



Low voltage AC drives

ABB machinery drives

ACS850

0.5 to 700 hp / 0.37 to 560 kW

Catalog

Power and productivity
for a better world™

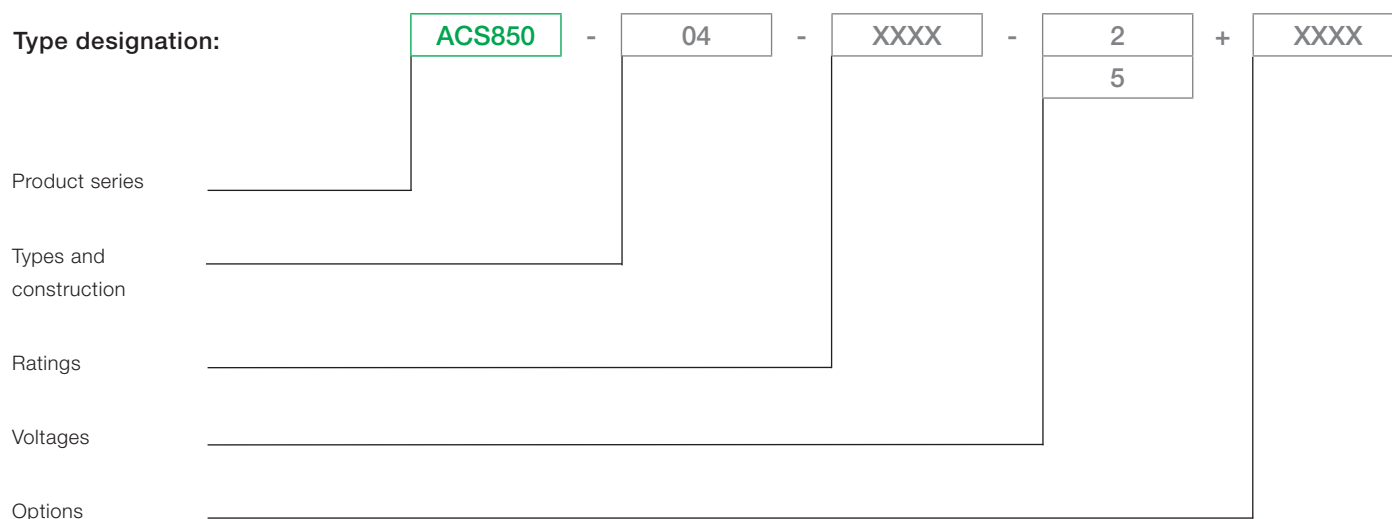


Selecting and ordering your drive

Type designation is a unique reference number that clearly identifies the drive by construction, power and voltage rating and selected options. Using the type designation you can specify your drives from the wide range of options available. Options are added to the type designation using the corresponding “plus” (+) code.

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:



Contents

ABB machinery drives, ACS850

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ABB machinery drives



ABB machinery drives are designed to meet the production and performance needs of machine builders, system integrators, panel builders and end users in a broad range of applications. ACS850 drives are ideal for applications like cranes, extruders, winches, conveyors, winders, pumps, fans and mixers in industries such as material handling, plastic and rubber, food and beverage, textile and metals.

The drives can be configured to meet the precise needs of these industries, as order-based configuration is an integral part of the offering. Covering a wide power and voltage range with standard and optional features, the drives are readily programmable, making their adaptation to different applications easy.

Wide range of options

ACS850 drives offer a wide range of built-in options such as different I/O and communications. A wide selection of external accessories is also available. The flexibility and programmability of the drives make them suitable for many applications in different areas of industry.

Robust design

The current ratings of ABB machinery drives are designed for applications that have a high overload requirement. At the heart of the drive is the motor control platform, direct torque control (DTC) that provides accurate motor torque and speed control even without feedback. The drive is designed for a long working life and as such, parts like fans and capacitors are selected to maximize their lifetime. This, together with the extensive protection features and design details such as coated boards, results in excellent reliability for the demanding industrial market.

