



Low voltage AC drives

# ABB industrial drives ACS800, drive modules 0.55 to 2900 kW Catalog

Power and productivity  
for a better world™



# Selecting and ordering your drive

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

Type designation:

ACS800

-

04

X04

14

04LC

X04LC

-

XXXX

-

2

3

5

7

+

XXXX

Product series

Types and construction

Ratings

Voltages

Options

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## ABB industrial drives, drive modules

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### ABB industrial drives

ABB industrial drives are designed for industrial applications, and especially for applications in process industries such as the pulp and paper, metals, mining, cement, power, chemical, and oil and 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 built-in 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. Built-in 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 designation

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

### ABB's module offering - common features

ABB industrial drive modules are meant for system integrators and/or machine builders 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 a built-in harmonic filtering choke, for example. There is also a wide selection of built-in 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.

### Functional safety

The ABB functional safety solution complies with the requirements of the European Union machinery directive 2006/42/EC. This directive is associated with standards such as IEC 62061 (Safety Integrity Level) and ISO 13849-1 (Performance Level), which require both a documented and proven safety performance and life cycle approach to safety. Safe torque-off is a certified solution offering SIL2 and PL d (Cat.2) safety levels.

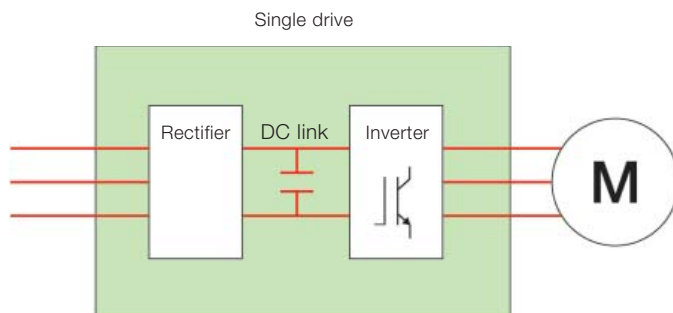
ABB drives can be provided, as an option, with the safe torque-off function. Safe torque-off can be used for the prevention of unexpected start-up and represents a cost-effective and certified solution for basic safety. Other safety functions include safe stop 1 (SS1) and safely-limited speed (SLS), which can be used to achieve SIL2 or PL d (Cat.3) safety levels.

Other products:  
Please also see the separate catalogs  
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.

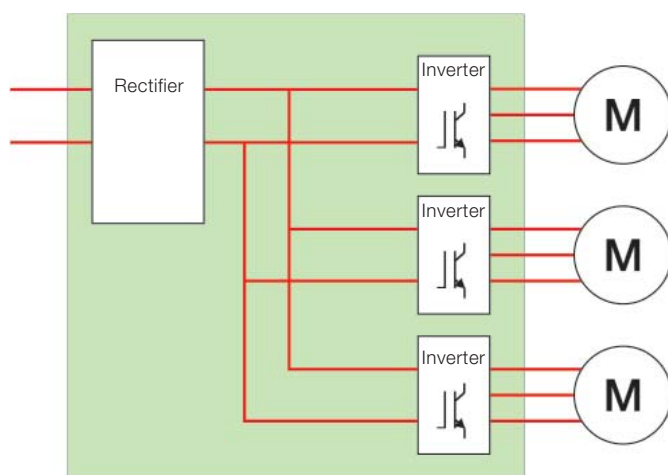
The single drive configuration contains a rectifier, DC link and an inverter in one single AC drive unit.



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 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 to 2900 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 690 V supply voltage while the ACS800 liquid-cooled single drive modules from 200 to 2240 kW at 380 to 690 V supply voltage.

# Drive modules main features

| Feature                                       | Advantage  | Benefit  |
|---|--|--|
| <b>Compact and complete</b>                   |  |  |
| Compact size, everything integrated           | Less space and installation work required.   | No need to install extra components such as input chokes or EMC filter.<br>Possibility for side by side mounting.  |
| Built-in harmonic filter in all ACS800 drives | Low harmonics, meaning less interference and less heating in cables and transformers.<br>Filter also protects the drive from line side transients.<br>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.<br>In most types no need for external braking chopper thus reducing size and installation cost.   | Brake chopper built-in in all frame sizes (standard/optional).   |
| Optimised products for cabinet assembly       | Possible to use any kind of customer specific cabinet.<br>Easy to make the cabinet assembly saving time and money.   |  |
| <b>User interface</b>                         |  |  |
| 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.<br>Easy to use PC tools available for commissioning, maintenance, monitoring and programming.      |
| Versatile connections and communications      | Standard I/O covers most requirements.<br>Connectable to commonly used fieldbuses.   | Extensive standard and optional I/O.<br>I/O fulfills PELV (EN 50178).  |
| Extensive programmability                     | Flexibility. Possible to replace relays or even PLC in some applications.  | Two levels of programmability:<br>1. Parameter programming (standard)<br>2. Adaptive programming (free block programming)<br>- Standard feature<br>- More blocks available as options<br>- All I/Os are programmable |
| <b>Industrial design</b>                      |  |  |
| Wide power and voltage range                  | One product series suits everywhere meaning less training and fewer spare parts, and a standardised interface to drives.   |  |
| Galvanic isolation of I/O                     | Safe and reliable operation without separate isolators and relays.   | Isolated input signals and relay outputs as standard.  |

# Drive modules main features

| Feature   | Advantage  | Benefit  |
|---|--|--|
| <b>Industrial design</b>  |  |  |
| Robust main circuit design  | Suitable for heavy industrial use.<br>Reliable.<br>Long motor cables can be used without extra output filters.   | Components dimensioned for heavy duty and long lifetime.<br>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.   |
| Functional safety   | Certified safety features according to Machinery Directive 2006/42/EC.<br>Safe operation and maintenance.  | Safe torque-off available as built-in option.  |
| All terminals designed for industrial use   | Adequate size even for large aluminium cables.<br>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.  |  |
| <b>Right performance for every application</b>  |  |  |
| 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.<br>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.<br>No torque ripple - minimized risk for torsional vibration.<br>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. |  |
| <b>Made in ABB</b>  |  |  |
| Global market leader in AC drives. Long experience.   | Well proven, safe and reliable solutions.<br>Application know-how.   |  |
| World wide service and support network  | Professional support available around the world.   |  |

# Technical data

|        |   |     |   |      |   |   |   |      |
|--------|---|-----|---|------|---|---|---|------|
| ACS800 | - | 04  | - | XXXX | - | 2 | + | XXXX |
|        |   | X04 |   |      |   | 3 |   |      |
|        |   | 14  |   |      |   | 5 |   |      |
|        |   |     |   |      |   | 7 |   |      |

| Mains connection              |  |
|-------------------------------|--|
| Supply voltage                | 3-phase, $U_{2IN}$ = 208 to 240 V, $\pm 10\%$ , except multidrive and nxR8i ACS800-04 modules<br>3-phase, $U_{3IN}$ = 380 to 415 V, $\pm 10\%$<br>3-phase, $U_{5IN}$ = 380 to 500 V, $\pm 10\%$<br>3-phase, $U_{7IN}$ = 525 to 690 V, $\pm 10\%$ |
| Frequency                     | 48 to 63 Hz  |
| Power factor                  | $\cos\phi_1$ = 0.98 (fundamental)<br>$\cos\phi$ = 0.93 to 0.95 (total)   |
| Power factor ISU              | $\cos\phi_1$ = 1 (fundamental)<br>$\cos\phi$ = 0.99 (total)  |
| Efficiency (at nominal power) |  |
| ACS800-04                     | 98%  |
| ACS800-X04                    | 98%<br>97% with IGBT supply unit   |
| Motor connection              |  |
| Voltage for > 500 V units     | 3-phase output voltage 0 to $U_{2IN}/U_{3IN}/U_{5IN}/U_{7IN}$<br>please see "Filter selection table for ACS800" under the du/dt filters on page 42   |
| Frequency                     | 0 to $\pm 300$ Hz<br>0 to $\pm 300$ Hz, also with built-in du/dt filters in R8i module.<br>(0 to $\pm 120$ Hz with external du/dt filters in R2i to R7i)   |
| Field weakening point         | 8 to 300 Hz  |
| Motor control                 | ABB's direct torque control (DTC)  |
| Torque control:               | Torque step rise time:   |
| Open loop                     | <5 ms with nominal torque  |
| Closed loop                   | <5 ms with nominal torque  |
|                               | Non-linearity:   |
| Open loop                     | $\pm 4\%$ with nominal torque  |
| Closed loop                   | $\pm 3\%$ with nominal torque  |
| Speed control:                | Static accuracy:   |
| Open loop                     | 10% of motor slip  |
| Closed loop                   | 0.01% of nominal speed   |
|                               | Dynamic accuracy:  |
| Open loop                     | 0.3 to 0.4% sec. with 100% torque step   |
| Closed loop                   | 0.1 to 0.2% sec. with 100% torque step   |

| Environmental limits       |   |
|----------------------------|---|
| Ambient temperature        |   |
| Transport                  | -40 to +70 °C   |
| Storage                    | -40 to +70 °C   |
| Operation                  |   |
| ACS800-04                  | -15 to +50 °C, no frost allowed<br>40 to 50 °C at reduced output current (1% / 1 °C)            |
| ACS800-04 nxR8i, -X04, -14 | 0 to +50 °C, no frost allowed<br>40 to 50 °C at reduced output current (1% / 1 °C)              |
| Cooling method:            | Dry clean air   |
| Altitude                   |   |
| 0 to 1000 m                | Without derating  |
| 1000 to 4000 m             | With derating ~ (1% / 100 m)<br>(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 to R6 and option for some -04(M) variants                       |
| Paint colour               | NCS 1502-Y<br>(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 2006/95/EC      |
| Machinery Directive 2006/42/EC        |
| EMC Directive 2006/108/EC             |
| Quality assurance system ISO 9001 and |
| Environmental system ISO 14001        |

| EMC according to EN 61800-3   |
|---|
| 2 <sup>nd</sup> environment, unrestricted distribution category C3 - as option in ACS800-04 up to frame size R8 |
| 1 <sup>st</sup> environment, restricted distribution category C2 as option up to 1000 A input current           |
| Available options are shown in the summary of features and options table. Please see pages 58-60.               |



# Technical data

|        |   |       |   |      |   |   |   |      |
|--------|---|-------|---|------|---|---|---|------|
| ACS800 | - | 04LC  | - | XXXX | - | 3 | + | XXXX |
|        |   | X04LC |   |      |   | 5 |   |      |
|        |   |       |   |      |   | 7 |   |      |

| Mains connection                 |  |
|----------------------------------|--|
| Supply voltage                   | 3-phase $U_{3IN} = 380$ to $415$ V, $\pm 10\%$<br>3-phase $U_{5IN} = 380$ to $500$ V, $\pm 10\%$<br>3-phase $U_{7IN} = 525$ to $690$ V, $\pm 10\%$ |
| Frequency                        | 48 to 63 Hz  |
| Power factor                     | $\cos\phi_1 = 0.98$ (fundamental)<br>$\cos\phi = 0.93$ to $0.95$ (total)   |
| Efficiency<br>(at nominal power) | > 98%  |
| Motor connection                 |  |
| 3-phase supply voltage           | Output voltage: 0 to $U_{3IN}/U_{5IN}/U_{7IN}$   |
| Frequency                        | 0 to $\pm 300$ Hz  |
| Field weakening point            | 8 to 300 Hz  |
| Motor control                    | ABB's direct torque control (DTC)  |
| Torque control:                  | Torque step rise time:   |
| Open loop                        | <5 ms with nominal torque  |
| Closed loop                      | <5 ms with nominal torque  |
|                                  | Non-linearity:   |
| Open loop                        | $\pm 4\%$ with nominal torque  |
| Closed loop                      | $\pm 3\%$ with nominal torque  |
| Speed Control:                   | Static accuracy:   |
| Open loop                        | 10% of motor slip  |
| Closed loop                      | 0.01% of nominal speed   |
|                                  | Dynamic accuracy:  |
| Open loop                        | 0.3 to 0.4% sec. with 100% torque step   |
| Closed loop                      | 0.1 to 0.2% sec. with 100% torque step   |
| Enclosure                        |  |
| 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 55 °C, no frost allowed<br>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<br>2 to 13.2 Hz                                      |
| Cooling Method  | Liquid-cooled, closed loop   |
| Internal cooling circuit  | Drinking water +42 °C max,<br>42 to 48 °C at reduced output power (1.0% /1 °C)                   |
| External cooling circuit with optimal liquid cooling unit   | Industrial or sea water +38 °C max, 38 to 45 °C at reduced output power (1.0% /1 °C)             |
| Altitude  |  |
| 0 to 1000 m   | Without derating   |
| 1000 to 4000 m  | With derating ~ (1% / 100 m)<br>(690 V units 1000 to 2000 m with derating)                       |
| Storage   | IEC 60721-3-1, class 1C2 (chemical gases), Class 1S2 (solid particles)                           |
| Transportation  | IEC 60721-3-2, Class 2C2 or 3C2* (chemical gases), Class 2S2 (solid particles)                   |
| Operation   | IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles without air inlet filters) |
| C = chemically active substances<br>S = mechanically active substances<br>* = coated circuit boards |  |

| Product compliance  |
|---|
| CE, UL, CSA, GOST-R   |
| Low Voltage Directive 2006/95/EC  |
| Machinery Directive 2006/42/EC  |
| EMC Directive 2006/108/EC   |
| Quality assurance system ISO 9001 and   |
| Environmental system ISO 14001  |
| EMC according to EN 61800-3   |
| 2 <sup>nd</sup> environment, unrestricted distribution category C3 - as option in ACS800-04 up to frame size R8 |
| 1 <sup>st</sup> environment, restricted distribution category C2 as option up to 1000 A input current           |

# Single drive modules

## ACS800-04/-04M/-14

### 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 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 built-in. That includes, for example, built-in chokes for harmonic filtering as standard, built-in braking chopper and built-in 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 to R6

The R2 to 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 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. Safe torque-off (complies with the European Union machinery directive 2006/42/EC) is also available as 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 to 560 kW and the voltage range is from 230 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. Safe torque-off (complies with the European Union Machinery Directive 2006/42/EC) is also available as option.



### High ratings - frame sizes D4 to 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 a built-in 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 to 1900 kW, and the voltage range is from 380 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 to R6:

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

# Single drive modules

## ACS800-04/-04M/-14

### Frame sizes R7 and 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

#### Built-in options:

- Analogue and digital I/O extension modules
- Fieldbus modules
- Pulse encoder interface module
- Motion control and other control solution software
- Safe torque-off
- Control panel

#### Options for frame sizes R2 to R6:

- Built-in brake chopper (R4 to R6)
- EMC filter for 2<sup>nd</sup> environment, unrestricted distribution according to EN 61800-3 (Category C3)
- EMC filter for 1<sup>st</sup> 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 and R8:

- Built-in brake chopper
- IP20 enclosure class (for some -04M mounting variants)
- EMC filter for 2<sup>nd</sup> environment, unrestricted distribution according to EN 61800-3 (Category C3)
- EMC filter for 1<sup>st</sup> 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
- Built-in 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 to IP54 cabinet door / roof mechanical kits
  - Mechanical cabinet accessories kits

# Single drive modules

## ACS800-04/-04M/-14

### ACS800-14 single drive modules

The ACS800-14 drives are regenerative single drive 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 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 to 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 to 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 to IP54 cabinet door / roof mechanical kits
  - Accessories kits
- Common mode filters for motor protection





# Ratings, types and voltages

## ACS800-04, single drive modules, $U_N = 230\text{ V}$

ACS800

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04

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| Nominal ratings  |                       | No-overload use              | Light-overload use  |                      | Heavy-duty use       |                       | Noise level | Heat dissipation | Air flow | Type designation    | Frame size |
|--|-----------------------|------------------------------|---------------------|----------------------|----------------------|-----------------------|-------------|------------------|----------|---------------------|------------|
| $I_{\text{cont. max}}$<br>A  | $I_{\text{max}}$<br>A | $P_{\text{cont. max}}$<br>kW | $I_{\text{N}}$<br>A | $P_{\text{N}}$<br>kW | $I_{\text{hd}}$<br>A | $P_{\text{hd}}$<br>kW |             |                  |          |                     |            |
| $U_{\text{N}} = 230 \text{ V}$ (Range 208 to 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 <sup>4)</sup>    | 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 <sup>2)</sup>    | 160                   | 72          | 7850             | 1220     | ACS800-04(M)-0260-2 | R8         |
| 720  | 1017                  | 200                          | 704                 | 200                  | 635 <sup>3)</sup>    | 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 to R6, option for some 04(M) variants  
Paint color: RAL 9002/PMS 420C

### Dimensions

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

| Nominal ratings                  |  |
|----------------------------------|--|
| $I_{\text{cont. max}}$           | Rated current available continuously without overloadability at 40 °C.   |
| $I_{\text{max}}$                 | Maximum output current. Available for 10 s at start, otherwise as long as allowed by drive temperature. Note: max. motor shaft power is 150% $P_{\text{hd}}$ . |
| 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                   |  |
| $I_{\text{hd}}$                  | Continuous current allowing 150% $I_{\text{hd}}$ for 1 min / 5 min at 40 °C.   |
| $P_{\text{hd}}$                  | 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  $T_{\text{amb}} < 25\text{ °C}$ . If  $T_{\text{amb}} = 40\text{ °C}$ , max overload is 37%.
  - 2) 50% overload available if  $T_{\text{amb}} < 30\text{ °C}$ . If  $T_{\text{amb}} = 40\text{ °C}$ , max overload is 40%.
  - 3) 50% overload available if  $T_{\text{amb}} < 20\text{ °C}$ . If  $T_{\text{amb}} = 40\text{ °C}$ , max overload is 30%.
  - 4) 50% overload available if  $T_{\text{amb}} < 35\text{ °C}$ . If  $T_{\text{amb}} = 40\text{ °C}$ , 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, types and voltages

## ACS800-04, single drive modules, $U_N = 400\text{ V}$

ACS800 - 04 - XXXX - 3 + XXXX

| Nominal ratings  |                       | No-overload use              | Light-overload use |             | Heavy-duty use       |                       | Noise level | Heat dissipation | Air flow | Type designation    | Frame size   |
|--|-----------------------|------------------------------|--------------------|-------------|----------------------|-----------------------|-------------|------------------|----------|---------------------|--------------|
| $I_{\text{cont. max}}$<br>A  | $I_{\text{max}}$<br>A | $P_{\text{cont. max}}$<br>kW | $I_N$<br>A         | $P_N$<br>kW | $I_{\text{hd}}$<br>A | $P_{\text{hd}}$<br>kW | dBA         | W                | m³/h     |                     |              |
| $U_N = 400\text{ V}$ (Range 380 to 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 <sup>1)</sup>    | 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 <sup>2)</sup>    | 315                   | 72          | 8650             | 1220     | ACS800-04(M)-0440-3 | R8           |
| 720  | 1017                  | 400                          | 704                | 400         | 635 <sup>3)</sup>    | 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 to R6, option for some 04(M) variants

Paint color: RAL 9002/PMS 420C

### Dimensions

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

| Nominal ratings                  |  |
|----------------------------------|--|
| $I_{\text{cont. max}}$           | Rated current available continuously without overloadability at 40 °C.   |
| $I_{\text{max}}$                 | Maximum output current. Available for 10 s at start, otherwise as long as allowed by drive temperature. Note: max. motor shaft power is 150% $P_{\text{hd}}$ . |
| 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                   |  |
| $I_{\text{hd}}$                  | Continuous current allowing 150% $I_{\text{hd}}$ for 1 min / 5 min at 40 °C.   |
| $P_{\text{hd}}$                  | 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  $T_{\text{amb}} < 25\text{ °C}$ . If  $T_{\text{amb}} = 40\text{ °C}$ , max overload is 37%.
- 50% overload available if  $T_{\text{amb}} < 30\text{ °C}$ . If  $T_{\text{amb}} = 40\text{ °C}$ , max overload is 40%.
- 50% overload available if  $T_{\text{amb}} < 20\text{ °C}$ . If  $T_{\text{amb}} = 40\text{ °C}$ , max overload is 30%.
- 50% overload available if  $T_{\text{amb}} < 35\text{ °C}$ . If  $T_{\text{amb}} = 40\text{ °C}$ , 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, types and voltages

