Assembly kits for Rittal TS8 cabinets		■	■	■	■

- Standard
- Option inbuilt
- External accessory, no plus code
- Not available

- 1) Frame sizes R2i-R5i inside of the module.
- 2) Only in standard software.
- 3) Fixed I/O in ISU and DSU.
- 4) Not for 690V.
- 5) For frame size nxR8i only.
- 6) For frame size R2i-R5i only.
- 7) For frame size R7i only.
- 8) For frame size D4 only.



All industries face a common goal: to maximize their production output at the lowest possible cost, while maintaining the highest quality end products. One of ABB's key objectives is to maximize the uptime of its customers' processes by ensuring optimum lifetime of all ABB products in a predictable, safe and low cost manner.

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.

Maximizing return on investment

At the heart of ABB's services is its drive lifecycle management model. All services available for ABB low voltage drives are planned according to this model. For customers it is easy to see which services are available at which phase.

precisely the timing of the part replacements plus all other maintenance related actions. The model also helps the customer when deciding about upgrades, retrofits and replacements.

Drive specific maintenance schedules are also based on this four-phase model. Thus, a customer knows

Professional management of the drive's lifecycle maximizes the return on any investment in ABB low voltage drives.

ABB drive lifecycle management model

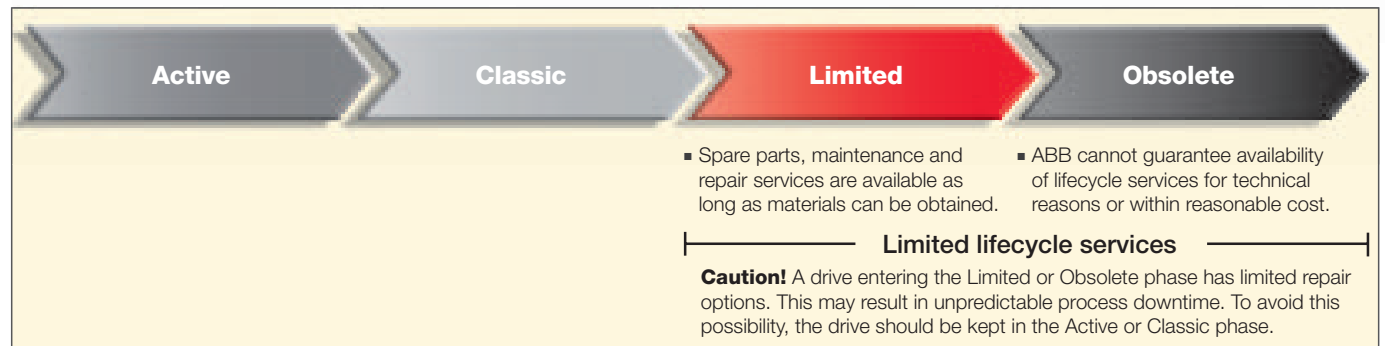
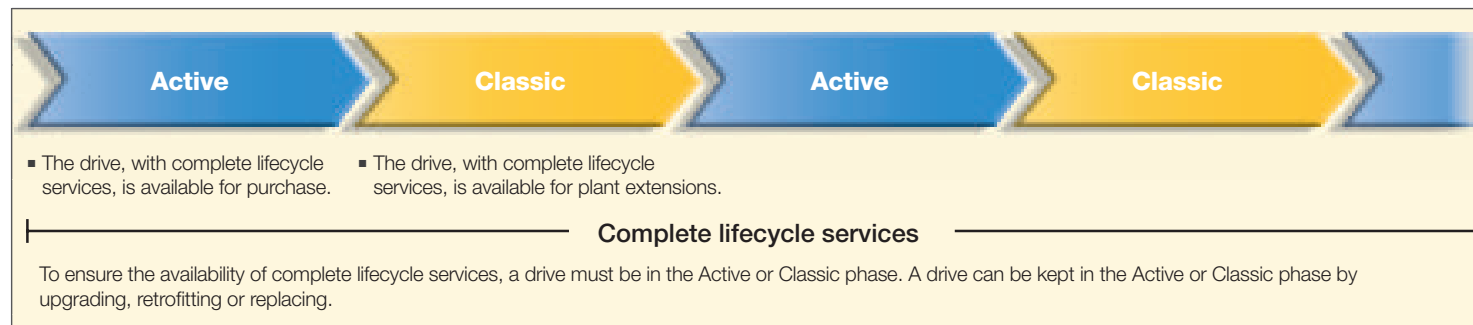


ABB follows a four-phase model for managing drive lifecycles, which brings enhanced customer support and improved efficiency.

Examples of lifecycle services are: selection and dimensioning, installation and commissioning, preventive and corrective maintenance, remote services, spare part services, training and learning, technical support, upgrade and retrofit, replacement and recycling.

Contact and web information

www.abb.com/drives



ABB's worldwide presence is built on strong local companies working together with the channel partner network. By combining the experience and know-how gained in local and global markets, we ensure that our customers in all industries can gain the full benefit from our products.