Optimized cabinet assembly

ACS850 drives are designed to be built into a customer's own cabinet, using minimal cabinet space while ensuring that cabinet assembly is as easy as possible. The drives can be mounted side-by-side and cabinet assembly documentation is included. The documentation gives examples of different cabinet configurations, examples of drawings and hints on the selection of auxiliary equipment.



Main features

| Feature | Advantage | Benefit |
|---------------------------------------|--|---|
| Modular and compact design | | |
| Compact size | Smallest frame size is only 4 in (93 mm) wide. More drives can be placed in the same cabinet. | Optimum installation layout and efficient cabinet space usage. Space and cost savings. |
| Side-by-side mounting | Minimized cabinet wall space. No need to remember air gaps between drives. | Space and cost savings. |
| Modular design | Many standard features and a wide range of options allow different system configurations. | Fits many application needs. Offers flexibility in system design. |
| Optimal location of power terminals | Top-down power flow in frames A to D and G1 to G2 enables the most optimal cabinet layout in many cases. | Easy connection of power cables. Optimum installation layout and efficient cabinet space usage. Optimized EMC design. |
| Integrated brake chopper | Brake chopper as standard up to 30 hp (frames A to D) and a built-in option for other frame sizes. | Compact and cost-effective design. |
| User interface and programming | | |
| Intuitive human-machine interface | Large alphanumeric display showing different assistants and macros. Extremely easy to use and commission the drive. DriveStudio PC-tool offers easy access to drive parameter setting and start-up features. | Faster and more accurate drive configuration. Optimal drive settings as assistants offer interactive help. |
| Drive programming and configuration | Can replace relays and small PLCs with function block programming. | Lower investment cost. Higher flexibility in system design. |
| Memory unit for easy drive management | Complete drive configuration and settings are stored in a separate memory unit. Power or control unit can be replaced without parameter setting. | Drive functionality can be easily configured, modified or updated with the memory unit. Offers quick and easy after-sales service. |
| Designed for reliability | | |
| Robust main circuit design | Enhanced reliability. Coated boards and long life time components. Cooling supervision (depending on frame size). | Less process interruptions. Lower maintenance costs. |
| Extensive protection | Advanced thermal protection of the drive semiconductors and motor. Several adjustable protections for the drive and adjoining equipment ensure a reliable operation. | Higher process uptime. Early warning of any production interruptions. |
| Maintenance assistant | Indicates preventive maintenance needs of drive, motor or machine. User-set alarms and triggering limits. Monitors running hours, cooling fan running hours, number of relay switchings etc. | Helps with maintenance schedules and cost control of maintenance. Fewer unexpected process interruptions. |
| Diagnostic assistant | Drive helps in locating failures or reasons for performance changes and suggests remedies. | Reduced process downtime. Faster recovery to drives optimum performance. |
| Optimized use | | |
| Energy saving calculator | Monitors used and saved energy, displayed in kWh, currency (\$ or Euros) or volume of CO ₂ emission. | Easy to check the return on investment. |
| Load analyzer | Shows the load profile of the drive. | Easy process analysis. |
| Energy optimizer | Maximizes efficiency by optimizing the motor flux. | Improves motors performance therefore makes process more efficient. Energy savings are realized and money saved. |