## ACS800-04, single drive modules, $U_N = 500\text{ V}$

ACS800 - 04 - XXXX - 5 + XXXX

| Nominal ratings  |                       | No-overload use              | Light-overload use |             | Heavy-duty use       |                       | Noise level | Heat dissipation | Air flow | Type designation    | Frame size   |
|--|-----------------------|------------------------------|--------------------|-------------|----------------------|-----------------------|-------------|------------------|----------|---------------------|--------------|
| $I_{\text{cont. max}}$<br>A  | $I_{\text{max}}$<br>A | $P_{\text{cont. max}}$<br>kW | $I_N$<br>A         | $P_N$<br>kW | $I_{\text{hd}}$<br>A | $P_{\text{hd}}$<br>kW | dBA         | W                | m³/h     |                     |              |
| $U_N = 500\text{ V}$ (Range 380 to 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 <sup>2)</sup>    | 355                   | 72          | 8100             | 1220     | ACS800-04(M)-0490-5 | R8           |
| 684  | 1017                  | 450                          | 670                | 450         | 590 <sup>2)</sup>    | 400                   | 72          | 9100             | 1220     | ACS800-04(M)-0550-5 | R8           |
| 718  | 1017                  | 500                          | 704                | 500         | 632 <sup>3)</sup>    | 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 to R6, option for some 04(M) variants

Paint color: RAL 9002/PMS 420C

### Dimensions

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

| Nominal ratings                  |  |
|----------------------------------|--|
| $I_{\text{cont. max}}$           | Rated current available continuously without overloadability at 40 °C.   |
| $I_{\text{max}}$                 | Maximum output current. Available for 10 s at start, otherwise as long as allowed by drive temperature. Note: max. motor shaft power is 150% $P_{\text{hd}}$ . |
| 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                   |  |
| $I_{\text{hd}}$                  | Continuous current allowing 150% $I_{\text{hd}}$ for 1 min / 5 min at 40 °C.   |
| $P_{\text{hd}}$                  | 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  $T_{\text{amb}} < 25\text{ °C}$ . If  $T_{\text{amb}} = 40\text{ °C}$ , max overload is 37%.
- 50% overload available if  $T_{\text{amb}} < 30\text{ °C}$ . If  $T_{\text{amb}} = 40\text{ °C}$ , max overload is 40%.
- 50% overload available if  $T_{\text{amb}} < 20\text{ °C}$ . If  $T_{\text{amb}} = 40\text{ °C}$ , max overload is 30%.
- 50% overload available if  $T_{\text{amb}} < 35\text{ °C}$ . If  $T_{\text{amb}} = 40\text{ °C}$ , 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, types and voltages

## ACS800-04, single drive modules, $U_N = 690$ V

ACS800 - 04 - XXXX - 7 + XXXX

| Nominal ratings   |                       | No-overload use              | Light-overload use    |                       | Heavy-duty use       |                       | Noise level | Heat dissipation | Air flow | Type designation    | Frame size   |
|---|-----------------------|------------------------------|-----------------------|-----------------------|----------------------|-----------------------|-------------|------------------|----------|---------------------|--------------|
| $I_{\text{cont. max}}$<br>A   | $I_{\text{max}}$<br>A | $P_{\text{cont. max}}$<br>kW | $I_N$<br>A            | $P_N$<br>kW           | $I_{\text{hd}}$<br>A | $P_{\text{hd}}$<br>kW |             |                  |          |                     |              |
| $U_N = 690$ V (Range 525 to 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 <sup>5)</sup>   | 294                   | 160                          | 165/195 <sup>5)</sup> | 160                   | 147                  | 132                   | 71          | 4250             | 540      | ACS800-04(M)-0210-7 | R7           |
| 175/230 <sup>5)</sup>   | 326                   | 160/200 <sup>5)</sup>        | 175/212 <sup>5)</sup> | 160/200 <sup>5)</sup> | 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 to R6, option for some 04(M) variants

Paint color: RAL 9002/PMS 420C

### Dimensions

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

| Nominal ratings                  |  |
|----------------------------------|--|
| $I_{\text{cont. max}}$           | Rated current available continuously without overloadability at 40 °C.   |
| $I_{\text{max}}$                 | Maximum output current. Available for 10 s at start, otherwise as long as allowed by drive temperature. Note: max. motor shaft power is 150% $P_{\text{hd}}$ . |
| 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                   |  |
| $I_{\text{hd}}$                  | Continuous current allowing 150% $I_{\text{hd}}$ for 1 min / 5 min at 40 °C.   |
| $P_{\text{hd}}$                  | 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  $T_{\text{amb}} < 25$  °C. If  $T_{\text{amb}} = 40$  °C, max overload is 37%.
- 50% overload available if  $T_{\text{amb}} < 30$  °C. If  $T_{\text{amb}} = 40$  °C, max overload is 40%.
- 50% overload available if  $T_{\text{amb}} < 20$  °C. If  $T_{\text{amb}} = 40$  °C, max overload is 30%.
- 50% overload available if  $T_{\text{amb}} < 35$  °C. If  $T_{\text{amb}} = 40$  °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, types and voltages

ACS800-14, single drive modules,  $U_N = 400$  to  $690$  V

|        |   |    |   |      |   |   |   |      |
|--------|---|----|---|------|---|---|---|------|
| 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 designation | Frame size                  |
|--|-----------------------------|------------------------------|--------------------|-------------|----------------------|-----------------------|-------------|------------------|----------|------------------|-----------------------------|
| $I_{\text{cont. max}}$<br>A                          | $I_{\text{cont. max}}$<br>A | $P_{\text{cont. max}}$<br>kW | $I_N$<br>A         | $P_N$<br>kW | $I_{\text{hd}}$<br>A | $P_{\text{hd}}$<br>kW | dBA         | kW               | m³/h     |                  |                             |
| <b><math>U_N = 400</math> V (Range 380 to 415 V)</b> |                             |                              |                    |             |                      |                       |             |                  |          |                  |                             |
| 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 |
| <b><math>U_N = 500</math> V (Range 380 to 500 V)</b> |                             |                              |                    |             |                      |                       |             |                  |          |                  |                             |
| 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 |
| <b><math>U_N = 690</math> V (Range 525 to 690 V)</b> |                             |                              |                    |             |                      |                       |             |                  |          |                  |                             |
| 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 <sup>1)</sup> mm | Weight kg |
|-------------------|-----------|-------------------|------------------------|-----------|
| R7i <sup>1)</sup> | 963       | 170               | 408                    | 38        |
| R8i               | 1397      | 245 <sup>2)</sup> | 596                    | 130       |
| 2xR8i             | 1397      | 245 <sup>2)</sup> | 596                    | 260       |
| 3xR8i             | 1397      | 245 <sup>2)</sup> | 596                    | 390       |
| 4xR8i             | 1397      | 245 <sup>2)</sup> | 596                    | 520       |

<sup>1)</sup> Dimensions do not include cooling fan

<sup>2)</sup> 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                  |  |
|----------------------------------|--|
| $I_{\text{cont. max}}$           | Rated current available continuously without overloadability at 40 °C.   |
| $I_{\text{max}}$                 | Maximum output current. Available for 10 s at start, otherwise as long as allowed by drive temperature. Note: max. motor shaft power is 150% $P_{\text{hd}}$ . |
| 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                   |  |
| $I_{\text{hd}}$                  | Continuous current allowing 150% $I_{\text{hd}}$ for 1 min / 5 min at 40 °C.   |
| $P_{\text{hd}}$                  | 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.

# Multidrive modules

## ACS800-X04

The ACS800 multidrive module product range includes rectifier- and DC-supplied inverter modules and accessories especially designed for integrators, machine builders 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 to R7i start from 1.1 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 to 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 to 3150 kW in 380 to 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 2.7 to 2900 kW in 380 to 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.

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

# Multidrive modules

## ACS800-X04

### Main standard hardware features

- Frame sizes R2i to R5i control board inside of the module
- Frame sizes R7i to 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 to R7i and on the cabinet floor for R8i and the D3/D4 supply module
- Wheels and plug connectors in the R8i inverter and D3/D4 supply module
- Coated boards
- LCL-filter units in ISUs

### Main optional hardware features

#### Inverter frame sizes R2i to R7i:

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

#### Inverter frame sizes R8i to 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 to IP54 cabinet door / roof mechanical kits
  - Accessories kits
- Common mode filters for motor protection
- Safe torque-off (STO)

### DSU frame sizes D3 to 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 to IP54 cabinet door / roof mechanical kits
  - Accessories kits



# Ratings, types and voltages

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

ACS800 - X04 - XXXX - 3 + XXXX

| Nominal ratings  |                       | No-overload<br>use           | Light-overload<br>use |                      | Heavy-duty<br>use    |                       | Heat<br>dissipation | Type designation  | Frame<br>size |
|--|-----------------------|------------------------------|-----------------------|----------------------|----------------------|-----------------------|---------------------|-------------------|---------------|
| $I_{\text{cont. max}}$<br>A  | $I_{\text{max}}$<br>A | $P_{\text{cont. max}}$<br>kW | $I_{\text{N}}$<br>A   | $P_{\text{N}}$<br>kW | $I_{\text{hd}}$<br>A | $P_{\text{hd}}$<br>kW |                     |                   |               |
| U <sub>N</sub> = 400 V (Range 380 to 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<br>mm | Width<br>mm       | Depth<br>mm       | Weight<br>kg | Noise level<br>dB(A) | Air flow<br>m³/h |
|-------------------|--------------|-------------------|-------------------|--------------|----------------------|------------------|
| R2i               | 401          | 165               | 193 <sup>3)</sup> | 9            | 62                   | 35               |
| R3i               | 466          | 173               | 232 <sup>3)</sup> | 12           | 62                   | 69               |
| R4i               | 525          | 240               | 252 <sup>3)</sup> | 15           | 62                   | 103              |
| R5i               | 673          | 265               | 276 <sup>3)</sup> | 23           | 65                   | 168              |
| R7i <sup>1)</sup> | 963          | 170               | 408               | 38           | 64                   | 800              |
| R8i               | 1397         | 245               | 596               | 130          | 72                   | 1280             |
| 2xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 260          | 74                   | 2560             |
| 3xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 390          | 76                   | 3840             |
| 4xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 520          | 76                   | 5120             |
| 5xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 650          | 77                   | 6400             |
| 6xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 780          | 78                   | 7680             |

<sup>1)</sup> Dimensions do not include cooling fan.

<sup>2)</sup> Single module only.

<sup>3)</sup> The depth is without control panels and options.

| Type                 | Height<br>mm | Width<br>mm | Depth<br>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.                                  |
| $I_{\text{max}}$                 | 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                   |   |
| $I_{\text{hd}}$                  | Continuous current allowing 150% $I_{\text{hd}}$ for 1 min / 5 min at 40 °C.                            |
| $P_{\text{hd}}$                  | 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  $I_{\text{max}}$ ).

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, types and voltages

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

|        |   |     |   |      |   |                           |   |      |
|--------|---|-----|---|------|---|---------------------------|---|------|
| ACS800 | - | X04 | - | XXXX | - | <div>3</div> <div>7</div> | + | XXXX |
|--------|---|-----|---|------|---|---------------------------|---|------|

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

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

| IGBT supply module (ISU) |       |       |      |      |      |      |      |      |      |                   |                     |
|--------------------------|-------|-------|------|------|------|------|------|------|------|-------------------|---------------------|
| 5.3                      | 6.4   | 9.3   | 3.8  | 3.8  | 6.2  | 3.7  | 4.7  | 2.7  | 0.3  | ACS800-204-0003-3 | R2i + RLCL-01-5     |
| 11.3                     | 13.7  | 19.9  | 8.1  | 8.0  | 13.2 | 8.0  | 9.9  | 5.8  | 0.5  | ACS800-204-0008-3 | R2i + RLCL-02-5     |
| 27.7                     | 33.6  | 48.7  | 20.0 | 19.8 | 32.3 | 20   | 24.3 | 14.3 | 0.8  | ACS800-204-0021-3 | R3i + RLCL-03-5     |
| 44.9                     | 54.4  | 78.7  | 32.2 | 31.9 | 52.2 | 32   | 39.4 | 23.1 | 1.3  | ACS800-204-0031-3 | R4i + RLCL-11-5     |
| 84.0                     | 101.9 | 147.4 | 60.3 | 59.7 | 97.8 | 60   | 73.7 | 43.3 | 2.2  | ACS800-204-0061-3 | R5i + RLCL-12-5     |
| 182                      | 221   | 330   | 131  | 130  | 212  | 124  | 165  | 97   | 3.8  | ACS800-204-0135-3 | R7i + ALCL-04-5     |
| 224                      | 272   | 406   | 161  | 159  | 261  | 153  | 203  | 119  | 4.2  | ACS800-204-0155-3 | R7i + ALCL-05-5     |
| 284                      | 344   | 471   | 204  | 202  | 331  | 194  | 258  | 151  | 5.9  | ACS800-204-0200-3 | R8i + ALCL-12-5     |
| 378                      | 458   | 627   | 272  | 269  | 440  | 258  | 343  | 201  | 8    | ACS800-204-0260-3 | R8i + ALCL-13-5     |
| 473                      | 573   | 784   | 340  | 336  | 550  | 323  | 429  | 252  | 10.3 | ACS800-204-0330-3 | R8i + ALCL-14-5     |
| 630                      | 764   | 1046  | 453  | 448  | 733  | 430  | 571  | 335  | 14.6 | ACS800-204-0440-3 | R8i + ALCL-15-5     |
| 945                      | 1146  | 1568  | 679  | 672  | 1100 | 646  | 857  | 503  | 20.5 | ACS800-204-0660-3 | 2xR8i + ALCL-24-5   |
| 1235                     | 1497  | 2049  | 888  | 879  | 1437 | 844  | 1120 | 657  | 28.3 | ACS800-204-0860-3 | 2xR8i + ALCL-25-5   |
| 1833                     | 2223  | 3042  | 1318 | 1304 | 2134 | 1252 | 1662 | 976  | 41.7 | ACS800-204-1270-3 | 3xR8i + 2xALCL-24-5 |
| 2419                     | 2933  | 4015  | 1739 | 1722 | 2816 | 1653 | 2194 | 1288 | 54.8 | ACS800-204-1680-3 | 4xR8i + 2xALCL-25-5 |
| 3591                     | 4354  | 5960  | 2581 | 2555 | 4180 | 2453 | 3257 | 1911 | 81   | ACS800-204-2490-3 | 6xR8i + 3xALCL-25-5 |

| 6-pulse diode supply unit (DSU) |      |      |      |      |      |      |      |      |     |                   |      |
|---------------------------------|------|------|------|------|------|------|------|------|-----|-------------------|------|
| 286                             | 350  | 462  | 198  | 183  | 335  | 175  | 280  | 147  | 1.5 | ACS800-304-0320-7 | D3   |
| 408                             | 500  | 700  | 283  | 262  | 480  | 251  | 400  | 210  | 2.4 | ACS800-304-0450-7 | D3   |
| 571                             | 700  | 924  | 396  | 367  | 670  | 351  | 560  | 293  | 3.8 | ACS800-704-0640-7 | D4   |
| 816                             | 1000 | 1400 | 566  | 524  | 960  | 503  | 800  | 419  | 5   | ACS800-704-0910-7 | D4   |
| 1143                            | 1400 | 1848 | 792  | 733  | 1340 | 702  | 1120 | 587  | 7.6 | ACS800-704-1370-7 | 2xD4 |
| 1518                            | 1860 | 2604 | 1052 | 974  | 1790 | 938  | 1490 | 780  | 10  | ACS800-704-1810-7 | 2xD4 |
| 2278                            | 2790 | 3906 | 1578 | 1461 | 2685 | 1406 | 2230 | 1168 | 15  | ACS800-704-2720-7 | 3xD4 |
| 3037                            | 3720 | 5208 | 2104 | 1949 | 3580 | 1875 | 2980 | 1561 | 20  | ACS800-704-3630-7 | 4xD4 |
| 3796                            | 4650 | 6510 | 2630 | 2436 | 4475 | 2344 | 3720 | 1949 | 25  | ACS800-704-4540-7 | 5xD4 |

| 6-pulse regenerative thyristor supply unit (TSU) |      |      |      |      |      |      |      |      |      |                   |              |
|--|------|------|------|------|------|------|------|------|------|-------------------|--------------|
| 981  | 1202 | 1947 | 680  | 639  | 1136 | 604  | 880  | 468  | 6.3  | ACS800-404-0680-3 | 2xB4 + choke |
| 1617   | 1980 | 3208 | 1120 | 1053 | 1872 | 995  | 1450 | 721  | 10.2 | ACS800-404-1120-3 | 2xB4 + choke |
| 2449   | 3000 | 4860 | 1697 | 1595 | 2838 | 1509 | 2244 | 1193 | 16.5 | ACS800-404-1700-3 | 2xB5 + choke |
| 2858   | 3500 | 5670 | 1980 | 1861 | 3311 | 1760 | 2618 | 1392 | 20.8 | ACS800-404-2100-3 | 2xB5 + choke |

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

### Dimensions

| Frame size                            | Height<br>mm | Width<br>mm       | Depth<br>mm | Weight<br>kg | Noise level<br>dB(A) | Air flow<br>m³/h |
|---------------------------------------|--------------|-------------------|-------------|--------------|----------------------|------------------|
| IGBT supply unit (ISU)                |              |                   |             |              |                      |                  |
| R2i                                   | 401          | 165               | 193         | 9            | 62                   | 35               |
| R3i                                   | 466          | 173               | 232         | 12           | 62                   | 69               |
| R4i                                   | 525          | 240               | 252         | 15           | 62                   | 103              |
| R5i                                   | 673          | 265               | 276         | 23           | 65                   | 250              |
| R7i <sup>1)</sup>                     | 963          | 170               | 408         | 38           | 72 <sup>4)</sup>     | 800              |
| R8i                                   | 1397         | 245               | 596         | 130          | 74 <sup>4)</sup>     | 1280             |
| 2xR8i                                 | 1397         | 245 <sup>2)</sup> | 596         | 260          | 76 <sup>4)</sup>     | 2560             |
| 3xR8i                                 | 1397         | 245 <sup>2)</sup> | 596         | 390          | 78 <sup>4)</sup>     | 3840             |
| 4xR8i                                 | 1397         | 245 <sup>2)</sup> | 596         | 520          | 78 <sup>4)</sup>     | 5120             |
| 6xR8i                                 | 1397         | 245 <sup>2)</sup> | 596         | 780          | 80 <sup>4)</sup>     | 7680             |
| LCL-filter for IGBT supply unit (ISU) |              |                   |             |              |                      |                  |
| RLCL-01-5                             | 850          | 173               | 137         | 15           | 69                   | -                |
| RLCL-02-5                             | 850          | 173               | 137         | 15           | 69                   | -                |
| RLCL-03-5                             | 850          | 173               | 137         | 20           | 69                   | -                |
| RLCL-11-5                             | 920          | 265               | 169.5       | 40           | 69                   | -                |
| RLCL-12-5                             | 920          | 265               | 169.5       | 50           | 69                   | -                |
| ALCL-0X-X                             | 810          | 304               | 292         | 72           | -                    | 480              |
| ALCL-1X-X                             | 1397         | 240               | 499         | 180          | -                    | 400              |
| ALCL-2X-X                             | 1397         | 240               | 573         | 305          | -                    | 1280             |

| Frame size   | Height<br>mm | Width<br>mm       | Depth<br>mm       | Weight<br>kg      | Noise level<br>dB(A) | Air flow<br>m³/h |
|--|--------------|-------------------|-------------------|-------------------|----------------------|------------------|
| 6-pulse diode supply unit (DSU)                      |              |                   |                   |                   |                      |                  |
| D3   | 1480         | 234               | 400 <sup>3)</sup> | 130               | 65                   | 720              |
| D4   | 1480         | 234               | 400 <sup>3)</sup> | 180               | 65                   | 720              |
| 2XD4   | 1480         | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 360               | 67                   | 1440             |
| 3XD4   | 1480         | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 540               | 68                   | 2160             |
| 4XD4   | 1480         | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 720               | 69                   | 2880             |
| 5XD4   | 1480         | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 900               | 70                   | 3600             |
| 6-pulse regenerative thyristor supply unit (TSU)     |              |                   |                   |                   |                      |                  |
| 2XB4   | 1808         | 340 <sup>2)</sup> | 430               | 110 <sup>2)</sup> | 72 <sup>5)</sup>     | 2000             |
| 2XB5   | 1808         | 420 <sup>2)</sup> | 430               | 150 <sup>2)</sup> | 75 <sup>5)</sup>     | 3400             |
| DC chokes for 6-pulse regenerative supply unit (TSU) |              |                   |                   |                   |                      |                  |
| choke B4   | 771          | 348               | 449               | 110               | -                    | 600              |
| choke B5   | 991          | 348               | 449               | 150               | -                    | 700              |
| 12-pulse diode supply unit (DSU)                     |              |                   |                   |                   |                      |                  |
| D4   | 1480         | 234               | 400 <sup>3)</sup> | 180               | 65                   | 720              |
| 2XD4   | 1480         | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 360               | 67                   | 1440             |
| 3XD4   | 1480         | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 540               | 68                   | 2160             |
| 4XD4   | 1480         | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 720               | 69                   | 2880             |
| 5XD4   | 1480         | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 900               | 70                   | 3600             |

<sup>1)</sup> Dimensions do not include cooling fan.