For further details about all our low voltage AC drives and services please contact your nearest ABB office or ABB drives channel partner or visit the websites www.abb.com/drives and www.abb.com/drivespartners.

Albania (Tirana)

Tel: +355 42 241 492
Fax: +355 42 234 368

Algeria

Tel: +213 21 553 860
Fax: +213 21 552 330

Argentina (Valentin Alsina)

Tel: +54 11 4229 5500
Fax: +54 11 4229 5784

Australia (Victoria - Notting Hill)

Tel: +1800 222 435
Tel: +61 3 8544 0000
e-mail: drives@au.abb.com

Austria (Vienna)

Tel: +43 1 60109 0
Fax: +43 1 60109 8312

Azerbaijan (Baku)

Tel: +994 12 404 5200
Fax: +994 12 404 5022

Bahrain (Manama)

Tel: +973 725 377
Fax: +973 725 332

Bangladesh (Dhaka)

Tel: +88 02 8856468
Fax: +88 02 8850906

Belarus (Minsk)

Tel: +375 228 12 40, 228 12 42
Fax: +375 228 12 43

Belgium (Zaventem)

Tel: +32 2 718 6320
Fax: +32 2 718 6664

Bolivia (La Paz)

Tel: +591 2 278 8181
Fax: +591 2 278 8184

Bosnia Herzegovina (Tuzla)

Tel: +387 35 246 020
Fax: +387 35 255 098

Brazil (Osasco)

Tel: 0800 014 9111
Tel: +55 11 3688 9282
Fax: +55 11 3688 9421

Bulgaria (Sofia)

Tel: +359 2 807 5500
Fax: +359 2 807 5599

Canada (Montreal)

Tel: +1 514 420 3100
Fax: +1 514 420 3138

Chile (Santiago)

Tel: +56 2 471 4391
Fax: +56 2 471 4399

China (Beijing)

Tel: +86 10 5821 7788
Fax: +86 10 5821 7618

Colombia (Bogotá)

Tel: +57 1 417 8000
Fax: +57 1 413 4086

Costa Rica (San Jose)

Tel: +506 288 5484
Fax: +506 288 5482

Croatia (Zagreb)

Tel: +385 1 600 8550
Fax: +385 1 619 5111

Czech Republic (Prague)

Tel: +420 234 322 327
e-mail: motors&drives@cz.abb.com

Denmark (Skovlunde)

Tel: +45 44 504 345
Fax: +45 44 504 365

Dominican Republic (Santo Domingo)

Tel: +809 562 9010
Fax: +809 562 9011

Ecuador (Quito)

Tel: +593 2 2500 645
Fax: +593 2 2500 650

Egypt (Cairo)

Tel: +202 2 6251630
drives@eg.abb.com

El Salvador (San Salvador)

Tel: +503 2264 5471
Fax: +503 2264 2497

Estonia (Tallinn)

Tel: +372 6801 800
e-mail: info@ee.abb.com

Ethiopia (Addis Ababa)

Tel: +251 1 669506, 669507
Fax: +251 1 669511

Finland (Helsinki)

Tel: +358 10 22 11
Tel: +358 10 222 1999
Fax: +358 10 222 2913

France (Montluel)

Tel: +33 (0)4 37 40 40 00
Fax: +33 (0)4 37 40 40 72

Germany (Ladenburg)

Tel: +01805 222 580 (Service)
Tel: +49 (0)6203 717 717
Fax: +49 (0)6203 717 600

Greece (Athens)

Tel: +30 210 289 1 651
Fax: +30 210 289 1 792

Guatemala (Guatemala City)

Tel: +502 2 363 3814
Fax: +502 2 363 3624

Hungary (Budapest)

Tel: +36 1 443 2224
Fax: +36 1 443 2144

India (Bangalore)

Tel: +91 80 2294 9585
Fax: +91 80 2294 9389

Indonesia (Jakarta)

Tel: +62 21 2551 5555
e-mail: automation@id.abb.com

Iran (Tehran)

Tel: +98 21 2222 5120
Fax: +98 21 2222 5157

Ireland (Dublin)

Tel: +353 1 405 7300
Fax: +353 1 405 7307

Israel (Haifa)

Tel: +972 4 850 2111
Fax: +972 4 850 2112

Italy (Milan)

Tel: +39 02 2414 3085
Fax: +39 02 2414 3979

Ivory Coast (Abidjan)

Tel: +225 21 21 7575
Fax: +225 21 35 0414

Japan (Tokyo)

Tel: +81(0)3 5784 6010
Fax: +81(0)3 5784 6275

Jordan (Amman)

Tel: +962 6 562 0181
Fax: +962 6 5621369

Kazakhstan (Almaty)

Tel: +7 727 2583838
Fax: +7 727 2583839

Kenya (Nairobi)

Tel: +254 20 828811/13 to 20
Fax: +254 20 828812/21

Kuwait (Kuwait city)

Tel: +965 2428626 ext. 106
Fax: +965 2403139

Latvia (Riga)

Tel: +371 7 063 600
Fax: +371 7 063 601

Lithuania (Vilnius)

Tel: +370 5 273 8300
Fax: +370 5 273 8333

Luxembourg (Leudelange)