Main features

| Feature | Advantage | Benefit |
|---|--|--|
| Control and performance | | |
| Compatible with AC induction and permanent magnet motors | Same drive can be used to control different motor types. | Savings in investment costs. Savings in spares stockholding. |
| Standard drive-to-drive link, configurable as Modbus link | No additional hardware needed for master-follower communication or Modbus. Galvanic isolation. | Lower investment cost. More reliable, disturbance-free isolation. |
| Different communication options | Flexibility with master communication - drive supports PROFIBUS, CANopen®, DeviceNet™, Modbus, EtherCAT, Modbus TCP and Ethernet / IP™ communication. | Drive can be applied to many existing processes. |
| Integrated safe torque-off function (up to SIL 3) | Safe torque-off (STO) is used to prevent unexpected start-up. High SIL class means high reliability of the safety function. Can also be used to implement Emergency Stop without contactors. | Enhances safety of the machines. Cost-effective and certified solution for safe machine maintenance. Fulfils new safety directives IEB 61508, IEC 62061 and EN ISO 13489-1. |
| Extensive configurable standard I/Os. | Optimized accessibility. | Lower cost. Fewer parts and installation work needed for cabinet assembly. |
| Optional I/O extensions | Plug-in analog and digital I/O extensions. | Extends drives' scope, performance and applications opportunities. |
| Direct torque control | Accurate, dynamic and static speed and torque control. Excellent process control even without pulse encoder. Power interruption ride-through using kinetic energy of load. Fast reaction to load or voltage variations. No shock torques. No torque ripple - minimized risk for torsional vibration. Less noise during motor operation. Output frequency up to 500 Hz. Enhanced motor identification at stand still. | Improves product quality, productivity and reliability. Lower investment cost. No unnecessary trips or process interruptions. Less maintenance. Suitable for use where audible noise is an issue. Applicable in high speed applications. Better process control due to more accurate identification. Can do motor identification without decoupling the load. |
| High overload and high starting torque | Smooth start without over-dimensioning the drive. | Longer motor and gear lifetime thereby reduced maintenance costs. |
| Made by ABB | | |
| Global market leader in AC drives with long experience | Well proven, safe and reliable solutions. Application know-how. | Highly reliable drives. |
| World wide service and support network | Professional support available around the world. | High quality service and support wherever you need it. |

Technical data

ACS850 - 04 - XXXX -

| |
|---|
| 2 |
| 5 |

 + XXXX

Mains connection

| | |
|-----------------------|--|
| Supply voltage | 3-phase 380 to 500 V AC +10 /-15% 3-phase 200 to 240 V AC ± 10% |
| Frequency | 50 to 60 Hz ± 5% |

DC connection

| | |
|-------------------------|--|
| DC voltage level | 485 to 675 V DC ± 10% (-5 types) 270 to 324 V DC ± 10% (-2 types) |
| Charging circuit | Internal in frames A to D External in frames E0 to G2 |

Motor connection

| | |
|-------------------------|---|
| Motor types | AC induction motors and permanent magnet motors |
| Output frequency | 0 to 500 Hz |
| Motor control | Direct torque control (DTC) or scalar control |
| Torque control: | Torque step rise time: |
| Open loop | <5 ms with nominal torque |
| Closed loop | <5 ms with nominal torque |
| | Non-linearity: |
| Open loop | ± 4% with nominal torque |
| Closed loop | ± 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 |

Braking power connection

| | |
|-----------------------|---|
| Brake chopper | Standard in frames A to D, built-in option in the other frame sizes |
| Brake resistor | External resistor connected to drive |

Operating conditions

| | |
|---|--|
| Degree of protection | IP20 according to EN 60529 (G frame IP00); Open type according to UL 508 |
| Ambient temperature | 14 to 131 °F / (-10 to +55 °C), derating above 104 °F (40 °C) No frost allowed |
| Installation altitude | 0 to 13000 ft (0 to 4000 m) (IT network: 6560 ft (2000 m)), derating above 3280 ft (1000 m): 1% / 328 ft (100 m) |
| Relative humidity | Max. 95%, no condensation allowed |
| Climatic/ environmental conditions | Class 3K3, 3C2 according to EN 60721-3-3. Oil mist, formation of ice, moisture condensation, water drops, water spray, water splashes and water jets are not permissible (EN 60204, Part 1) |
| Vibration | Class 3M4 according to EN 60721-3-3 |
| EMC (According to EN 61800-3) | Categories C2 and C3 with optional filter (according to EN 61800-3) |
| Functional safety | Safe torque-off (STO according EN 61800-5-2) IEC 61508: SIL 3 IEC 61511: SIL3 IEC 62061: SILCL 3 EN ISO 13849-1: PL e Certified by TÜV |
| Compliance | Frames A to D: CE, GOST R, UL, cUL, CSA, C-Tick Frames E0 to G: CE, GOST R; pending: UL, cUL, CSA, C-Tick |