<sup>2)</sup> Single module only.

<sup>3)</sup> Cable connections need additional space (about 200 mm) behind the module.

<sup>4)</sup> Supply modules + filters.

<sup>5)</sup> Supply modules + choke.

# Ratings, types and voltages

## 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 | Type designation  | Frame size |
|--|-----------------------|------------------------------|--------------------|-------------|----------------------|-----------------------|------------------|-------------------|------------|
| $I_{\text{cont. max}}$<br>A  | $I_{\text{max}}$<br>A | $P_{\text{cont. max}}$<br>kW | $I_N$<br>A         | $P_N$<br>kW | $I_{\text{hd}}$<br>A | $P_{\text{hd}}$<br>kW | kW               |                   |            |
| $U_N = 500\text{ V}$ (Range 380 to 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                | 75          | 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<br>mm | Width<br>mm       | Depth<br>mm       | Weight<br>kg | Noise level<br>dB(A) | Air flow<br>m³/h |
|-------------------|--------------|-------------------|-------------------|--------------|----------------------|------------------|
| R2i               | 401          | 165               | 193 <sup>3)</sup> | 9            | 62                   | 35               |
| R3i               | 466          | 173               | 232 <sup>3)</sup> | 12           | 62                   | 69               |
| R4i               | 525          | 240               | 252 <sup>3)</sup> | 15           | 62                   | 103              |
| R5i               | 673          | 265               | 276 <sup>3)</sup> | 23           | 65                   | 168              |
| R7i <sup>1)</sup> | 963          | 170               | 408               | 38           | 64                   | 800              |
| R8i               | 1397         | 245               | 596               | 130          | 72                   | 1280             |
| 2xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 260          | 74                   | 2560             |
| 3xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 390          | 76                   | 3840             |
| 4xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 520          | 76                   | 5120             |
| 5xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 650          | 77                   | 6400             |
| 6xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 780          | 78                   | 7680             |

<sup>1)</sup> Dimensions do not include cooling fan.

<sup>2)</sup> Single module only.

<sup>3)</sup> The depth is without control panels and options.

| Type                 | Height<br>mm | Width<br>mm | Depth<br>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.                                  |
| $I_{\text{max}}$                 | 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                   |   |
| $I_{\text{hd}}$                  | Continuous current allowing 150% $I_{\text{hd}}$ for 1 min / 5 min at 40 °C.                            |
| $P_{\text{hd}}$                  | 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  $I_{\text{max}}$ ).

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, types and voltages

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

ACS800 - X04 - XXXX - 

|   |
|---|
| 5 |
| 7 |

 + XXXX

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

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

| IGBT supply module (ISU) |      |       |      |      |      |      |      |      |      |                   |                     |
|--------------------------|------|-------|------|------|------|------|------|------|------|-------------------|---------------------|
| 5.1                      | 6.1  | 8.9   | 4.4  | 4.4  | 5.9  | 4.3  | 4.4  | 3.1  | 0.3  | ACS800-204-0004-5 | R2i + RLCL-01-5     |
| 10.8                     | 13.0 | 18.9  | 9.3  | 9.2  | 12.5 | 9.2  | 9.4  | 6.7  | 0.6  | ACS800-204-0009-5 | R2i + RLCL-02-5     |
| 27.7                     | 33.6 | 48.4  | 24.0 | 23.8 | 32.2 | 23.8 | 24.2 | 17.1 | 0.9  | ACS800-204-0021-5 | R3i + RLCL-03-5     |
| 39.2                     | 47.4 | 68.7  | 33.9 | 33.6 | 45.5 | 33.6 | 34.3 | 24.3 | 1.5  | ACS800-204-0031-5 | R4i + RLCL-11-5     |
| 78.3                     | 94.7 | 137.9 | 67.8 | 67.1 | 91.0 | 67.1 | 69.0 | 48.8 | 2.4  | ACS800-204-0061-5 | R5i + RLCL-12-5     |
| 180                      | 218  | 327   | 156  | 154  | 210  | 148  | 163  | 115  | 4    | ACS800-204-0165-5 | R7i + ALCL-04-5     |
| 220                      | 267  | 399   | 191  | 189  | 256  | 181  | 200  | 141  | 4.4  | ACS800-204-0195-5 | R7i + ALCL-05-5     |
| 270                      | 327  | 475   | 234  | 231  | 314  | 222  | 245  | 173  | 6.2  | ACS800-204-0230-5 | R8i + ALCL-12-5     |
| 360                      | 436  | 633   | 312  | 309  | 419  | 296  | 327  | 231  | 8.4  | ACS800-204-0310-5 | R8i + ALCL-13-5     |
| 450                      | 546  | 792   | 390  | 386  | 524  | 370  | 408  | 289  | 10.6 | ACS800-204-0390-5 | R8i + ALCL-14-5     |
| 600                      | 727  | 1056  | 520  | 514  | 698  | 494  | 544  | 385  | 14.9 | ACS800-204-0520-5 | R8i + ALCL-15-5     |
| 900                      | 1091 | 1584  | 779  | 772  | 1048 | 741  | 816  | 577  | 21.2 | ACS800-204-0780-5 | 2xR8i + ALCL-24-5   |
| 1176                     | 1426 | 2069  | 1018 | 1008 | 1369 | 968  | 1067 | 754  | 28.9 | ACS800-204-1020-5 | 2xR8i + ALCL-25-5   |
| 1746                     | 2117 | 3072  | 1512 | 1497 | 2032 | 1437 | 1584 | 1120 | 42.7 | ACS800-204-1510-5 | 3xR8i + 2xALCL-24-5 |
| 2304                     | 2794 | 4054  | 1995 | 1975 | 2682 | 1896 | 2090 | 1478 | 56.1 | ACS800-204-2000-5 | 4xR8i + 2xALCL-25-5 |
| 3420                     | 4147 | 6017  | 2962 | 2932 | 3981 | 2815 | 3102 | 2193 | 83   | ACS800-204-2960-5 | 6xR8i + 3xALCL-25-5 |

| 6-pulse diode supply unit (DSU) |      |      |      |      |      |      |      |      |     |                   |      |
|---------------------------------|------|------|------|------|------|------|------|------|-----|-------------------|------|
| 286                             | 350  | 462  | 247  | 229  | 335  | 219  | 280  | 183  | 1.5 | ACS800-304-0320-7 | D3   |
| 408                             | 500  | 700  | 353  | 327  | 480  | 314  | 400  | 262  | 2.4 | ACS800-304-0450-7 | D3   |
| 571                             | 700  | 924  | 495  | 458  | 670  | 439  | 560  | 367  | 3.8 | ACS800-704-0640-7 | D4   |
| 816                             | 1000 | 1400 | 707  | 655  | 960  | 629  | 800  | 524  | 5   | ACS800-704-0910-7 | D4   |
| 1143                            | 1400 | 1848 | 990  | 917  | 1340 | 877  | 1120 | 733  | 7.6 | ACS800-704-1370-7 | 2xD4 |
| 1518                            | 1860 | 2604 | 1315 | 1218 | 1790 | 1172 | 1490 | 976  | 10  | ACS800-704-1810-7 | 2xD4 |
| 2278                            | 2790 | 3906 | 1972 | 1827 | 2685 | 1758 | 2230 | 1460 | 15  | ACS800-704-2720-7 | 3xD4 |
| 3037                            | 3720 | 5208 | 2630 | 2436 | 3580 | 2344 | 2980 | 1951 | 20  | ACS800-704-3630-7 | 4xD4 |
| 3796                            | 4650 | 6510 | 3287 | 3045 | 4475 | 2930 | 3720 | 2436 | 25  | ACS800-704-4540-7 | 5xD4 |

| 6-pulse regenerative thyristor supply unit (TSU) |      |      |      |      |      |      |      |      |      |                   |              |
|--|------|------|------|------|------|------|------|------|------|-------------------|--------------|
| 981  | 1202 | 1947 | 850  | 792  | 1137 | 749  | 881  | 580  | 6.3  | ACS800-404-0850-5 | 2xB4 + choke |
| 1617   | 1980 | 3208 | 1400 | 1304 | 1872 | 1233 | 1450 | 955  | 10.2 | ACS800-404-1400-5 | 2xB4 + choke |
| 2449   | 3000 | 4860 | 2120 | 1976 | 2838 | 1869 | 2240 | 1478 | 16.5 | ACS800-404-2120-5 | 2xB5 + choke |
| 2858   | 3500 | 5670 | 2475 | 2305 | 3310 | 2180 | 2618 | 1724 | 20.8 | ACS800-404-2600-5 | 2xB5 + choke |

| 12-pulse diode supply unit (DSU) |      |      |      |      |      |      |      |      |     |                   |      |
|----------------------------------|------|------|------|------|------|------|------|------|-----|-------------------|------|
| 571                              | 700  | 924  | 495  | 458  | 670  | 439  | 560  | 367  | 3.8 | ACS800-704-0640-7 | D4   |
| 816                              | 1000 | 1400 | 707  | 655  | 960  | 629  | 800  | 524  | 5   | ACS800-704-0910-7 | D4   |
| 1143                             | 1400 | 1848 | 990  | 917  | 1340 | 877  | 1120 | 733  | 7.6 | ACS800-704-1370-7 | 2xD4 |
| 1518                             | 1860 | 2604 | 1315 | 1218 | 1790 | 1172 | 1490 | 976  | 10  | ACS800-704-1810-7 | 2xD4 |
| 2278                             | 2790 | 3906 | 1972 | 1827 | 2685 | 1758 | 2230 | 1460 | 15  | ACS800-704-2720-7 | 3xD4 |
| 3037                             | 3720 | 5208 | 2630 | 2436 | 3580 | 2344 | 2980 | 1951 | 20  | ACS800-704-3630-7 | 4xD4 |
| 3796                             | 4650 | 6510 | 3287 | 3045 | 4475 | 2930 | 3720 | 2436 | 25  | ACS800-704-4540-7 | 5xD4 |

### Dimensions

| Frame size | Height<br>mm | Width<br>mm | Depth<br>mm | Weight<br>kg | Noise level<br>dB(A) | Air flow<br>m³/h |
|------------|--------------|-------------|-------------|--------------|----------------------|------------------|
|------------|--------------|-------------|-------------|--------------|----------------------|------------------|

#### IGBT supply unit (ISU)

|                   |      |                   |     |     |                  |      |
|-------------------|------|-------------------|-----|-----|------------------|------|
| R2i               | 401  | 165               | 193 | 9   | 62               | 35   |
| R3i               | 466  | 173               | 232 | 12  | 62               | 69   |
| R4i               | 525  | 240               | 252 | 15  | 62               | 103  |
| R5i               | 673  | 265               | 276 | 23  | 65               | 250  |
| R7i <sup>1)</sup> | 963  | 170               | 408 | 38  | 72 <sup>4)</sup> | 800  |
| R8i               | 1397 | 245               | 596 | 130 | 74 <sup>4)</sup> | 1280 |
| 2xR8i             | 1397 | 245 <sup>2)</sup> | 596 | 260 | 76 <sup>4)</sup> | 2560 |
| 3xR8i             | 1397 | 245 <sup>2)</sup> | 596 | 390 | 78 <sup>4)</sup> | 3840 |
| 4xR8i             | 1397 | 245 <sup>2)</sup> | 596 | 520 | 78 <sup>4)</sup> | 5120 |
| 6xR8i             | 1397 | 245 <sup>2)</sup> | 596 | 780 | 80 <sup>4)</sup> | 7680 |

#### LCL-filter for IGBT supply unit (ISU)

|           |      |     |       |     |    |      |
|-----------|------|-----|-------|-----|----|------|
| RLCL-01-5 | 850  | 173 | 137   | 15  | 69 | -    |
| RLCL-02-5 | 850  | 173 | 137   | 15  | 69 | -    |
| RLCL-03-5 | 850  | 173 | 137   | 20  | 69 | -    |
| RLCL-11-5 | 920  | 265 | 169.5 | 40  | 69 | -    |
| RLCL-12-5 | 920  | 265 | 169.5 | 50  | 69 | -    |
| ALCL-0X-X | 810  | 304 | 292   | 72  | -  | 480  |
| ALCL-1X-X | 1397 | 240 | 499   | 180 | -  | 400  |
| ALCL-2X-X | 1397 | 240 | 573   | 305 | -  | 1280 |

| Frame size | Height<br>mm | Width<br>mm | Depth<br>mm | Weight<br>kg | Noise level<br>dB(A) | Air flow<br>m³/h |
|------------|--------------|-------------|-------------|--------------|----------------------|------------------|
|------------|--------------|-------------|-------------|--------------|----------------------|------------------|

#### 6-pulse diode supply unit (DSU)

|      |      |                   |                   |     |    |      |
|------|------|-------------------|-------------------|-----|----|------|
| D3   | 1480 | 234               | 400 <sup>3)</sup> | 130 | 65 | 720  |
| D4   | 1480 | 234               | 400 <sup>3)</sup> | 180 | 65 | 720  |
| 2XD4 | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 360 | 67 | 1440 |
| 3XD4 | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 540 | 68 | 2160 |
| 4XD4 | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 720 | 69 | 2880 |
| 5XD4 | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 900 | 70 | 3600 |

#### 6-pulse regenerative thyristor supply unit (TSU)

|      |      |                   |     |                   |                  |      |
|------|------|-------------------|-----|-------------------|------------------|------|
| 2XB4 | 1808 | 340 <sup>2)</sup> | 430 | 110 <sup>2)</sup> | 72 <sup>5)</sup> | 2000 |
| 2XB5 | 1808 | 420 <sup>2)</sup> | 430 | 150 <sup>2)</sup> | 75 <sup>5)</sup> | 3400 |

#### DC chokes for 6-pulse regenerative supply unit (TSU)

|          |     |     |     |     |   |     |
|----------|-----|-----|-----|-----|---|-----|
| choke B4 | 771 | 348 | 449 | 110 | - | 600 |
| choke B5 | 991 | 348 | 449 | 150 | - | 700 |

#### 12-pulse diode supply unit (DSU)

|      |      |                   |                   |     |    |      |
|------|------|-------------------|-------------------|-----|----|------|
| D4   | 1480 | 234               | 400 <sup>3)</sup> | 180 | 65 | 720  |
| 2XD4 | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 360 | 67 | 1440 |
| 3XD4 | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 540 | 68 | 2160 |
| 4XD4 | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 720 | 69 | 2880 |
| 5XD4 | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 900 | 70 | 3600 |

<sup>1)</sup> Dimensions do not include cooling fan.

<sup>2)</sup> Single module only.

<sup>3)</sup> Cable connections need additional space (about 200 mm) behind the module.

<sup>4)</sup> Supply modules + filters.

<sup>5)</sup> Supply modules + choke.



# Ratings, types and voltages

## 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 | Type designation  | Frame size |
|--|-----------------------|------------------------------|--------------------|-------------|----------------------|-----------------------|------------------|-------------------|------------|
| $I_{\text{cont. max}}$<br>A  | $I_{\text{max}}$<br>A | $P_{\text{cont. max}}$<br>kW | $I_N$<br>A         | $P_N$<br>kW | $I_{\text{hd}}$<br>A | $P_{\text{hd}}$<br>kW | kW               |                   |            |
| $U_N = 690\text{ V}$ (Range 525 to 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<br>mm | Width<br>mm       | Depth<br>mm       | Weight<br>kg | Noise level<br>dB(A) | Air flow<br>m³/h |
|-------------------|--------------|-------------------|-------------------|--------------|----------------------|------------------|
| R2i               | 401          | 165               | 193 <sup>3)</sup> | 9            | 62                   | 35               |
| R3i               | 466          | 173               | 232 <sup>3)</sup> | 12           | 62                   | 69               |
| R4i               | 525          | 240               | 252 <sup>3)</sup> | 15           | 62                   | 103              |
| R5i               | 673          | 265               | 276 <sup>3)</sup> | 23           | 65                   | 168              |
| R7i <sup>1)</sup> | 963          | 170               | 408               | 38           | 64                   | 800              |
| R8i               | 1397         | 245               | 596               | 130          | 72                   | 1280             |
| 2xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 260          | 74                   | 2560             |
| 3xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 390          | 76                   | 3840             |
| 4xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 520          | 76                   | 5120             |
| 5xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 650          | 77                   | 6400             |
| 6xR8i             | 1397         | 245 <sup>2)</sup> | 596               | 780          | 78                   | 7680             |

<sup>1)</sup> Dimensions do not include cooling fan.

<sup>2)</sup> Single module only.

<sup>3)</sup> The depth is without control panels and options.

| Type designation     | Height<br>mm | Width<br>mm | Depth<br>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.                                  |
| $I_{\text{max}}$   | 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   |   |
| $I_{\text{hd}}$  | Continuous current allowing 150% $I_{\text{hd}}$ for 1 min / 5 min at 40 °C.                            |
| $P_{\text{hd}}$  | 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 $I_{\text{max}}$ ).                     |   |
| 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, types and voltages

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

ACS800 - X04 - XXXX - 7 + XXXX

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

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

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

### Dimensions

| Frame size | Height<br>mm | Width<br>mm | Depth<br>mm | Weight<br>kg | Noise level<br>dB(A) | Air flow<br>m³/h |
|------------|--------------|-------------|-------------|--------------|----------------------|------------------|
|------------|--------------|-------------|-------------|--------------|----------------------|------------------|

| IGBT supply unit (ISU) |      |                   |     |     |                  |      |
|------------------------|------|-------------------|-----|-----|------------------|------|
| R7i <sup>1)</sup>      | 963  | 170               | 408 | 38  | 72 <sup>4)</sup> | 800  |
| R8i                    | 1397 | 245               | 596 | 130 | 74 <sup>4)</sup> | 1280 |
| 2xR8i                  | 1397 | 245 <sup>2)</sup> | 596 | 260 | 76 <sup>4)</sup> | 2560 |
| 3xR8i                  | 1397 | 245 <sup>2)</sup> | 596 | 390 | 78 <sup>4)</sup> | 3840 |
| 4xR8i                  | 1397 | 245 <sup>2)</sup> | 596 | 520 | 78 <sup>4)</sup> | 5120 |
| 6xR8i                  | 1397 | 245 <sup>2)</sup> | 596 | 780 | 80 <sup>4)</sup> | 7680 |

| LCL-filter for IGBT supply unit (ISU) |      |     |     |     |   |      |
|---------------------------------------|------|-----|-----|-----|---|------|
| ALCL-0X-X                             | 810  | 304 | 292 | 72  | - | 480  |
| ALCL-1X-X                             | 1397 | 240 | 499 | 180 | - | 400  |
| ALCL-2X-X                             | 1397 | 240 | 573 | 305 | - | 1280 |

| 6-pulse diode supply unit (DSU) |      |                   |                   |     |    |      |
|---------------------------------|------|-------------------|-------------------|-----|----|------|
| D3                              | 1480 | 234               | 400 <sup>3)</sup> | 130 | 65 | 720  |
| D4                              | 1480 | 234               | 400 <sup>3)</sup> | 180 | 65 | 720  |
| 2xD4                            | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 360 | 67 | 1440 |
| 3xD4                            | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 540 | 68 | 2160 |
| 4xD4                            | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 720 | 69 | 2880 |
| 5xD4                            | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 900 | 70 | 3600 |

<sup>1)</sup> Dimensions do not include cooling fan.