Tel: +352 493 116
Fax: +352 492 859

Macedonia (Skopje)

Tel: +389 23 118 010
Fax: +389 23 118 774

Malaysia (Kuala Lumpur)

Tel: +603 5628 4888
Fax: +603 5635 8200

Mauritius (Port-Louis)

Tel: +230 208 7644, 211 8624
Fax: +230 211 4077

Mexico (Mexico City)

Tel: +52 (55) 5328 1400 ext. 3008
Fax: +52 (55) 5328 7467

Morocco (Casablanca)

Tel: +212 52 234 5540
Fax: +212 52 234 2099

The Netherlands (Rotterdam)

Tel: +31 (0)10 407 8886
e-mail: frequconv@nl.abb.com

New Zealand (Auckland)

Tel: +64 9 356 2160
Fax: +64 9 357 0019

Nigeria (Ikeja, Lagos)

Tel: +234 1 4937 347
Fax: +234 1 4937 329

Norway (Oslo)

Tel: +47 03500
motor@no.abb.com

Oman (Muscat)

Tel: +968 2456 7410
Fax: +968 2456 7406

Pakistan (Lahore)

Tel: +92 42 6315 882-85
Fax: +92 42 6368 565

Panama (Panama City)

Tel: +507 209 5400, 2095408
Fax: +507 209 5401

Peru (Lima)

Tel: +51 1 415 5100
Fax: +51 1 561 2902

The Philippines (Metro Manila)

Tel: +63 2 821 7777
Fax: +63 2 823 0309, 824 4637

Poland (Lodz)

Tel: +48 42 299 3000
Fax: +48 42 299 3340

Portugal (Oeiras)

Tel: +351 21 425 6000
Fax: +351 21 425 6390, 425 6354

Qatar (Doha)

Tel: +974 4253888
Fax: +974 4312630

Romania (Bucharest)

Tel: +40 21 310 4377
Fax: +40 21 310 4383

Russia (Moscow)

Tel: +7 495 960 22 00
Fax: +7 495 960 22 20

Saudi-Arabia (Al Khobar)

Tel: +966 (0)3 882 9394, ext. 240, 254, 247
Fax: +966 (0)3 882 4603

Senegal (Dakar)

Tel: +221 832 1242, 832 3466
Fax: +221 832 2057, 832 1239

Serbia (Belgrade)

Tel: +381 11 3094 320, 3094 300
Fax: +381 11 3094 343

Singapore (Singapore)

Tel: +65 6776 5711
Fax: +65 6778 0222

Slovakia (Banska Bystrica)

Tel: +421 48 410 2324
Fax: +421 48 410 2325

Slovenia (Ljubljana)

Tel: +386 1 2445 440
Fax: +386 1 2445 490

South Africa (Johannesburg)

Tel: +27 11 617 2000
Fax: +27 11 908 2061

South Korea (Seoul)

Tel: +82 2 528 2794
Fax: +82 2 528 2338

Spain (Barcelona)

Tel: +34 (9)3 728 8500
Fax: +34 (9)3 728 7659

Sri Lanka (Colombo)

Tel: +94 11 2399304/6
Fax: +94 11 2399303

Sweden (Västerås)

Tel: +46 (0)21 32 5000
Fax: +46 (0)21 14 8671

Switzerland (Zürich)

Tel: +41 (0)58 586 0000
Fax: +41 (0)58 586 0603

Syrian Arab Republic

Tel: +963 11 212 7018 / 9551
Fax: +963 11 212 8614

Taiwan (Taipei)

Tel: +886 2 2577 6090
Fax: +886 2 2577 9467, 2577 9434

Tanzania (Dar es Salaam)

Tel: +255 51 2136750, 2136751, 2136752
Fax: +255 51 2136749

Thailand (Bangkok)

Tel: +66 (0)2665 1000
Fax: +66 (0)2665 1042

Tunisia (Tunis)

Tel: +216 71 860 366
Fax: +216 71 860 255

Turkey (Istanbul)

Tel: +90 216 528 2200
Fax: +90 216 365 2944

Uganda (Nakasero, Kampala)

Tel: +256 41 348 800
Fax: +256 41 348 799

Ukraine (Kiev)

Tel: +380 44 495 22 11
Fax: +380 44 495 22 10

The United Arab Emirates (Dubai)

Tel: +971 4 3147500, 3401777
Fax: +971 4 3401771, 3401539

United Kingdom (Daresbury, Warrington)

Tel: +44 1925 741 111
Fax: +44 1925 741 693

Uruguay (Montevideo)

Tel: +598 2 707 7300
Tel: +598 2 707 7466

USA (New Berlin)

Tel: +1 800 752 0696
Tel: +1 262 785 3200
Fax: +1 262 785 0397

Venezuela (Caracas)

Tel: +58 212 2031949
Fax: +58 212 237 6270

Vietnam (Hochiminh)

Tel: +84 8 8237 972
Fax: +84 8 8237 970

Zimbabwe (Harare)

Tel: +263 4 369 070
Fax: +263 4 369 084

Contact us



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