| Feature / frame size | A | B | C | D | E0 | E | G | G1* | G2* |
|---|--|--|--|---|---------------------------------|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Current and power | | | | | | | | | |
| Nominal current | 3 to 8 A | 10.5 to 18 A | 25 to 50 A | 61 to 94 A | 103 to 144 A | 166 to 290 A | 430 to 720 A | 387 to 680 A | 710 to 875 A |
| Maximum current | 4.4 to 10.5 A | 13.5 to 21 A | 33 to 66 A | 78 to 124 A | 138 to 170 A | 202 to 348 A | 588 to 1017 A | 470 to 710 A | 850 to 1100 A |
| Typical motor power in hp (230 V) (480 V) | 0.5 to 2 hp 1.5 to 5 hp | 3 to 5 hp 5 to 10 hp | 7.5 to 15 hp 15 to 30 hp | 20 to 30 hp 40 to 60 hp | – 75 to 100 hp | – 125 to 200 hp | – 350 to 600 hp | – 300 to 550 hp | – 600 to 700 hp |
| Typical motor power in kW (230 V) (400 V) (500 V) | 0.37 to 1.5 kW 1.1 to 3 kW 1.5 to 4 kW | 2.2 to 4 kW 4 to 7.5 kW 5.5 to 11 kW | 5.5 to 11 kW 11 to 22 kW 15 to 30 kW | 15 to 22 kW 30 to 45 kW 37 to 55 kW | – 55 to 75 kW 55 to 90 kW | – 90 to 160 kW 110 to 200 kW | – 200 to 400 kW 250 to 500 kW | – 200 to 355 kW 250 to 400 kW | – 400 to 500 kW 500 to 560 kW |
| Brake chopper | ● | ● | ● | ● | □ | □ | □ | □ | □ |
| Brake resistor | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Input choke | ■ | ■ | ● | ● | ● | ● | ● | ● | ● |
| EMC filter / C2 | ■ | ■ | ■ | ■ | □ | □ | – | – | – |
| EMC filter / C3 | ■ | ■ | □ | □ | □ | □ | □ | ● | ● |
| Mounting and cooling | | | | | | | | | |
| Air cooling | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Side-by-side mounting | ● | ● | ● | ● | ● | ● | – | – | – |
| DIN rail mounting | ● | ● | – | – | – | – | – | – | – |
| Removable power connectors | ● | ● | – | – | – | – | – | – | – |
| Removable control connectors | ● | ● | ● | ● | ● | ● | ● | ● | ● |

● = standard □ = option, built-in ■ = option, external – = not available * available during 2011