<sup>2)</sup> Single module only.

<sup>3)</sup> Cable connections need additional space (about 200 mm) behind the module.

<sup>4)</sup> Supply modules + filters.

<sup>5)</sup> Supply modules + choke.

| Frame size | Height<br>mm | Width<br>mm | Depth<br>mm | Weight<br>kg | Noise level<br>dB(A) | Air flow<br>m³/h |
|------------|--------------|-------------|-------------|--------------|----------------------|------------------|
|------------|--------------|-------------|-------------|--------------|----------------------|------------------|

| 6-pulse regenerative thyristor supply unit (TSU) |      |                   |     |                   |                  |      |
|--|------|-------------------|-----|-------------------|------------------|------|
| 2XB4   | 1808 | 340 <sup>2)</sup> | 430 | 110 <sup>2)</sup> | 72 <sup>5)</sup> | 2000 |
| 2XB5   | 1808 | 420 <sup>2)</sup> | 430 | 150 <sup>2)</sup> | 75 <sup>5)</sup> | 3400 |

| DC chokes for 6-pulse regenerative supply unit (TSU) |     |     |     |     |   |     |
|--|-----|-----|-----|-----|---|-----|
| choke B4   | 771 | 348 | 449 | 110 | - | 600 |
| choke B5   | 991 | 348 | 449 | 150 | - | 700 |

| 12-pulse diode supply unit (DSU) |      |                   |                   |     |    |      |
|----------------------------------|------|-------------------|-------------------|-----|----|------|
| D4                               | 1480 | 234               | 400 <sup>3)</sup> | 180 | 65 | 720  |
| 2xD4                             | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 360 | 67 | 1440 |
| 3xD4                             | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 540 | 68 | 2160 |
| 4xD4                             | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 720 | 69 | 2880 |
| 5xD4                             | 1480 | 234 <sup>2)</sup> | 400 <sup>3)</sup> | 900 | 70 | 3600 |

| Nominal ratings                  |  |
|----------------------------------|--|
| $I_{\text{cont. max}}$           | Rated current available continuously without overloadability at 40 °C.       |
| $I_{\text{max}}$                 | 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                   |  |
| $I_{\text{hd}}$                  | Continuous current allowing 150% $I_{\text{hd}}$ for 1 min / 5 min at 40 °C. |
| $P_{\text{hd}}$                  | 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  $I_{\text{max}}$ ).

# Liquid-cooled modules

## ACS800-04LC/-X04LC



### Solutions for high power drives

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

### Customer specific design

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

### Advanced liquid-cooling

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

### Support for cabinet assembly

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

### Full selection of drive module products

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



# Ratings, types and voltages

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

|        |   |      |   |      |   |  |   |      |
|--------|---|------|---|------|---|--|---|------|
| ACS800 | - | 04LC | - | XXXX | - | <div>3</div> <div>5</div> <div>7</div> | + | XXXX |
|--------|---|------|---|------|---|--|---|------|

| Nominal ratings   |                       | No-overload use              | Light-overload use |             | Heavy-duty use       |                       | Heat dissipation | Mass flow <sup>1)</sup> | Type designation   | Frame size   |
|---|-----------------------|------------------------------|--------------------|-------------|----------------------|-----------------------|------------------|-------------------------|--------------------|--------------|
| $I_{\text{cont. max}}$<br>A   | $I_{\text{max}}$<br>A | $P_{\text{cont. max}}$<br>kW | $I_N$<br>A         | $P_N$<br>kW | $I_{\text{hd}}$<br>A | $P_{\text{hd}}$<br>kW | kW               | l/min                   |                    |              |
| <b><math>U_N = 400</math> V (Range 380 to 415 V) The power ratings are valid at nominal voltage 400 V.</b>  |                       |                              |                    |             |                      |                       |                  |                         |                    |              |
| 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 |
| <b><math>U_N = 500</math> V (Range 380 to 500 V). The power ratings are valid at nominal voltage 500 V.</b> |                       |                              |                    |             |                      |                       |                  |                         |                    |              |
| 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 |
| <b><math>U_N = 690</math> V (Range 525 to 690 V). The power ratings are valid at nominal voltage 690 V.</b> |                       |                              |                    |             |                      |                       |                  |                         |                    |              |
| 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 |

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

## Dimensions

| Frame size | Height<br>mm | Width<br>mm | Depth <sup>1)</sup><br>mm | Weight<br>kg |
|------------|--------------|-------------|---------------------------|--------------|
| D3         | 975          | 311         | 474                       | 140          |
| D4         | 975          | 311         | 474                       | 210          |
| R8i        | 918          | 214         | 478                       | 115          |

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

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



# Ratings, types and voltages

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

ACS800 - X04LC - XXXX - 3 + XXXX

### Inverter unit modules (INU)

| Nominal ratings  |                       | No-overload use              | Light-overload use |             | Heavy-duty use       |                       | Losses <sup>1)</sup>    |  | Mass flow <sup>2)</sup> | Type designation    | Frame size |
|--|-----------------------|------------------------------|--------------------|-------------|----------------------|-----------------------|-------------------------|--|-------------------------|---------------------|------------|
| $I_{\text{cont. max}}$<br>A  | $I_{\text{max}}$<br>A | $P_{\text{cont. max}}$<br>kW | $I_N$<br>A         | $P_N$<br>kW | $I_{\text{hd}}$<br>A | $P_{\text{hd}}$<br>kW | $P_{\text{loss}}$<br>kW |  | l/min                   |                     |            |
| $U_N = 400\text{ V}$ (Range 380 to 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 <sup>1)</sup>    |                           |                            |                             | Mass flow <sup>2)</sup> | Type designation    | Frame size |
|--|----------------------------------|----------------------------|--------------|-----------------------------------|--------------------|-------------|---------------------------|-----------------------|-------------------------|---------------------------|----------------------------|-----------------------------|-------------------------|---------------------|------------|
| $I_{\text{cont. max}}$<br>A (AC)   | $I_{\text{cont. max}}$<br>A (DC) | $I_{\text{max}}$<br>A (DC) | $S_N$<br>kVA | $P_{\text{cont. max}}$<br>kW (DC) | $I_N$<br>A (DC)    | $P_N$<br>kW | $I_{\text{hd}}$<br>A (DC) | $P_{\text{hd}}$<br>kW | $P_{\text{loss}}$<br>kW | $P_{\text{lossSU}}$<br>kW | $P_{\text{lossLCL}}$<br>kW | $P_{\text{loss tot}}$<br>kW | l/min                   |                     |            |
| $U_N = 400\text{ V}$ (Range 380 to 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 unit 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 unit modules (DSU)  |                                  |                            |              |                                   |                    |             |                           |                       |                         |                           |                            |                             |                         |                     |            |
| 1143   | 1400                             | 1960                       | 792          | 756                               | 1344               | 726         | 1120                      | 605                   | 7.2                     | -                         | -                          | -                           | 19                      | ACS800-704LC-1370-7 | 1xD4       |
| 1796   | 2200                             | 3080                       | 1245         | 1188                              | 2112               | 1141        | 1760                      | 951                   | 11.8                    | -                         | -                          | -                           | 19                      | ACS800-704LC-2150-7 | 1xD4       |
| 2126   | 2604                             | 3646                       | 1473         | 1407                              | 2500               | 1350        | 2083                      | 1125                  | 13.0                    | -                         | -                          | -                           | 38                      | ACS800-704LC-2540-7 | 2xD4       |
| 3200   | 3919                             | 5487                       | 2217         | 2117                              | 3762               | 2032        | 3135                      | 1694                  | 19.7                    | -                         | -                          | -                           | 38                      | ACS800-704LC-3820-7 | 2xD4       |

- <sup>1)</sup> In totally enclosed cabinet 98% of losses are conducted to coolant, 2% to ambient air.  
<sup>2)</sup> Pressure loss 100 kPa. Hydrostatic pressure loss 120 kPa due to 2 m height difference.

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

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

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

# Ratings, types and voltages

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

ACS800

-

X04LC

-

XXXX

-

5

+

XXXX

### Inverter unit modules (INU)

| Nominal ratings  |                       | No-overload use              | Light-overload use  |                      | Heavy-duty use       |                       | Losses <sup>1)</sup>    | Mass flow <sup>2)</sup> | Type designation    | Frame size |
|--|-----------------------|------------------------------|---------------------|----------------------|----------------------|-----------------------|-------------------------|-------------------------|---------------------|------------|
| $I_{\text{cont. max}}$<br>A  | $I_{\text{max}}$<br>A | $P_{\text{cont. max}}$<br>kW | $I_{\text{N}}$<br>A | $P_{\text{N}}$<br>kW | $I_{\text{hd}}$<br>A | $P_{\text{hd}}$<br>kW | $P_{\text{loss}}$<br>kW |                         |                     |            |
| U <sub>N</sub> = 500 V (Range 380 to 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                   | 0.1                     | 6                       | ACS800-104LC-0004-5 | R2i        |
| 6.2  | 8.2                   | 3                            | 5.6                 | 3                    | 4.2                  | 2.2                   | 0.1                     | 6                       | ACS800-104LC-0005-5 | R2i        |
| 8.1  | 10.8                  | 4                            | 7.7                 | 4                    | 5.6                  | 3                     | 0.2                     | 6                       | ACS800-104LC-0006-5 | R2i        |
| 10.5   | 13.8                  | 5.5                          | 10                  | 5.5                  | 7.5                  | 4                     | 0.2                     | 6                       | ACS800-104LC-0009-5 | R2i        |
| 13.2   | 17.6                  | 7.5                          | 12                  | 7.5                  | 9.2                  | 5.5                   | 0.3                     | 6                       | ACS800-104LC-0011-5 | R2i        |
| 19   | 24                    | 11                           | 18                  | 11                   | 13                   | 7.5                   | 0.3                     | 6                       | ACS800-104LC-0016-5 | R3i        |
| 25   | 32                    | 15                           | 23                  | 15                   | 18                   | 11                    | 0.4                     | 6                       | ACS800-104LC-0020-5 | R3i        |
| 34   | 46                    | 18.5                         | 31                  | 18.5                 | 23                   | 15                    | 0.5                     | 6                       | ACS800-104LC-0025-5 | R3i        |
| 42   | 62                    | 22                           | 39                  | 22                   | 32                   | 18.5                  | 0.6                     | 6                       | ACS800-104LC-0030-5 | R4i        |
| 48   | 72                    | 30                           | 44                  | 30                   | 36                   | 22                    | 0.8                     | 6                       | ACS800-104LC-0040-5 | R4i        |
| 65   | 86                    | 37                           | 61                  | 37                   | 50                   | 30                    | 1.0                     | 6                       | ACS800-104LC-0050-5 | R5i        |
| 79   | 112                   | 45                           | 75                  | 45                   | 60                   | 37                    | 1.2                     | 6                       | ACS800-104LC-0060-5 | R5i        |
| 96   | 138                   | 55                           | 88                  | 55                   | 69                   | 45                    | 1.4                     | 6                       | ACS800-104LC-0070-5 | R5i        |
| 138  | 206                   | 90                           | 132                 | 90                   | 103                  | 55                    | 1.3                     | 13                      | ACS800-104LC-0120-5 | R7i        |
| 162  | 242                   | 110                          | 156                 | 110                  | 121                  | 75                    | 1.6                     | 13                      | ACS800-104LC-0140-5 | R7i        |
| 199  | 252                   | 132                          | 191                 | 132                  | 149                  | 90                    | 2.0                     | 13                      | ACS800-104LC-0170-5 | R7i        |
| 250  | 335                   | 160                          | 240                 | 160                  | 187                  | 110                   | 2.5                     | 13                      | ACS800-104LC-0220-5 | R7i        |
| 300  | 448                   | 200                          | 288                 | 200                  | 224                  | 160                   | 2.7                     | 13                      | ACS800-104LC-0260-5 | R7i        |
| 378  | 558                   | 250                          | 363                 | 250                  | 283                  | 200                   | 4.4                     | 13                      | ACS800-104LC-0330-5 | R8i        |
| 438  | 558                   | 315                          | 420                 | 315                  | 328                  | 250                   | 5.2                     | 13                      | ACS800-104LC-0380-5 | R8i        |
| 546  | 673                   | 355                          | 524                 | 355                  | 408                  | 315                   | 6.0                     | 13                      | ACS800-104LC-0470-5 | R8i        |
| 630  | 838                   | 400                          | 605                 | 400                  | 471                  | 355                   | 7.0                     | 13                      | ACS800-104LC-0550-5 | R8i        |
| 840  | 1042                  | 560                          | 806                 | 560                  | 628                  | 400                   | 8.9                     | 13                      | ACS800-104LC-0730-5 | R8i        |
| 1070   | 1280                  | 710                          | 1027                | 710                  | 800                  | 560                   | 11.5                    | 26                      | ACS800-104LC-0930-5 | 2xR8i      |
| 1235   | 1589                  | 900                          | 1185                | 900                  | 924                  | 630                   | 13.6                    | 26                      | ACS800-104LC-1070-5 | 2xR8i      |
| 1646   | 1996                  | 1120                         | 1581                | 1120                 | 1232                 | 710                   | 17.4                    | 26                      | ACS800-104LC-1430-5 | 2xR8i      |
| 1833   | 2344                  | 1250                         | 1760                | 1250                 | 1371                 | 900                   | 20.1                    | 39                      | ACS800-104LC-1590-5 | 3xR8i      |
| 2444   | 2943                  | 1600                         | 2347                | 1600                 | 1828                 | 1250                  | 25.9                    | 39                      | ACS800-104LC-2120-5 | 3xR8i      |
| 3226   | 3885                  | 2240                         | 3097                | 2240                 | 2413                 | 1600                  | 33.8                    | 52                      | ACS800-104LC-2790-5 | 4xR8i      |

| Nominal ratings  |  |                                   |                              | No-overload<br>use                       | Light-overload<br>use           | Heavy-duty<br>use           | Losses <sup>1)</sup>             |                              |                                |                                  | Mass<br>flow <sup>2)</sup>        | Type designation                   | Frame<br>size |                     |       |
|--|--|-----------------------------------|------------------------------|--|---------------------------------|-----------------------------|----------------------------------|------------------------------|--------------------------------|----------------------------------|-----------------------------------|------------------------------------|---------------|---------------------|-------|
| <i>I</i> <sub>cont. max</sub><br>A (AC)  | <i>I</i> <sub>cont.max</sub><br>A (DC) | <i>I</i> <sub>max</sub><br>A (DC) | <i>S</i> <sub>N</sub><br>kVA | <i>P</i> <sub>cont. max</sub><br>kW (DC) | <i>I</i> <sub>N</sub><br>A (DC) | <i>P</i> <sub>N</sub><br>kW | <i>I</i> <sub>hd</sub><br>A (DC) | <i>P</i> <sub>hd</sub><br>kW | <i>P</i> <sub>loss</sub><br>kW | <i>P</i> <sub>lossSU</sub><br>kW | <i>P</i> <sub>lossLCL</sub><br>kW | <i>P</i> <sub>loss tot</sub><br>kW | l/min         |                     |       |
| U <sub>N</sub> = 500 V (Range 380 to 500 V). The power ratings are valid at nominal 500 V. |  |                                   |                              |  |                                 |                             |                                  |                              |                                |                                  |                                   |                                    |               |                     |       |
| IGBT supply unit modules (ISU)   |  |                                   |                              |  |                                 |                             |                                  |                              |                                |                                  |                                   |                                    |               |                     |       |
| 324  | 393                                    | 475                               | 281                          | 278                                      | 377                             | 267                         | 294                              | 208                          | -                              | 4.5                              | 3.0                               | 7.5                                | 22            | ACS800-204LC-0280-5 | R8i   |
| 432  | 524                                    | 633                               | 374                          | 370                                      | 503                             | 356                         | 392                              | 277                          | -                              | 5.7                              | 3.1                               | 8.8                                | 22            | ACS800-204LC-0370-5 | R8i   |
| 540  | 655                                    | 792                               | 468                          | 463                                      | 629                             | 444                         | 490                              | 346                          | -                              | 6.8                              | 3.4                               | 10.2                               | 22            | ACS800-204LC-0470-5 | R8i   |
| 720  | 873                                    | 1056                              | 624                          | 617                                      | 838                             | 593                         | 653                              | 462                          | -                              | 9.0                              | 4.0                               | 13.0                               | 22            | ACS800-204LC-0620-5 | R8i   |
| 1080   | 1309                                   | 1584                              | 935                          | 926                                      | 1257                            | 889                         | 980                              | 693                          | -                              | 13.7                             | 5.6                               | 19.3                               | 40            | ACS800-204LC-0940-5 | 2xR8i |
| 1411   | 1711                                   | 2069                              | 1222                         | 1210                                     | 1643                            | 1162                        | 1280                             | 905                          | -                              | 17.6                             | 7.9                               | 25.5                               | 40            | ACS800-204LC-1220-5 | 2xR8i |
| 2095   | 2540                                   | 3072                              | 1814                         | 1796                                     | 2439                            | 1724                        | 1900                             | 1344                         | -                              | 26.1                             | 12.0                              | 38.2                               | 66            | ACS800-204LC-1810-5 | 3xR8i |
| 2765   | 3352                                   | 4054                              | 2394                         | 2370                                     | 3218                            | 2276                        | 2508                             | 1773                         | -                              | 34.3                             | 15.8                              | 50.2                               | 80            | ACS800-204LC-2390-5 | 4xR8i |

| 6-pulse, diode supply unit 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 unit modules (DSU) |      |      |      |      |      |      |      |      |      |   |   |   |    |                     |      |
| 1143                                      | 1400 | 1960 | 990  | 945  | 1344 | 908  | 1120 | 756  | 7.2  | - | - | - | 19 | ACS800-704LC-1370-7 | 1xD4 |
| 1796                                      | 2200 | 3080 | 1556 | 1486 | 2112 | 1426 | 1760 | 1188 | 11.8 | - | - | - | 19 | ACS800-704LC-2150-7 | 1xD4 |
| 2126                                      | 2604 | 3646 | 1841 | 1758 | 2500 | 1688 | 2083 | 1407 | 13.0 | - | - | - | 38 | ACS800-704LC-2540-7 | 2xD4 |
| 3200                                      | 3919 | 5487 | 2771 | 2646 | 3762 | 2540 | 3135 | 2117 | 19.7 | - | - | - | 38 | ACS800-704LC-3820-7 | 2xD4 |

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

<sup>2)</sup> Pressure loss 100 kPa. Hydrostatic pressure loss 120 kPa due to 2 m height difference.

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

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

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

# Ratings, types and voltages

## ACS800-X04LC, drive module, $U_N = 690$ V

ACS800 - X04LC - XXXX - 7 + XXXX

### Inverter unit modules (INU)

| Nominal ratings   |                       | No-overload use              |            | Light-overload use |                      | Heavy-duty use        |                         | Losses <sup>1)</sup> | Mass flow <sup>2)</sup> | Type designation    | Frame size |
|---|-----------------------|------------------------------|------------|--------------------|----------------------|-----------------------|-------------------------|----------------------|-------------------------|---------------------|------------|
| $I_{\text{cont. max}}$<br>A   | $I_{\text{max}}$<br>A | $P_{\text{cont. max}}$<br>kW | $I_N$<br>A | $P_N$<br>kW        | $I_{\text{hd}}$<br>A | $P_{\text{hd}}$<br>kW | $P_{\text{loss}}$<br>kW | l/min                |                         |                     |            |
| $U_N = 690$ V (Range 525 to 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<br>use                | Light-overload<br>use | Heavy-duty<br>use |                           | Losses <sup>1)</sup>  |                         |                           |                            | Mass<br>flow <sup>2)</sup>  | Type designation | Frame<br>size       |       |
|---|----------------------------------|----------------------------|--------------|-----------------------------------|-----------------------|-------------------|---------------------------|-----------------------|-------------------------|---------------------------|----------------------------|-----------------------------|------------------|---------------------|-------|
| $I_{\text{cont. max}}$<br>A (AC)  | $I_{\text{cont. max}}$<br>A (DC) | $I_{\text{max}}$<br>A (DC) | $S_N$<br>kVA | $P_{\text{cont. max}}$<br>kW (DC) | $I_N$<br>A (DC)       | $P_N$<br>kW       | $I_{\text{hd}}$<br>A (DC) | $P_{\text{hd}}$<br>kW | $P_{\text{loss}}$<br>kW | $P_{\text{lossSU}}$<br>kW | $P_{\text{lossLCL}}$<br>kW | $P_{\text{loss tot}}$<br>kW | l/min            |                     |       |
| $U_N = 690$ V (Range 525 to 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 unit 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 unit modules (DSU)   |                                  |                            |              |                                   |                       |                   |                           |                       |                         |                           |                            |                             |                  |                     |       |
| 1143  | 1400                             | 1960                       | 1366         | 1305                              | 1344                  | 1252              | 1120                      | 1044                  | 7.2                     | -                         | -                          | -                           | 19               | ACS800-704LC-1370-7 | 1xD4  |
| 1796  | 2200                             | 3080                       | 2147         | 2050                              | 2112                  | 1968              | 1760                      | 1640                  | 11.8                    | -                         | -                          | -                           | 19               | ACS800-704LC-2150-7 | 1xD4  |
| 2126  | 2604                             | 3646                       | 2541         | 2426                              | 2500                  | 2329              | 2083                      | 1941                  | 13.0                    | -                         | -                          | -                           | 38               | ACS800-704LC-2540-7 | 2xD4  |
| 3200  | 3919                             | 5487                       | 3824         | 3652                              | 3762                  | 3506              | 3135                      | 2921                  | 19.7                    | -                         | -                          | -                           | 38               | ACS800-704LC-3820-7 | 2xD4  |

- <sup>1)</sup> In totally enclosed cabinet 98% of losses are conducted to coolant, 2% to ambient air.  
<sup>2)</sup> Pressure loss 100 kPa. Hydrostatic pressure loss 120 kPa due to 2 m height difference.

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

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

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<br>mm | Width<br>mm       | Depth <sup>1)</sup><br>mm | Weight<br>kg |
|------------|--------------|-------------------|---------------------------|--------------|
| D3         | 975          | 311               | 474                       | 140          |
| D4         | 975          | 311               | 474                       | 210          |
| R2i        | 401          | 165               | 193 <sup>1)</sup>         | 9            |
| R3i        | 466          | 173               | 232 <sup>1)</sup>         | 12           |
| R4i        | 535          | 240               | 252 <sup>1)</sup>         | 15           |
| R5i        | 673          | 265               | 276 <sup>1)</sup>         | 23           |
| R7i        | 880          | 210               | 475                       | 85           |
| R8i        | 880          | 210               | 475                       | 127          |
| 2xR8i      | 880          | 210 <sup>2)</sup> | 475                       | 254          |
| 3xR8i      | 880          | 210 <sup>2)</sup> | 475                       | 381          |
| 4xR8i      | 880          | 210 <sup>2)</sup> | 475                       | 508          |

<sup>1)</sup> The depth is without control panels and options.

<sup>2)</sup> Single module only

## Liquid cooling unit

| Nominal ratings    |                               |                    |                        | Cooling information / Losses |                           |                       | Cooling media       |                     | Type designation   |
|--------------------|-------------------------------|--------------------|------------------------|------------------------------|---------------------------|-----------------------|---------------------|---------------------|--------------------|
| $P_{\max}$         | Internal mass flow at 120 kPa | External mass flow | External pressure loss | $P_{\text{loss}}$            | $P_{\text{loss coolant}}$ | $P_{\text{loss air}}$ | Internal liquid qty | External liquid qty |                    |
| kW                 | l/min                         | l/min              | kPa                    | kW                           | kW                        | kW                    | l                   | l                   |                    |
| Range 380 to 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<br>mm | Width<br>mm | Depth<br>mm | Weight<br>kg | Type designation   |
|--------------|-------------|-------------|--------------|--------------------|
| 2003         | 330         | 644         | 200          | ACS800-1007LC-0070 |
| 2003         | 630         | 644         | 400          | ACS800-1007LC-0195 |





# Brake options

## Brake chopper

The ACS800 series has built-in 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.

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

| ACS800 type designation | Brake chopper power          | Brake resistor(s) |           |            |                  |
|-------------------------|------------------------------|-------------------|-----------|------------|------------------|
|                         | Continuous $P_{brcont}$ [kW] | Type designation  | $R$ [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               |

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

| ACS800 type designation | Brake chopper power          | Brake resistor(s) |           |            |                  |
|-------------------------|------------------------------|-------------------|-----------|------------|------------------|
|                         | Continuous $P_{brcont}$ [kW] | Type designation  | $R$ [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             |

## 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

| ACS800 type designation | 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 designation  | $R$ [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               |

| ACS800 type designation | 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 designation  | $R$ [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<sub>N</sub> = 500 V (Range 380 to 500 V)

| ACS800<br>type designation | Brake chopper                                | Brake resistor(s) |                   |                              |                                  |  |
|----------------------------|--|-------------------|-------------------|------------------------------|----------------------------------|--|
|                            | power  | Type designation  | <i>R</i><br>[Ohm] | <i>E<sub>r</sub></i><br>[kJ] | <i>P<sub>rcont</sub></i><br>[kW] |  |
|                            | Continuous<br><i>P<sub>brcont</sub></i> [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                             |  |

U<sub>N</sub> = 690 V (Range 525 to 690 V)

| ACS800<br>type designation | Brake chopper<br>power                 | Brake resistor(s) |              |               |                            |  |
|----------------------------|--|-------------------|--------------|---------------|----------------------------|--|
|                            | Continuous<br>$P_{\text{brcont}}$ [kW] | Type designation  | $R$<br>[Ohm] | $E_r$<br>[kJ] | $P_{\text{rcont}}$<br>[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 <sup>®</sup>                     | 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                          |  |

| Brake resistor   | Height | Width | Depth | Weight |
|------------------|--------|-------|-------|--------|
| type designation | mm     | mm    | mm    | 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     |



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| ACS800<br>type designation | Brake chopper power                    |  |  |   | Brake resistor(s) |                |                           |                                |
|----------------------------|--|--|--|---|-------------------|----------------|---------------------------|--------------------------------|
|                            | 5/60 s<br><i>P</i> <sub>br5</sub> [kW] | 10/60 s<br><i>P</i> <sub>br10</sub> [kW] | 30/60 s<br><i>P</i> <sub>br30</sub> [kW] | Continuous<br><i>P</i> <sub>brcont</sub> [kW] | Type designation  | <i>R</i> [Ohm] | <i>E<sub>r</sub></i> [kJ] | <i>P</i> <sub>rcont</sub> [kW] |
| ACS800-04(M)-0170-5        | 165                                    | 132 <sup>2)</sup>                        | 120                                      | 80  | SAFUR200F500      | 2.70           | 5400                      | 13.5                           |
| ACS800-04(M)-0210-5        | 198                                    | 132 <sup>2)</sup>                        | 120                                      | 80  | SAFUR200F500      | 2.70           | 5400                      | 13.5                           |
| ACS800-04(M)-0260-5        | 198 <sup>1)</sup>                      | 132 <sup>2)</sup>                        | 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 <sup>4)</sup>                        | 300                                      | 170   | 4xSAFUR125F500    | 1.00           | 14400                     | 36                             |
| ACS800-04(M)-0610-5        | 600 <sup>3)</sup>                      | 400 <sup>4)</sup>                        | 300                                      | 170   | 4xSAFUR125F500    | 1.00           | 14400                     | 36                             |

| ACS800<br>type designation | Brake chopper power                    |  |  |   | Brake resistor(s) |                |                           |                                |
|----------------------------|--|--|--|---|-------------------|----------------|---------------------------|--------------------------------|
|                            | 5/60 s<br><i>P</i> <sub>br5</sub> [kW] | 10/60 s<br><i>P</i> <sub>br10</sub> [kW] | 30/60 s<br><i>P</i> <sub>br30</sub> [kW] | Continuous<br><i>P</i> <sub>brcont</sub> [kW] | Type designation  | <i>R</i> [Ohm] | <i>E<sub>r</sub></i> [kJ] | <i>P</i> <sub>rcont</sub> [kW] |
| ACS800-04(M)-0140-7        | 125 <sup>5)</sup>                      | 110                                      | 90                                       | 75  | SAFUR80F500       | 6.00           | 2400                      | 6                              |
| ACS800-04(M)-0170-7        | 125 <sup>6)</sup>                      | 110                                      | 90                                       | 75  | SAFUR80F500       | 6.00           | 2400                      | 6                              |
| ACS800-04(M)-0210-7        | 125 <sup>6)</sup>                      | 110                                      | 90                                       | 75  | SAFUR80F500       | 6.00           | 2400                      | 6                              |
| ACS800-04(M)-0260-7        | 135 <sup>7)</sup>                      | 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                             |

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

|                          |              |
|--------------------------|--------------|
| <i>P</i> <sub>br5</sub>  | 5 s / 1 min  |
| <i>P</i> <sub>br10</sub> | 10 s / 1 min |
| <i>P</i> <sub>br30</sub> | 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<sub>r</sub>*. (*E<sub>r</sub>* varies depending on the resistor).

|                            |   |
|----------------------------|---|
| <i>P</i> <sub>brcont</sub> | Continuous brake chopper power. The value applies to the minimum resistance value. With a higher resistance value the <i>P</i> <sub>brcont</sub> may increase in some ACS800-02/07 units. |
| <i>R</i>                   | Resistance value for the listed resistor type. Note: This is also the minimum allowable resistance value for the brake resistor.  |
| <i>E<sub>r</sub></i>       | 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.                    |
| <i>P</i> <sub>rcont</sub>  | Continuous power (heat) dissipation of the resistor when placed correctly. Energy <i>E<sub>r</sub></i> dissipates in 400 seconds.   |

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

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

# Brake options

## Brake chopper and resistor options

### for ACS800-04 in frame sizes 2xR8i

| Type designation                            | Nominal ratings     |            |                |                |                   | Duty cycle<br>(1 min / 5 min) |                | Duty cycle<br>(10 s / 60 s) |                | $E_r$ | Brake chopper<br>type | Resistor type      |
|---|---------------------|------------|----------------|----------------|-------------------|-------------------------------|----------------|-----------------------------|----------------|-------|-----------------------|--------------------|
|   | $P_{br. max}$<br>kW | $R$<br>ohm | $I_{max}$<br>A | $I_{rms}$<br>A | $P_{cont.}$<br>kW | $P_{br.}$<br>kW               | $I_{rms}$<br>A | $P_{br.}$<br>kW             | $I_{rms}$<br>A | $kJ$  |                       |                    |
| U <sub>N</sub> = 400 V (Range 380 to 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 <sub>N</sub> = 500 V (Range 380 to 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 <sub>N</sub> = 690 V (Range 525 to 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) |

## Dimensions

| Frame size   | Height<br>mm | Width<br>mm       | Depth<br>mm | Weight<br>kg     |
|--------------|--------------|-------------------|-------------|------------------|
| NBRA659      | 584          | 334               | 240         | 26               |
| NBRA669      | 584          | 334 <sup>1)</sup> | 240         | 26 <sup>1)</sup> |
| SAFUR180F460 | 1320         | 300 <sup>1)</sup> | 345         | 32 <sup>1)</sup> |
| SAFUR125F500 | 1320         | 300 <sup>1)</sup> | 345         | 25 <sup>1)</sup> |
| SAFUR200F500 | 1320         | 300 <sup>1)</sup> | 345         | 30 <sup>1)</sup> |
| SAFUR210F575 | 1320         | 300 <sup>1)</sup> | 345         | 27 <sup>1)</sup> |

<sup>1)</sup> Single drive module only.

|               |  |
|---------------|--|
| $P_{br, max}$ | 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.

# Brake options

## 3-phase high power brake units

| Resistors values                          |           | Ratings $R_{min}$ |           |               |           |                          |                   |                  |  | Ratings $R_{max}$ |           |               |           |                          |                   |                  |  | Type designation  | Frame size |
|---|-----------|-------------------|-----------|---------------|-----------|--------------------------|-------------------|------------------|--|-------------------|-----------|---------------|-----------|--------------------------|-------------------|------------------|--|-------------------|------------|
|   |           | No-overload use   |           |               |           | Cycle load (1 min/5 min) |                   |                  |  | No-overload use   |           |               |           | Cycle load (1 min/5 min) |                   |                  |  |                   |            |
| $R_{min}$                                 | $R_{max}$ | $I_{dc}$          | $I_{rms}$ | $P_{contmax}$ | $I_{max}$ | $I_{dc}$                 | $I_{rms-R_{min}}$ | $P_{br-R_{min}}$ |  | $I_{dc}$          | $I_{rms}$ | $P_{contmax}$ | $I_{max}$ | $I_{dc}$                 | $I_{rms-R_{max}}$ | $P_{br-R_{max}}$ |  |                   |            |
| Ohm                                       | Ohm       | A DC              | A DC      | kW            | A DC      | A DC                     | A DC              | kW               |  | A DC              | A DC      | kW            | A DC      | A DC                     | A DC              | kW               |  |                   |            |
| $U_N = 400\text{ V}$ (Range 380 to 415 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      |
| $U_N = 500\text{ V}$ (Range 380 to 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      |
| $U_N = 690\text{ V}$ (Range 525 to 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      |

### Dimensions

| Frame size        | Height mm | Width mm          | Depth mm          | Weight kg | Noise level dB(A) | Air flow m³/h |
|-------------------|-----------|-------------------|-------------------|-----------|-------------------|---------------|
| R2i               | 401       | 165               | 193 <sup>3)</sup> | 9         | 62                | 35            |
| R3i               | 466       | 173               | 232 <sup>3)</sup> | 12        | 62                | 69            |
| R4i               | 525       | 240               | 252 <sup>3)</sup> | 15        | 62                | 103           |
| R5i               | 673       | 265               | 276 <sup>3)</sup> | 23        | 65                | 168           |
| R7i <sup>1)</sup> | 963       | 170               | 404               | 37        | 64                | 800           |
| R8i               | 1397      | 235               | 596               | 130       | 72z               | 1280          |
| 2xR8i             | 1397      | 245 <sup>2)</sup> | 596               | 260       | 74                | 2560          |
| 3xR8i             | 1397      | 245 <sup>2)</sup> | 596               | 390       | 76                | 3840          |
| 4xR8i             | 1397      | 245 <sup>2)</sup> | 596               | 520       | 76                | 5120          |
| 5xR8i             | 1397      | 245 <sup>2)</sup> | 596               | 650       | 77                | 6400          |

<sup>1)</sup> Dimensions do not include cooling fan.

<sup>2)</sup> Single module only.

<sup>3)</sup> The depth is without control panels and options.

| 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.<br>For example, a brake unit of frame size 2xR8i including two brake modules<br>→ 2 x 3 resistors are needed. |  |
| Typical ratings: 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 1 minute every 5 minutes.  |



# Brake options

## Multidrive module brake units

| Brake unit<br>type designation | Nominal ratings     |            |                |                |                   | Duty cycle<br>(1 min / 5 min) |                | Duty cycle<br>(10 s / 60 s) |                | Noise<br>level | Air flow | Resistor type<br>designation |
|--------------------------------|---------------------|------------|----------------|----------------|-------------------|-------------------------------|----------------|-----------------------------|----------------|----------------|----------|------------------------------|
|                                | $P_{br. max}$<br>kW | $R$<br>ohm | $I_{max}$<br>A | $I_{rms}$<br>A | $P_{cont.}$<br>kW | $P_{br.}$<br>kW               | $I_{rms}$<br>A | $P_{br.}$<br>kW             | $I_{rms}$<br>A |                |          |                              |

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

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

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

Only the chopper

|                            |      |      |      |     |     |      |      |      |      |    |      |   |
|----------------------------|------|------|------|-----|-----|------|------|------|------|----|------|---|
| Chopper-0400-6 (NBRA 669)  | 404  | 2.72 | 414  | 107 | 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) |

### Dimensions

| Frame size   | Height<br>mm | Width<br>mm       | Depth<br>mm | Weight<br>kg     |
|--------------|--------------|-------------------|-------------|------------------|
| NBRA658      | 584          | 334               | 240         | 26               |
| NBRA659      | 584          | 334 <sup>1)</sup> | 240         | 26 <sup>1)</sup> |
| NBRA669      | 584          | 334 <sup>1)</sup> | 240         | 26 <sup>1)</sup> |
| SAFUR180F460 | 1320         | 300 <sup>1)</sup> | 345         | 32 <sup>1)</sup> |
| SAFUR125F500 | 1320         | 300 <sup>1)</sup> | 345         | 25 <sup>1)</sup> |
| SAFUR200F500 | 1320         | 300 <sup>1)</sup> | 345         | 30 <sup>1)</sup> |
| SAFUR210F575 | 1320         | 300 <sup>1)</sup> | 345         | 27 <sup>1)</sup> |

<sup>1)</sup> Single drive module only.

# Brake options

## Liquid cooled 3-phase high power brake modules

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

### Dimensions

| Frame size | Height <sup>1)</sup><br>mm | Width <sup>2)</sup><br>mm | Depth<br>mm | Weight<br>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         |

<sup>1)</sup> Pressure release lids require an additional 400 mm.

<sup>2)</sup> First values for bottom exit and latter values for top exit.

| 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. |
| 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.  |
| Cyclic 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 1 minute every 5 minutes.  |
| Losses          |  |
| $P_{loss}$      | Power loss conducted to coolant.   |

# EMC filters

## EMC - Electromagnetic Compatibility and modules

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

## EMC standards

The EMC product standard (EN 61800-3 + Amendment A11(2000)) covers the specific EMC requirements stated for drives (tested with motor and cable) within the EU.

EMC standards such as EN 55011, or EN 61000-6-3/4, apply to industrial and household equipments and systems including drive component inside. Drive units complying with requirements of EN 61800-3 are always compliant with comparable categories in EN 55011 and EN 61000-6-3/4, but not necessarily vice versa. EN 55011 and EN 61000-6-3/4 do not specify cable length nor require a motor to be connected as a load. The emission limits are comparable according to the following table, EMC standards.

## EMC standards

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

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

<sup>1)</sup> Includes externally mounted components.

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

## 1<sup>st</sup> environment vs 2<sup>nd</sup> environment

### 1<sup>st</sup> environment (category C1 and C2)

"1<sup>st</sup> 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.

### 2<sup>nd</sup> environment (category C3 and C4)

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

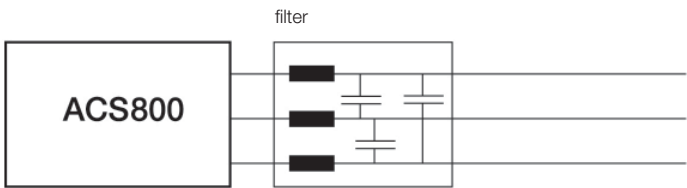
## Selecting an EMC filter

The following table gives the correct filter selection.

# 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.

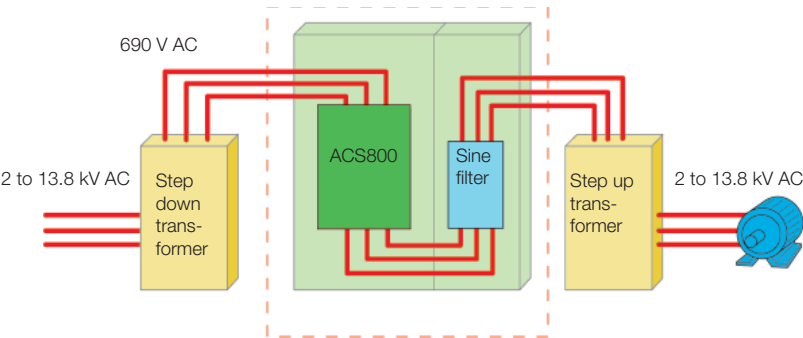
The ABB sine filter solution can be used in a variety of applications:

- 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.   |





# Sine filters

## Types and ratings for ACS800-04(M)

| $I_{\text{cont. max}}$  | $P_{\text{cont. max}}$ | Noise level | Heat dissipation | Air flow           | Type designation    | Filter size               | IP class  | Filter height mm | Filter width mm | Filter depth mm | Filter weight kg | Frame size |
|---|------------------------|-------------|------------------|--------------------|---------------------|---------------------------|-----------|------------------|-----------------|-----------------|------------------|------------|
| A   | kW                     | dB          | W                | m <sup>3</sup> /h  |                     |                           |           |                  |                 |                 |                  |            |
| <b><math>U_N = 400 \text{ V}</math> (Range 380 to 415 V). The power ratings are valid at nominal voltage 400 V.</b> |                        |             |                  |                    |                     |                           |           |                  |                 |                 |                  |            |
| 8.5   | 3                      | 67          | 180              | 35 <sup>1)</sup>   | ACS800-04-0005-3    | NSIN 0006-5               | IP00/IP23 | 160/234          | 155/230         | 120/170         | 6/9              | R2         |
| 19  | 7.5                    | 68          | 350              | 69 <sup>1)</sup>   | ACS800-04-0011-3    | NSIN 0016-5               | IP00/IP23 | 280/460          | 240/470         | 190/270         | 15/26            | R3         |
| 25  | 11                     | 68          | 450              | 69 <sup>1)</sup>   | ACS800-04-0016-3    | NSIN 0020-5               | IP00/IP23 | 280/460          | 240/470         | 200/270         | 19/30            | R3         |
| 33  | 15                     | 68          | 560              | 69 <sup>1)</sup>   | ACS800-04-0020-3    | NSIN 0025-5               | IP00/IP23 | 280/460          | 240/470         | 210/270         | 21/32            | R3         |
| 39  | 18.5                   | 69          | 630              | 69 <sup>1)</sup>   | ACS800-04-0023-3    | NSIN 0030-5               | IP00/IP23 | 280/460          | 240/470         | 220/270         | 26/37            | R3         |
| 44  | 22                     | 69          | 630              | 103 <sup>1)</sup>  | ACS800-04-0025-3    | NSIN 0030-5               | IP00/IP23 | 280/460          | 240/470         | 220/270         | 26/37            | R4         |
| 54  | 26                     | 69          | 730              | 103 <sup>1)</sup>  | ACS800-04-0030-3    | NSIN 0040-5               | IP00/IP23 | 315/460          | 300/470         | 228/270         | 34/45            | R4         |
| 58  | 28                     | 69          | 730              | 103 <sup>1)</sup>  | ACS800-04-0035-3    | NSIN 0040-5               | IP00/IP23 | 315/460          | 300/470         | 228/270         | 34/45            | R4         |
| 72  | 35                     | 73          | 950              | 250 <sup>1)</sup>  | ACS800-04-0040-3    | NSIN 0050-5               | IP00/IP23 | 315/510          | 300/580         | 240/325         | 37/53            | R5         |
| 86  | 42                     | 73          | 1100             | 250 <sup>1)</sup>  | ACS800-04-0050-3    | NSIN 0060-5               | IP00/IP23 | 320/510          | 300/580         | 270/325         | 53/69            | R5         |
| 102   | 52                     | 73          | 1500             | 250 <sup>1)</sup>  | ACS800-04-0060-3    | NSIN 0070-5               | IP00/IP23 | 415/510          | 360/580         | 210/325         | 66/82            | R5         |
| 125   | 63                     | 75          | 1800             | 250 <sup>1)</sup>  | ACS800-04-0075-3    | NSIN 0100-5               | IP00/IP23 | 415/620          | 360/700         | 225/425         | 69/99            | R5         |
| 164   | 84                     | 75          | 2200             | 405 <sup>1)</sup>  | ACS800-04-0100-3    | NSIN 0120-5               | IP00/IP23 | 415/620          | 360/700         | 240/425         | 75/105           | R6         |
| 199   | 102                    | 75          | 2700             | 405 <sup>1)</sup>  | ACS800-04-0120-3    | NSIN 0140-5               | IP00/IP23 | 450/620          | 400/700         | 500/525         | 120/165          | R6         |
| 225   | 110                    | 79          | 3900             | 1105 <sup>2)</sup> | ACS800-04-0135-3    | NSIN 0315-6               | IP00      | 2060             | 400             | 600             | 230              | R6         |
| 260   | 130                    | 79          | 5500             | 1105 <sup>2)</sup> | ACS800-04-0205-3    | NSIN 0315-6               | IP00      | 2060             | 400             | 600             | 230              | R6         |
| 206   | 100                    | 79          | 4100             | 1240 <sup>2)</sup> | ACS800-04(M)-0140-3 | NSIN 0315-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 230              | R7         |
| 248   | 120                    | 79          | 4900             | 1240 <sup>2)</sup> | ACS800-04(M)-0170-3 | NSIN 0315-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 230              | R7         |
| 266   | 130                    | 79          | 5600             | 1240 <sup>2)</sup> | ACS800-04(M)-0210-3 | NSIN 0315-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 230              | R7         |
| 445   | 215                    | 80          | 8800             | 1920 <sup>2)</sup> | ACS800-04(M)-0260-3 | NSIN 0485-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 250              | R8         |
| 521   | 250                    | 80          | 9700             | 3220 <sup>2)</sup> | ACS800-04(M)-0320-3 | NSIN 0900-6 <sup>3)</sup> | IP00      | 2120             | 1000            | 600             | 690              | R8         |
| 602   | 295                    | 80          | 11100            | 3220 <sup>2)</sup> | ACS800-04(M)-0400-3 | NSIN 0900-6 <sup>3)</sup> | IP00      | 2120             | 1000            | 600             | 690              | R8         |
| 693   | 340                    | 80          | 12100            | 3220 <sup>2)</sup> | ACS800-04(M)-0440-3 | NSIN 0900-6 <sup>3)</sup> | IP00      | 2120             | 1000            | 600             | 690              | R8         |
| 720   | 350                    | 80          | 12600            | 3220 <sup>2)</sup> | ACS800-04(M)-0490-3 | NSIN 0900-6 <sup>3)</sup> | IP00      | 2120             | 1000            | 600             | 690              | R8         |
| <b><math>U_N = 500 \text{ V}</math> (Range 380 to 500 V). The power ratings are valid at nominal voltage 500 V.</b> |                        |             |                  |                    |                     |                           |           |                  |                 |                 |                  |            |
| 8.1   | 4.4                    | 67          | 200              | 35 <sup>1)</sup>   | ACS800-04-0006-5    | NSIN 0006-5               | IP00/IP23 | 160/234          | 155/230         | 120/170         | 6/9              | R2         |
| 19  | 11                     | 68          | 440              | 69 <sup>1)</sup>   | ACS800-04-0016-5    | NSIN 0016-5               | IP00/IP23 | 280/460          | 240/470         | 190/270         | 15/26            | R3         |
| 25  | 15                     | 68          | 550              | 69 <sup>1)</sup>   | ACS800-04-0020-5    | NSIN 0020-5               | IP00/IP23 | 280/460          | 240/470         | 200/270         | 19/30            | R3         |
| 33  | 20                     | 68          | 600              | 69 <sup>1)</sup>   | ACS800-04-0025-5    | NSIN 0025-5               | IP00/IP23 | 280/460          | 240/470         | 210/270         | 21/32            | R3         |
| 37  | 23                     | 68          | 600              | 69 <sup>1)</sup>   | ACS800-04-0028-5    | NSIN 0025-5               | IP00/IP23 | 280/460          | 240/470         | 210/270         | 21/32            | R3         |
| 42  | 26                     | 69          | 700              | 103 <sup>1)</sup>  | ACS800-04-0030-5    | NSIN 0030-5               | IP00/IP23 | 280/460          | 240/470         | 220/270         | 26/37            | R4         |
| 47  | 29                     | 69          | 900              | 103 <sup>1)</sup>  | ACS800-04-0040-5    | NSIN 0040-5               | IP00/IP23 | 315/460          | 300/470         | 228/270         | 34/45            | R4         |
| 56  | 34                     | 69          | 900              | 103 <sup>1)</sup>  | ACS800-04-0045-5    | NSIN 0040-5               | IP00/IP23 | 315/460          | 300/470         | 228/270         | 34/45            | R4         |
| 65  | 40                     | 73          | 1100             | 250 <sup>1)</sup>  | ACS800-04-0050-5    | NSIN 0050-5               | IP00/IP23 | 315/510          | 300/580         | 240/325         | 37/53            | R5         |
| 79  | 48                     | 73          | 1300             | 250 <sup>1)</sup>  | ACS800-04-0060-5    | NSIN 0060-5               | IP00/IP23 | 320/510          | 300/580         | 270/325         | 53/69            | R5         |
| 94  | 60                     | 73          | 1800             | 250 <sup>1)</sup>  | ACS800-04-0070-5    | NSIN 0070-5               | IP00/IP23 | 415/510          | 360/580         | 210/325         | 66/82            | R5         |
| 125   | 78                     | 75          | 2500             | 250 <sup>1)</sup>  | ACS800-04-0105-5    | NSIN 0100-5               | IP00/IP23 | 415/620          | 360/700         | 225/425         | 69/99            | R5         |
| 155   | 99                     | 75          | 2500             | 405 <sup>1)</sup>  | ACS800-04-0120-5    | NSIN 0120-5               | IP00/IP23 | 415/620          | 360/700         | 240/425         | 75/105           | R6         |
| 177   | 114                    | 75          | 3500             | 405 <sup>1)</sup>  | ACS800-04-0140-5    | NSIN 0140-5               | IP00/IP23 | 450/620          | 400/700         | 500/525         | 120/165          | R6         |
| 225   | 137                    | 79          | 4600             | 1105 <sup>2)</sup> | ACS800-04-0165-5    | NSIN 0315-6               | IP00      | 2060             | 400             | 600             | 230              | R6         |
| 260   | 160                    | 79          | 6100             | 1105 <sup>2)</sup> | ACS800-04-0255-5    | NSIN 0315-6               | IP00      | 2060             | 400             | 600             | 230              | R6         |
| 196   | 125                    | 79          | 4300             | 1240 <sup>2)</sup> | ACS800-04(M)-0170-5 | NSIN 0315-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 230              | R7         |
| 245   | 150                    | 79          | 5400             | 1240 <sup>2)</sup> | ACS800-04(M)-0210-5 | NSIN 0315-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 230              | R7         |
| 258   | 160                    | 79          | 6200             | 1240 <sup>2)</sup> | ACS800-04(M)-0260-5 | NSIN 0315-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 230              | R7         |
| 440   | 275                    | 80          | 9600             | 1920 <sup>2)</sup> | ACS800-04(M)-0320-5 | NSIN 0485-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 250              | R8         |
| 515   | 320                    | 80          | 11100            | 3220 <sup>2)</sup> | ACS800-04(M)-0400-5 | NSIN 0900-6 <sup>3)</sup> | IP00      | 2120             | 1000            | 600             | 690              | R8         |
| 550   | 345                    | 80          | 11100            | 3220 <sup>2)</sup> | ACS800-04(M)-0440-5 | NSIN 0900-6 <sup>3)</sup> | IP00      | 2120             | 1000            | 600             | 690              | R8         |
| 602   | 375                    | 80          | 11900            | 3220 <sup>2)</sup> | ACS800-04(M)-0490-5 | NSIN 0900-6 <sup>3)</sup> | IP00      | 2120             | 1000            | 600             | 690              | R8         |
| 684   | 430                    | 80          | 13400            | 3220 <sup>2)</sup> | ACS800-04(M)-0550-5 | NSIN 0900-6 <sup>3)</sup> | IP00      | 2120             | 1000            | 600             | 690              | R8         |
| 700   | 440                    | 80          | 14100            | 3220 <sup>2)</sup> | ACS800-04(M)-0610-5 | NSIN 0900-6 <sup>3)</sup> | IP00      | 2120             | 1000            | 600             | 690              | R8         |
| <b><math>U_N = 690 \text{ V}</math> (Range 525 to 690 V). The power ratings are valid at nominal voltage 690 V.</b> |                        |             |                  |                    |                     |                           |           |                  |                 |                 |                  |            |
| 13  | 10.6                   | 67          | 400              | 103 <sup>1)</sup>  | ACS800-04-0011-7    | NSIN 0011-7               | IP00/IP23 | 280/460          | 240/470         | 190/270         | 20/31            | R4         |
| 17  | 14                     | 67          | 460              | 103 <sup>1)</sup>  | ACS800-04-0016-7    | NSIN 0020-7               | IP00/IP23 | 280/460          | 240/470         | 220/270         | 26/37            | R4         |
| 22  | 18                     | 68          | 560              | 103 <sup>1)</sup>  | ACS800-04-0020-7    | NSIN 0020-7               | IP00/IP23 | 280/460          | 240/470         | 220/270         | 26/37            | R4         |
| 25  | 21                     | 68          | 650              | 103 <sup>1)</sup>  | ACS800-04-0025-7    | NSIN 0025-7               | IP00/IP23 | 320/510          | 300/580         | 222/325         | 35/51            | R4         |
| 31  | 26                     | 69          | 740              | 103 <sup>1)</sup>  | ACS800-04-0030-7    | NSIN 0040-7               | IP00/IP23 | 320/510          | 300/580         | 235/325         | 40/56            | R4         |
| 34  | 29                     | 70          | 820              | 103 <sup>1)</sup>  | ACS800-04-0040-7    | NSIN 0040-7               | IP00/IP23 | 320/510          | 300/580         | 235/325         | 40/56            | R4         |
| 48  | 40                     | 73          | 1000             | 250 <sup>1)</sup>  | ACS800-04-0050-7    | NSIN 0060-7               | IP00/IP23 | 330/510          | 300/580         | 275/325         | 57/73            | R5         |
| 52  | 46                     | 73          | 1200             | 250 <sup>1)</sup>  | ACS800-04-0060-7    | NSIN 0060-7               | IP00/IP23 | 330/510          | 300/580         | 275/325         | 57/73            | R5         |
| 79  | 69                     | 75          | 1500             | 405 <sup>1)</sup>  | ACS800-04-0070-7    | NSIN 0070-7               | IP00/IP23 | 415/510          | 360/580         | 240/325         | 75/91            | R6         |
| 93  | 82                     | 75          | 1900             | 405 <sup>1)</sup>  | ACS800-04-0100-7    | NSIN 0120-7               | IP00/IP23 | 500/510          | 420/580         | 290/325         | 126/142          | R6         |
| 104   | 92                     | 75          | 2300             | 405 <sup>1)</sup>  | ACS800-04-0120-7    | NSIN 0120-7               | IP00/IP23 | 500/510          | 420/580         | 290/325         | 126/142          | R6         |
| 134   | 113                    | 79          | 3800             | 1105 <sup>2)</sup> | ACS800-04-0145-7    | NSIN 0210-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 250              | R6         |
| 148   | 125                    | 79          | 4700             | 1105 <sup>2)</sup> | ACS800-04-0175-7    | NSIN 0210-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 250              | R6         |
| 130   | 115                    | 78          | 4000             | 540 <sup>2)</sup>  | ACS800-04(M)-0140-7 | NSIN 0210-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 250              | R7         |
| 142   | 125                    | 79          | 4600             | 540 <sup>2)</sup>  | ACS800-04(M)-0170-7 | NSIN 0210-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 250              | R7         |
| 169   | 150                    | 79          | 6000             | 1240 <sup>2)</sup> | ACS800-04(M)-0210-7 | NSIN 0210-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 250              | R7         |
| 315   | 280                    | 80          | 9000             | 1920 <sup>2)</sup> | ACS800-04(M)-0320-7 | NSIN 0485-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 250              | R8         |
| 336   | 300                    | 80          | 9700             | 1920 <sup>2)</sup> | ACS800-04(M)-0400-7 | NSIN 0485-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 250              | R8         |
| 367   | 330                    | 80          | 10700            | 1920 <sup>2)</sup> | ACS800-04(M)-0440-7 | NSIN 0485-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 250              | R8         |
| 444   | 395                    | 80          | 12300            | 1920 <sup>2)</sup> | ACS800-04(M)-0550-7 | NSIN 0485-6 <sup>3)</sup> | IP00      | 2060             | 400             | 600             | 250              | R8         |

### Nominal ratings

$I_{\text{cont. max}}$  Rated current of the drive-filter combination available continuously without overload at 40 °C.

### Typical ratings

$P_{\text{cont. max}}$  Typical motor power.

Notes: Noise level is a combined value for the drive and the filter. Heat dissipation is a combined value for the drive and the filter.

<sup>1)</sup> Air flow of the drive.

<sup>2)</sup> Combined air flow of the drive and the filter.

<sup>3)</sup> Dimensions are approximations for a cabinet that can house the filter. Weight is on approximate total weight of the cabinet and the filter. The filter is delivered as loose items including choke module, capacitors and cooling fan.

## du/dt filters

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

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.

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.

**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.   |
| $\Delta t$     | Rise time, i.e. interval during which line to line voltage at motor terminals changes from 10 to 90% of full voltage range. |

# du/dt filters

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

| ACS800                |                       |                       | du/dt filter type (3 filters included in kits marked *) |             |             |              |              |             |             |
|-----------------------|-----------------------|-----------------------|---|-------------|-------------|--------------|--------------|-------------|-------------|
|                       |                       |                       | Unprotected (IP00)                                      |             |             |              |              |             |             |
| 400 V                 | 500 V                 | 690 V                 | NOCH0016-60   | NOCH0030-60 | NOCH0070-60 | *NOCH0120-60 | *NOCH0260-60 | FOCH0260-70 | FOCH0320-50 |
| -0003-3               |                       |                       |   |             |             |              |              |             |             |
| -0004-3               | -0004-5               |                       |   |             |             |              |              |             |             |
| -0005-3               | -0005-5               |                       |   |             |             |              |              |             |             |
| -0006-3               | -0006-5               |                       | 1   |             |             |              |              |             |             |
| -0009-3               | -0009-5               |                       |   |             |             |              |              |             |             |
| -0011-3               | -0011-5               | -0011-7               |   |             |             |              |              |             |             |
|                       | -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               |   |             |             |              |              | 1           |             |
| -0205-3               | -0255-5               |                       |   |             |             |              |              |             |             |
| -0210-3               | -0260-5               | -0260-7               |   |             |             |              |              |             |             |
| -0260-3               | -0320-5               |                       |   |             |             |              |              |             | 1           |
| -0320-3               | -0400-5               | -0320-7               |   |             |             |              |              |             |             |
|                       |                       | -0400-7               |   |             |             |              |              |             |             |
| -0400-3               | -0440-5               | -0440-7               |   |             |             |              |              |             |             |
| -0440-3               | -0490-5               | -0490-7               |   |             |             |              |              |             | 1           |
| -0490-3               | -0550-5               | -0550-7               |   |             |             |              |              |             |             |
|                       | -0610-5               | -0610-7               |   |             |             |              |              |             |             |
| 0610-3 <sup>2)</sup>  | -0760-5 <sup>2)</sup> | -0750-7 <sup>2)</sup> |   |             |             |              |              |             |             |
| -0770-3 <sup>2)</sup> | -0910-5 <sup>2)</sup> | -0870-7 <sup>2)</sup> |   |             |             |              |              |             |             |
| -0870-3 <sup>2)</sup> | -1090-5 <sup>2)</sup> | -1060-7 <sup>2)</sup> |   |             |             |              |              |             |             |
| -1030-3 <sup>2)</sup> | -1210-5 <sup>2)</sup> | -1160-7 <sup>2)</sup> |   |             |             |              |              |             |             |
| -1230-3 <sup>2)</sup> | -1540-5 <sup>2)</sup> | -1500-7 <sup>2)</sup> |   |             |             |              |              |             |             |
| -1540-3 <sup>2)</sup> | -1820-5 <sup>2)</sup> | -1740-7 <sup>2)</sup> |   |             |             |              |              |             |             |
| -1850-3 <sup>2)</sup> | -2310-5 <sup>2)</sup> | -2120-7 <sup>2)</sup> |   |             |             |              |              |             |             |
|                       |                       | -2320-7 <sup>2)</sup> |   |             |             |              |              |             |             |

<sup>2)</sup> du/dt filters are built-in 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)                                      |             |             |              |             |
| 400 V                 | 500 V                 | 690 V                 | NOCH0016-60   | NOCH0030-60 | NOCH0070-60 | *NOCH0120-60 | FOCH0260-70 |
| -0003-3               |                       |                       |   |             |             |              |             |
| -0004-3               | -0004-5               |                       |   |             |             |              |             |
| -0005-3               | -0005-5               |                       |   |             |             |              |             |
| -0006-3               | -0006-5               |                       |   |             |             |              |             |
| -0009-3               | -0009-5               |                       |   |             |             |              |             |
| -0011-3               | -0011-5               | -0011-7               |   |             |             |              |             |
|                       | -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               |   |             | 1           |              |             |
| -0050-3               | -0050-5               | -0060-7               |   |             |             |              |             |
|                       | -0060-5               |                       |   |             |             |              |             |
| -0060-3               | -0070-5               |                       |   |             |             | 1            |             |
| -0105-3 <sup>1)</sup> |                       |                       |   |             |             |              |             |
| -0125-3 <sup>1)</sup> |                       |                       |   |             |             |              |             |
| -0145-3 <sup>1)</sup> |                       |                       |   |             |             |              | 1           |
| -0175-3 <sup>1)</sup> |                       |                       |   |             |             |              |             |
|                       | -0105-5 <sup>1)</sup> |                       |   |             |             | 1            |             |
|                       | -0125-5 <sup>1)</sup> |                       |   |             |             |              |             |
|                       | -0145-5 <sup>1)</sup> |                       |   |             |             |              |             |
|                       | -0175-5 <sup>1)</sup> |                       |   |             |             |              | 1           |
|                       | -0215-5 <sup>1)</sup> |                       |   |             |             |              |             |
|                       |                       | -0075-7 <sup>1)</sup> |   |             |             |              |             |
|                       |                       | -0105-7 <sup>1)</sup> |   |             |             | 1            |             |
|                       |                       | -0125-7 <sup>1)</sup> |   |             |             |              |             |
|                       |                       | -0145-7 <sup>1)</sup> |   |             |             |              |             |
|                       |                       | -0175-7 <sup>1)</sup> |   |             |             |              | 1           |
|                       |                       | -0215-7 <sup>1)</sup> |   |             |             |              |             |
| -0210-3 <sup>1)</sup> |                       |                       |   |             |             |              |             |
| -0260-3 <sup>1)</sup> | -0260-5 <sup>1)</sup> | -0260-7 <sup>2)</sup> |   |             |             |              |             |
| -0320-3 <sup>1)</sup> | -0320-5 <sup>1)</sup> | -0320-7 <sup>2)</sup> |   |             |             |              |             |
| -0390-3 <sup>1)</sup> | -0400-5 <sup>1)</sup> | -0400-7 <sup>2)</sup> |   |             |             |              |             |
| -0510-3 <sup>1)</sup> | -0460-5 <sup>1)</sup> | -0440-7 <sup>2)</sup> |   |             |             |              |             |
|                       | -0610-5 <sup>1)</sup> | -0580-7 <sup>2)</sup> |   |             |             |              |             |
| -0770-3 <sup>2)</sup> | -0910-5 <sup>2)</sup> | -0870-7 <sup>2)</sup> |   |             |             |              |             |
| -1030-3 <sup>2)</sup> | -1210-5 <sup>2)</sup> | -1160-7 <sup>2)</sup> |   |             |             |              |             |
| -1540-3 <sup>2)</sup> | -1820-5 <sup>2)</sup> | -1740-7 <sup>2)</sup> |   |             |             |              |             |
| -2050-3 <sup>2)</sup> | -2430-5 <sup>2)</sup> | -2320-7 <sup>2)</sup> |   |             |             |              |             |

<sup>1)</sup> du/dt filters are built-in as option

<sup>2)</sup> du/dt filters are built-in 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.

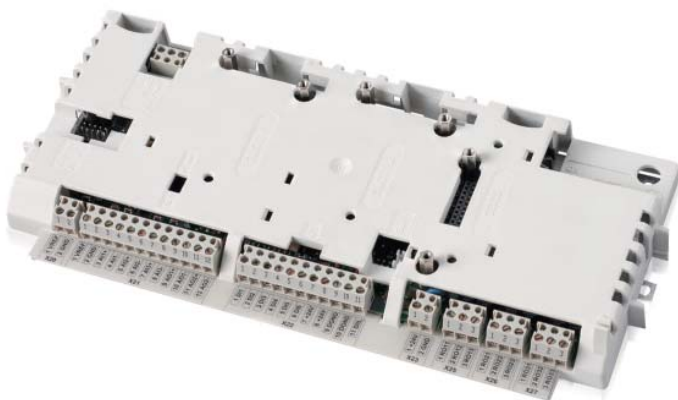
# Standard user interface

## Standard I/O

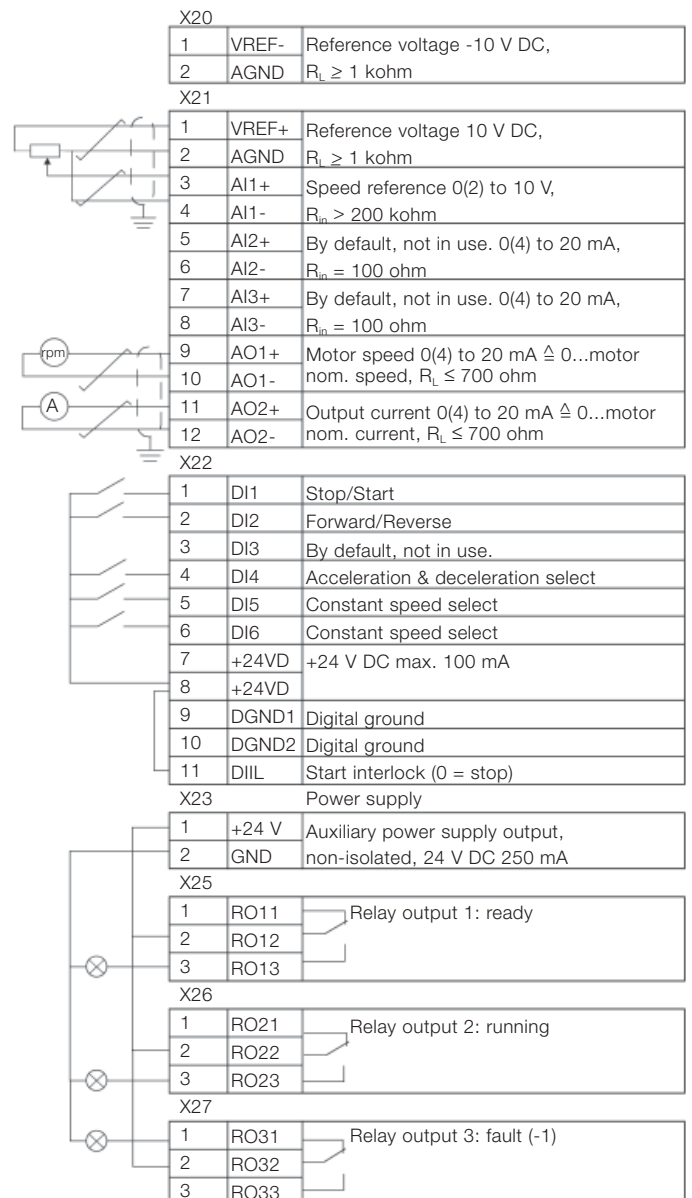
Analog and digital I/O channels are used for different functions such as control, monitoring and measurement purposes (e.g. motor temperature). In addition, optional I/O extension modules are available providing additional analog or digital I/O connections.

### Standard I/O on RMIO-11 board

- 3 analog inputs: differential, common mode voltage  $\pm 15$  V, galvanically isolated as a group
  - One  $\pm 0(2)$  to 10 V, resolution 12 bit
  - Two  $0(4)$  to 20 mA, resolution 11 bit
- 2 analog outputs:
  - $0(4)$  to 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:
  - $\pm 10$  V  $\pm 0.5\%$ , max. 10 mA
- Auxiliary power supply output:
  - +24 V  $\pm 10\%$ , max. 250 mA



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.



# 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 I
SPEED       1242.0 RPM
CURRENT     76.00 A
TORQUE      86.00 %
```



#### Start-up assistant

Easy commissioning with the start-up assistant in standard control program. 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 I
UPLOAD     <= <=
DOWNLOAD   => =>
CONTRAST   4
```

#### Actual value display

The control panel can display three separate actual values simultaneously.

#### Centralised control

One panel can control up to 31 drives.

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

Examples of these are:

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

#### Easy programming

Parameters are organised into groups for easy programming.

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

#### 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

#### Fault memory

A built-in fault memory stores information relating to the latest 64 faults, each with a time stamp.

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



# Options

## Optional I/O

Standard I/O can be extended by using analog and digital extension modules which are mounted in the slots on the ACS800 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
  - $\pm 0(2)$  to 10 V,  $0(4)$  to 20 mA or  $\pm 0$  to 2 V, resolution 12 bits
- 2 analog outputs: galvanically isolated from 24 V supply and ground
  - $0(4)$  to 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:
  - Changeover 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 × 325 × 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



Analog I/O extension module  
RAIO-01



Pulse encoder interface module  
RTAC-01



I/O extension adapter  
AIMA-01

# 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                   | PROFIdrive 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™<br>Modbus/TCP | ABB Drives*),<br>AC/DC drive ABB Drives*) | 10 Mbit/s / 100 Mbit/s  |
| Ethernet (+K467)           | PROFINET IO<br>Modbus/TCP  | PROFIdrive 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              |
| Ethernet POWERLINK (+K470) | Ethernet POWERLINK         | 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

## 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.

## The standard application macros

The ACS800 features built-in, 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
- 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 programs

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.





# Optional control programs

## Control solutions for different applications

### Rod pump and PCP/ESP pump control programs

These pump control programs have been specially developed in close cooperation with the oil industry for artificial oil lifting applications. The 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 software supports adaptive programming with 15 blocks.

### 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.

### Cranedrive control program

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

- A fixed, standard and ready-made crane application for different crane applications such as harbor 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.

# Optional control programs

## Control solutions for different applications

### Master/follower control

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 and 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.

### Winch control program

ABB industrial drives with winch control program replace traditional and costly hydraulic winch controllers, thereby eliminating high maintenance costs and performance inefficiencies, while improving operator and overall system reliability.

The electrical interface can be traditional I/O based or fieldbus gateways from an overriding PLC and can be used to control the winch directly from control stands located on the port, starboard and upper deck of the vessel.

Anchor control provides stepless speed control of the anchor whether is being raised or lowered.

The tension within the mooring ropes can be controlled either manually (hand-mooring) or automatically (auto-mooring) by automooring sequence.

Ro-Ro quarter ramp control logic is for lifting or lowering the gate ramp, with protection to slowdown the speed and torque before closing the gate ramp in the upper end position.



## Dimensioning tool

DriveSize is designed to help select the optimal motor, drive and transformer for the application. Based on user supplied data, the tool calculates and suggests which drive and motors to use. Additionally, the tool can be used to compute currents, network harmonics, and to create documents about dimensioning based on the load data provided. DriveSize uses the technical specifications contained in the ABB motor and drive catalogs.

DriveSize provides default values that can be changed by the user, and provides different options for drive selection. Shortcut keys can be used to quickly navigate around the tool.

## Motors, drives, and transformers

DriveSize can accommodate technical information for the following:

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

## Highlights

- Select optimal motor, drive, and transformer
- Calculate network harmonics for a single supply unit, or the whole system
- Import user defined motor database
- View dimensioning results graphically and numerically
- Print and save results

DriveSize can be downloaded free from [www.abb.com/drives](http://www.abb.com/drives). Follow the PC Tools link.

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## DriveSize

**DriveSize is a PC program to help select an optimal motor, frequency converter and transformer particularly in cases where a straightforward selection from a catalogue is not possible. DriveSize can also be used to compute network harmonics and to create documents about the dimensioning. It contains current versions of our motor and frequency converter catalogues.**

The DriveSize software can be used in Win98, WinNT, Win2000 and WinXP operating systems. For installation instruction check the README.pdf. DriveSize has eight parts covering ACS 800 multidrives, ACS800 single drives, ACS600 multidrives, ACS600 single drives, ACS550, ACH550, ACS400 Drives 3ph and Direct on line motors.

Link to [DriveSize Software](#).  
You have to register, before you can download the software.

Any feedback concerning DriveSize is welcome at [Drive Care - Support](mailto:drive.care@fi.abb.com) (drive.care@fi.abb.com) e-mail address.

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## DriveWindow

## Start-up and maintenance tool

A tool for the entire life cycle DriveWindow is designed to support the daily operation of ABB low voltage industrial drives. The tool provides users with capabilities to view, edit, and set drive parameters, as well as advanced functions like drive backup and data logger views. DriveWindow connects to drives using a disturbance free high speed fiber optic network.

## Drive startup and maintenance

DriveWindow is used to configure drive parameters during drive commissioning. Drive parameter configuration files can be saved and used to commission new drives or kept as backups. DriveWindow provides a complete listing of the drive parameters and their corresponding values allowing users to view and edit individual parameters. Using the built-in data and fault loggers, users are able to monitor signals and real-time status of the drive. This data can be used for graphical trending of the drive's performance. The data and fault loggers come with functions allowing users to process the data.

## PC based drive control

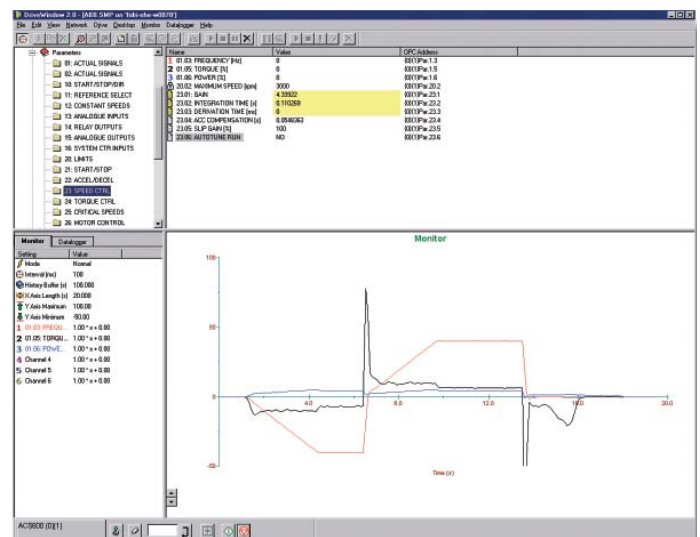
DriveWindow provides a built-in drive control panel allowing users to start, stop, set the direction, speed, and torque reference values of the connected drive.

## High speed data access

High speed connections between DriveWindow and drives via the DDCS fiber optic network can be made. The fast access enables oscilloscope-like functionality in the data logger view, where drive information can be viewed graphically and also saved to file.

## Highlights

- View and set drive parameters
- Monitor drive signals, graphically and numerically
- Use high speed data connection to the drive
- Save and compare drive configuration files
- Control the drive using the built-in control panel
- Tune the drives performance OPC server
- Connects via USB to the DDCS network



## Programming tool

DriveAP is a programming tool for creating, editing and documenting adaptive and multi-block programs. Fifteen function blocks are available for adaptive programming, and over 200 function blocks as well as PROFIBUS and drives I/O blocks may be edited using multi-block programming.

DriveAP supports IEC 61131 and only requires users to have a basic knowledge of block programming in order to use the tool. No special programming knowledge is needed.

Adaptive programs are easy to document either as printed copies or as stored files on the PC.

## Operating modes

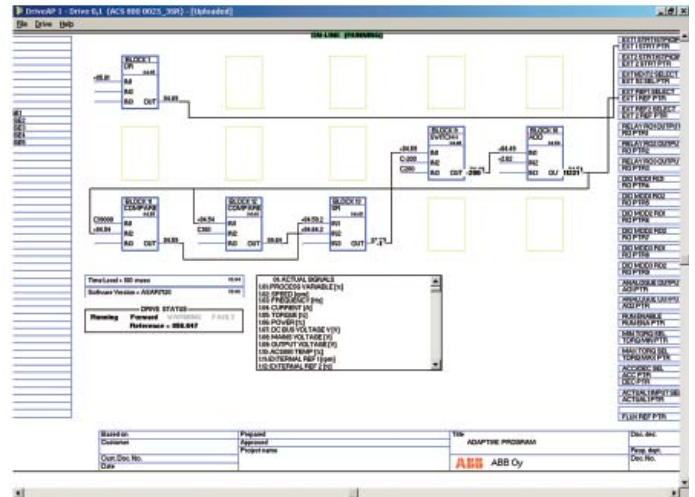
Stand-alone mode, DriveAP is not connected to a drive. The adaptive programming and multi-block programming can be done in the office and later downloaded to the drive.

Off-line mode, DriveAP is connected to a drive. The adaptive programming and multi-block programming can be carried out in batch mode.

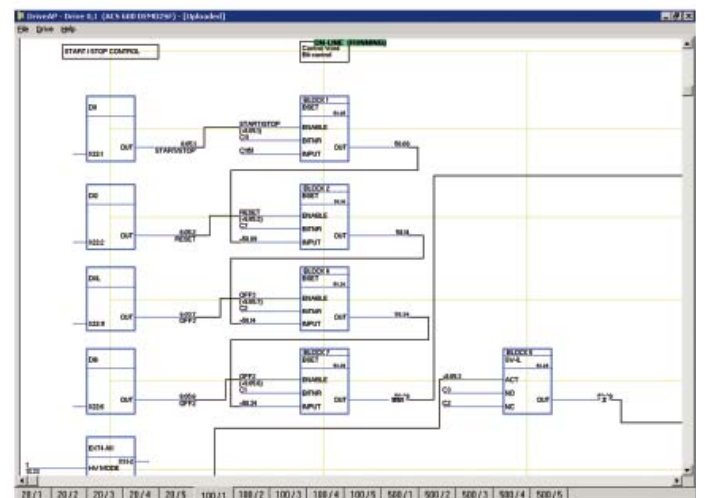
On-line mode, DriveAP is connected to a drive. Changes to the adaptive or multi-block programs are written immediately to the drive and the actual values are shown on the screen in real-time.

## DriveAP features

- Create and modify adaptive programs
- Create and modify multi-block programs
- Document programs
- Read existing program from the drive
- Stand-alone mode
- Off-line mode
- On-line mode



DriveAP with adaptive program of standard application.



DriveAP with multiblock programming application.



### Start-up and maintenance tool

DriveAnalyzer is a PC tool designed to perform analysis on ABB industrial single drive's performance. The results of the analysis can be used to help tune the drive to achieve better efficiencies and performance of the driven process.

Motor mechanical loads and performance data is recorded by DriveAnalyzer as the basis for the analysis. The tool is not a fault diagnosis tool, it is designed to work with operational drives using the standard control or system control programs. Drive data is collected over time enabling duration graphing and longer run time analysis.


DriveAnalyzer connects to multiple drives collecting data on the network supply which can be used by engineers to ensure the power supply network is optimized for the driven process.

DriveAnalyzer collects data on mechanical power, torque, rotational speed, energy use (kWh), currents, frequency, electrical power, temperatures, the status word, peak value logger information and amplitude logger information.

### Highlights

- Motor and drive utilization
- Motor shaft load shape and duration plots
- Machine load behavior analysis
- Power supply and network analysis
- Energy savings analysis
- Read and show peak values
- Read and show amplitude logger registers
- Export results and reports to spreadsheets

# Energy conservation report



**Test\_one\_full\_da**

Measurement started  
 Measurement ended  
 Total length of measurement

August 06 2007 05:34:50 PM  
 August 07 2007 10:12:42 AM  
**16 hr 37 min 52 sec**

**Drives**  
**Included:**  
 ACS 800 0025\_3SR

**Energy cost:**  
 Day Time 0,06 EUR/kWh  
 Night Time 0,03 EUR/kWh  
 ACS 800 0025\_3SR

**Actual Energy Consumed**  
 Energy consumed at day time 21206,77 kWh  
 Energy consumed at night time 10587,31 kWh  
 Energy Total 31794,08 kWh  
 Energy cost day 1272,41 EUR  
 Energy cost night 317,62 EUR  
 Energy cost total 1590,03 EUR

**Estimated Energy Consumed in Throttle control**  
 Energy consumed at day time 75960,13 kWh  
 Energy consumed at night time 70405,88 kWh  
 Energy Total 146366,01 kWh  
 Energy cost day 4557,61 EUR  
 Energy cost night 2112,18 EUR  
 Energy cost total 6669,78 EUR

DriveAnalyzer energy conservation report

## Integration tool

DriveOPC is a software package which allows OLE for Process Control (OPC) communication between Windows applications and ABB industrial drives. It allows Object Linking and Embedding (OLE) for Process Control (OPC) communication. This OPC server is an ideal tool for integrating ABB industrial drives and commercial PC software, and creating PC based control and monitoring systems.

## Remote monitoring

DriveOPC enables remote connection over LAN (local area networks). The remote PC can be connected through its IP address (e.g. "164.12.43.33") or by the DNS name (e.g. "Gitas213").

## OPC based software

OPC is an industry standard created in cooperation with Microsoft. It is an open architecture interface design, managed by the international OPC foundation. OPC is meant for different kinds of factory automation. DriveOPC is based on the OPC foundation data access standard 1.0A and Microsoft COM/DCOM technology. DriveOPC has full access to all drives, even when remote connection over LAN is used.

## High speed communication

DriveOPC uses the DDCS communication protocol on a highspeed 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 is connected to the PC using either a USB or communication card adapter.

## DriveOPC features

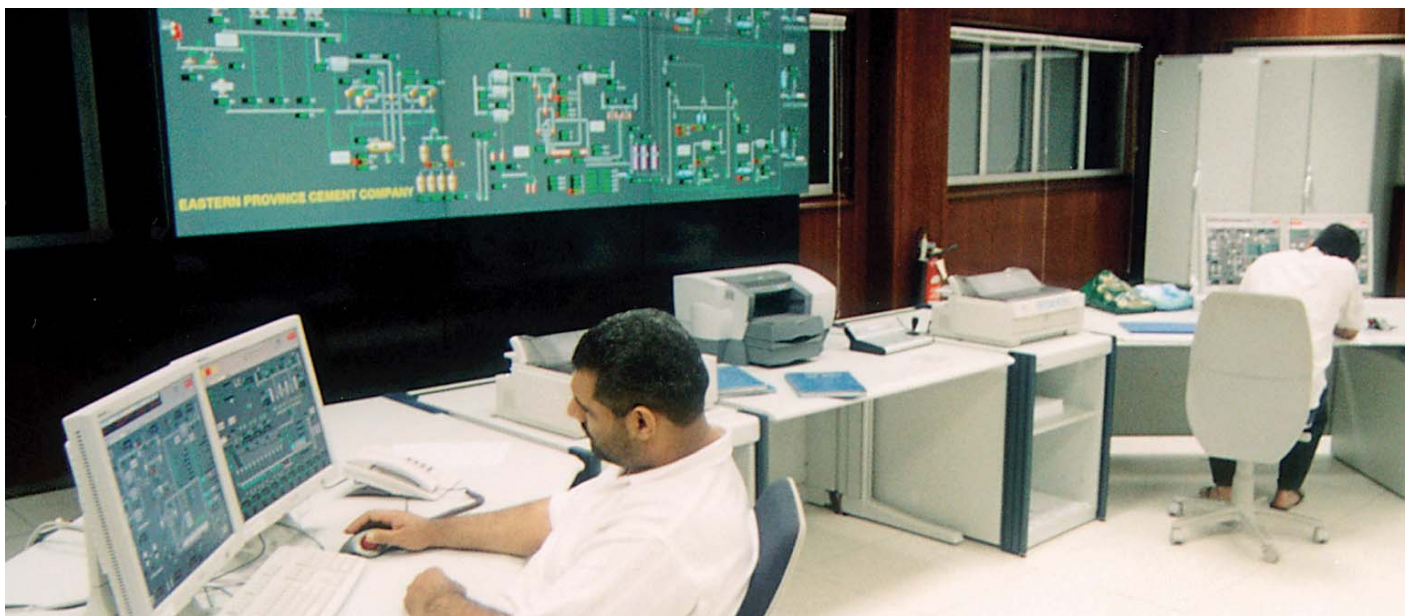
- DriveOPC supports OPC's data access 1.0A.

### Read access to:

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

### Write access to:

- Drive control: local, start, stop, forward, reverse, coast stop, reset fault, home, teach-in, contactor on/off, reference
- Parameters
- Fault logger clear
- Data logger init, start, trig, clear



# Summary of features and options

| Power and voltage range   | Ordering code | 04   | 04 (M)   | 04  | 14   | 104 (INU)   | 204 (ISU)   | 304 and 704 (DSU)   |
|---|---------------|--|--|---|--|---|---|---|
|   |               | Frame sizes R2 to R6   | Frame sizes R7 to R8   | Frame sizes nxR8i   | Frame sizes R7i to nxR8i   | Frame sizes R2i to 4*R8i  | Frame sizes R2i to 4*R8i  | Frame sizes D3 to 5*D4  |
|   |               | 230 V: 0.55 to 55 kW<br>400 V: 1.1 to 160 kW<br>500 V: 1.5 to 200 kW<br>690 V: 5.5 to 160 kW | 230 V: 45 to 200 kW<br>400 V: 90 to 400 kW<br>500 V: 110 to500 kW<br>690 V: 90 to 560 kW | 400 V: 400 to 1450 kW<br>500 V: 500 to 1900 kW<br>690 V: 500 to 1900 kW | 400 V: 75 to 1600 kW<br>500 V: 90 to 1800 kW<br>690 V: 90 to 1700 kW | 400 V: 1.1 to 2400 kW<br>500 V: 1.5 to 2900 kW<br>690 V: 5.5 to 2800 kW | 400 V: 2.7 to 2555 kW<br>500 V: 3.1 to 2932 kW<br>690 V: 105 to 2700 kW | 400 V: 147 to 2436 kW<br>500 V: 183 to 3045 kW<br>690 V: 253 to 4202 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)   | –   | –  | –   | –   | –   |
| 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  |               | ●  | ●  | ●   | ●  | ●   | ●   | ●   |
| Built-in I/O extension and speed feedback modules: for more details see section “Control connections and communications”                                    |               | □  | □  | □   | □  | □   | –   | –   |
| Built-in adapters for several fieldbuses: for more details see section “Control connections and communications”   |               | □  | □  | □   | □  | □   | □   | □   |

# Summary of features and options

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| EMC filters   |               |  |  |   |  |   |   |   |
| EMC 1 <sup>st</sup> environment (Category C2)                                 | E202          | □ 7)   | X 7)   | –   | –  | –   | –   | –   |
| EMC 2 <sup>nd</sup> environment, earthed networks only (Category C3)          | E200          | □ 16)  | –  | –   | –  | –   | –   | –   |
| EMC 2 <sup>nd</sup> environment, earthed and unearthed networks (Category C3) | E210          | □ 17)  | □  | –   | –  | –   |   | –   |
| Line filter   |               |  |  |   |  |   |   |   |
| AC or DC choke  |               | ●  | ●  | ●   | –  | –   | –   | ●   |
| LCL   |               | –  | –  | –   | ●  |   | ●   | –   |
| Output filters  |               |  |  |   |  |   |   |   |
| Common mode filter du/dt filters  | E208          | –<br>■   | □<br>■   | ●<br>●  | ●<br>● 18)   | ■ 15)<br>● 13)  | ■ 15)<br>–  | –<br>–  |
| Braking   |               |  |  |   |  |   |   |   |
| Brake chopper   | D150          | □ 8)   | □  | ■   | ■  | ■   | –   | –   |
| Brake resistor  |               | ■  | ■  | ■   | ■  | ■   | –   | –   |
| Regenerative braking  |               | –  | –  | –   | ●  | –   | ●   | –   |
| Rectifier bridge  |               |  |  |   |  |   |   |   |
| 6-pulse that can be connected as 12-pulse                                     |               | –  | –  | ● 14)   | –  | –   | –   | ● 14)   |
| Line side apparatus   |               |  |  |   |  |   |   |   |
| Built-in load switch  |               | –  | –  | ●   | –  | –   | –   | ●   |
| Built-in contactor  | F250          | –  | –  | –   | –  | –   | –   | □   |
| Safety  |               |  |  |   |  |   |   |   |
| Prevention of unexpected start-up   | Q950          | –  | –  | □   | □  | □   | –   | –   |
| Safe torque-off   | Q967          | □  | □  | □   | □  | □   | –   | –   |
| Earth fault monitoring, earthed mains   |               | ●  | ●  | ●   | ●  | ●   | ●   | ●   |
| Earth fault monitoring, unearthed mains                                       |               | ●  | ●  | ●   | ■  | ●   | ■   | ■   |
| Approvals   |               |  |  |   |  |   |   |   |
| CE  |               | ●  | ●  | ●   | ●  | ●   | ●   | ●   |
| UL 21), cUL, CSA  |               | ●  | ●  | ●   | ●  | ●   | ●   | ●   |
| GOST R  |               | ●  | ●  | ●   | ●  | ●   | ● /-  | ●   |
| C-Tick  |               | ●  | ●  | –   | –  | –   | –   | –   |
| Marine  |               | ● 22)  | ●  | ●   | ●  | ●   | ●   | ●   |
| Auxiliary option kits   |               |  |  |   |  |   |   |   |
| Fuses, fuse bases   |               | –  | –  | ■   | ■  | ■   | ■   | ■   |
| DC-fuse switch  |               | –  | –  | –   | –  | ■   | –   | –   |
| Contactor or breaker  |               | –  | –  | ■   | ■  | –   | ■   | ■   |
| Assembly kits for Rittal TS8 cabinets   |               | –  | –  | ■   | ■  | ■   | ■   | ■   |
| IP21 - IP54 door / roof kits  |               | –  | –  | ■   | ■  | ■   | ■   | ■   |

- Standard
- Option built-in
- 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) Only in standard control program.
- 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 690 V.
- 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 to R5i inside of the module.
- 12) Frame sizes R8i-4xR8i D3-5xD4.
- 13) Optional in frame sizes R2i to 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) Excluding TSU.
- 22) Type approval (ABS, DNV, Lloyd's, Bureau Veritas)

# Summary of features and options

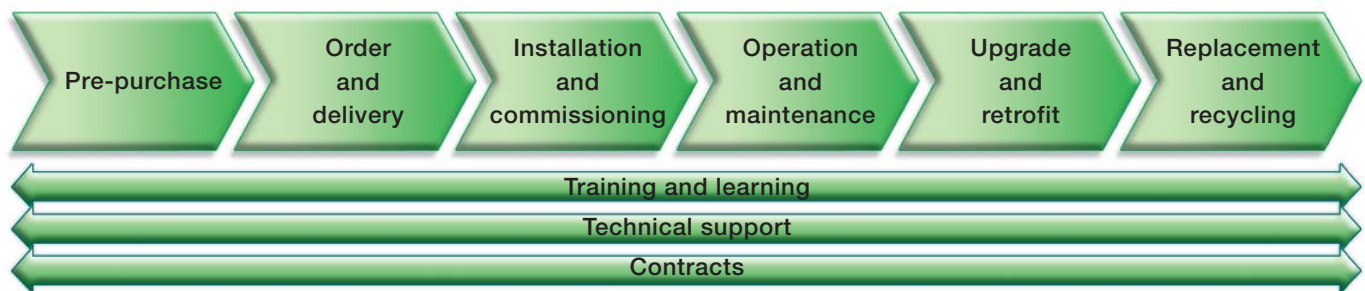
| Power and voltage range   | Ordering code | 04LC  | 104LC (INU)   | 204LC (ISU)   | 304LC and 704LC (DSU)   |
|---|---------------|---|---|---|---|
|   |               | Frame sizes D3+R8i to 2xD4+4xR8i  | Frame sizes R2i to 4xR8i  | Frame sizes R8i to 4xR8i  | Frame sizes D3 to 2xD4  |
|   |               | 400 V: 200 to 2000 kW<br>500 V: 315 to 2240 kW<br>690 V: 400 to 2240 kW | 400 V: 1.1 to 2000 kW<br>500 V: 1.5 to 2240 kW<br>690 V: 5.5 to 2240 kW | 400 V: 180 to 2066 kW<br>500 V: 208 to 2370 kW<br>690 V: 191 to 2181 kW | 400 V: 303 to 2100 kW<br>500 V: 303 to 2117 kW<br>690 V: 522 to 3652 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)  |               | ●   | ●   | ●   | ●   |
| Motor control   |               |   |   |   |   |
| DTC   |               | ●   | ●   | ●   | –   |
| Software  |               |   |   |   |   |
| Start-up assistant  |               | ● 2)  | ● 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  |               | ●   | ●   | ●   | ●   |
| Built-in I/O extension and speed feedback modules: for more details see section “Control connections and communications”                                    |               | □   | □   | –   | –   |
| Built-in 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 12-pulse   |               | ● 8)  | –   | –   | ● 8)  |
| Safety  |               |   |   |   |   |
| Prevention of unexpected start-up   | Q950          | □   | □   | –   | –   |
| Safe torque-off   | Q967          | □   | □   | –   | –   |
| Approvals   |               |   |   |   |   |
| CE  |               | ●   | ●   | ●   | ●   |
| UL, cUL, CSA  |               | ●   | ●   | ●   | ●   |
| GOST R  |               | ●   | ●   | ●   | ●   |
| Marine  |               | ● 9)  | ● 9)  | ● 9)  | ● 9)  |
| Auxiliary option kits   |               |   |   |   |   |
| Fuses, fuse bases   |               | ■   | ■   | ■   | ■   |
| DC-fuse switch  |               | –   | ■   | –   | –   |
| Contact or breaker  |               | ■   | –   | ■   | ■   |
| Assembly kits for Rittal TS8 cabinets   |               | ■   | ■   | ■   | ■   |

- Standard
- Option built-in
- External accessory, no plus code
- Not available

- 1) Frame sizes R2i-R5i inside of the module.
- 2) Only in standard control program.
- 3) Fixed I/O in ISU and DSU.
- 4) Not for 690 V.
- 5) For frame size nxR8i only.
- 6) For frame size R2i to R5i only.
- 7) For frame size R7i only.
- 8) For frame size D4 only.
- 9) Type approval (ABS, DNV, Lloyd's)



# Services



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 inquiry 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 life cycle 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.

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 precisely the

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

## ABB drive life cycle management model

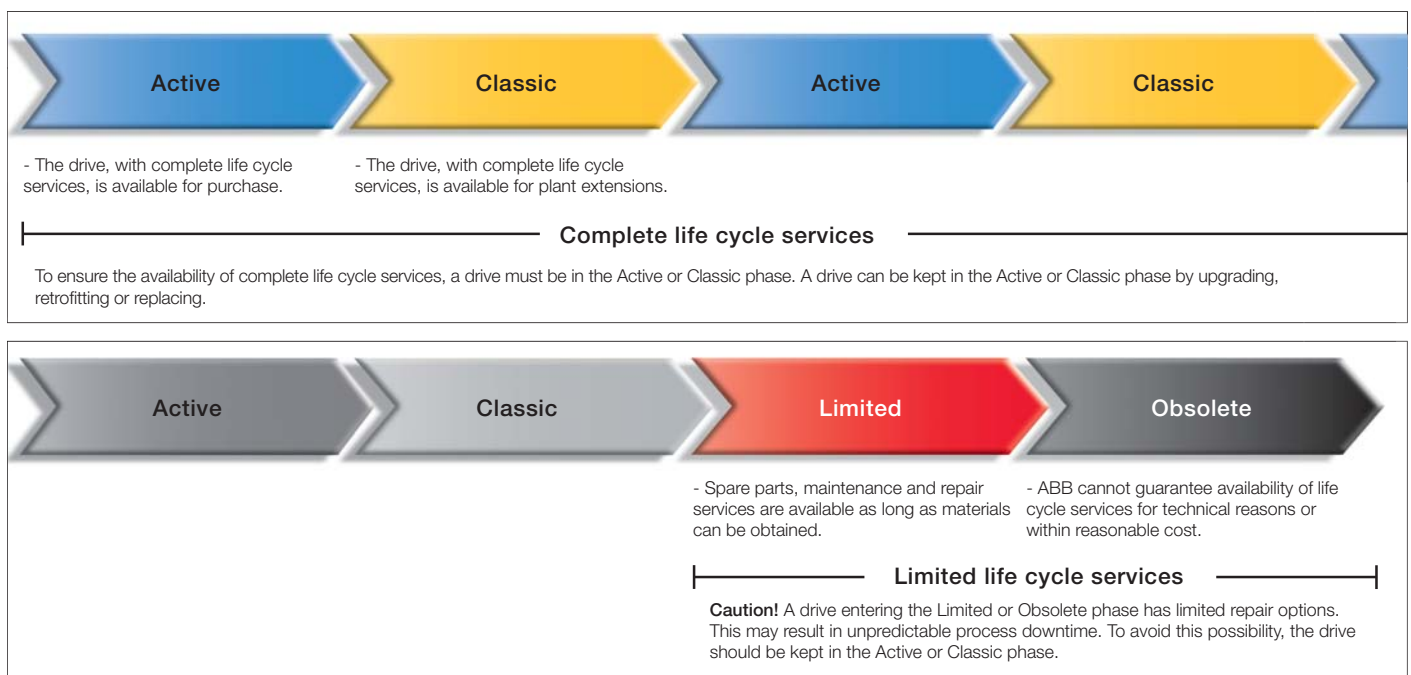


ABB follows a four-phase model for managing drive life cycles, which brings enhanced customer support and improved efficiency.

Examples of life cycle 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.

## Notes

## Notes

# Contact us

[www.abb.com/drives](http://www.abb.com/drives)  
[www.abb.com/drivespartners](http://www.abb.com/drivespartners)

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