Ratings, types and dimensions

ACS850 - 04 - XXXX -

| |
|---|
| 2 |
| 5 |

 + XXXX

Ratings 200 to 240 V

| Nominal ratings | | No-overload use | | Light-duty use | | | Heavy-duty use | | | Type designation | Frame size |
|-----------------|---------------|-----------------------------|-----------------------------|----------------|--------------------------------|--------------------------------|----------------|--------------------------------|--------------------------------|------------------|------------|
| I_{2N} (A) | I_{Max} (A) | P_N (hp) $U_N = 230$ V | P_N (kW) $U_N = 230$ V | I_{Ld} (A) | P_{Ld} (hp) $U_N = 230$ V | P_{Ld} (kW) $U_N = 230$ V | I_{Hd} (A) | P_{Hd} (hp) $U_N = 230$ V | P_{Hd} (kW) $U_N = 230$ V | | |
| 3 | 4.4 | 0.5 | 0.37 | 2.8 | 0.5 | 0.37 | 2.5 | 0.5 | 0.37 | ACS850-04-03A0-2 | A |
| 3.6 | 5.3 | 0.75 | 0.55 | 3.4 | 0.75 | 0.55 | 3 | 0.5 | 0.37 | ACS850-04-03A6-2 | A |
| 4.8 | 7 | 1 | 0.75 | 4.5 | 1 | 0.75 | 4 | 0.75 | 0.55 | ACS850-04-04A8-2 | A |
| 6 | 8.8 | 1.5 | 1.1 | 5.5 | 1 | 1.1 | 5 | 1 | 0.75 | ACS850-04-06A0-2 | A |
| 8 | 10.5 | 2 | 1.5 | 7.6 | 2 | 1.5 | 6 | 1.5 | 1.1 | ACS850-04-08A0-2 | A |
| 10.5 | 13.5 | 3 | 2.2 | 9.7 | 3 | 2.2 | 9 | 2 | 1.5 | ACS850-04-010A-2 | B |
| 14 | 16.5 | 3 | 3 | 13 | 3 | 3 | 11 | 3 | 2.2 | ACS850-04-014A-2 | B |
| 18 | 21 | 5 | 4 | 16.8 | 5 | 4 | 14 | 3 | 3 | ACS850-04-018A-2 | B |
| 25 | 33 | 7.5 | 5.5 | 23 | 7.5 | 5.5 | 19 | 5 | 4 | ACS850-04-025A-2 | C |
| 30 | 36 | 10 | 7.5 | 28 | 10 | 7.5 | 24 | 7.5 | 5.5 | ACS850-04-030A-2 | C |
| 35 | 44 | 10 | 7.5 | 32 | 10 | 7.5 | 29 | 10 | 7.5 | ACS850-04-035A-2 | C |
| 44 | 53 | 15 | 11 | 41 | 15 | 11 | 35 | 10 | 7.5 | ACS850-04-044A-2 | C |
| 50 | 66 | 15 | 11 | 46 | 15 | 11 | 44 | 15 | 11 | ACS850-04-050A-2 | C |
| 61 | 78 | 20 | 15 | 57 | 20 | 15 | 52 | 15 | 11 | ACS850-04-061A-2 | D |
| 78 | 100 | 25 | 18.5 | 74 | 25 | 18.5 | 66 | 20 | 15 | ACS850-04-078A-2 | D |

Ratings 400 to 500 V

| Nominal ratings | | No-overload use | | | Light-duty use | | | | Heavy-duty use | | | | Type designation | Frame size |
|-----------------|---------------|-----------------------------|-----------------------------|-----------------------------|----------------|--------------------------------|--------------------------------|--------------------------------|-------------------|--------------------------------|--------------------------------|--------------------------------|------------------|------------|
| I_{2N} (A) | I_{Max} (A) | P_N (hp) $U_N = 480$ V | P_N (kW) $U_N = 400$ V | P_N (kW) $U_N = 500$ V | I_{Ld} (A) | P_{Ld} (hp) $U_N = 480$ V | P_{Ld} (kW) $U_N = 400$ V | P_{Ld} (kW) $U_N = 500$ V | I_{Hd} (A) | P_{Hd} (hp) $U_N = 480$ V | P_{Hd} (kW) $U_N = 400$ V | P_{Hd} (kW) $U_N = 500$ V | | |
| 3 | 4.4 | 1.5 | 1.1 | 1.5 | 2.8 | 1 | 1.1 | 1.1 | 2.5 | 1 | 0.75 | 1.1 | ACS850-04-03A0-5 | A |
| 3.6 | 5.3 | 2 | 1.5 | 1.5 | 3.4 | 2 | 1.5 | 1.5 | 3 | 1.5 | 1.1 | 1.5 | ACS850-04-03A6-5 | A |
| 4.8 | 7 | 3 | 2.2 | 2.2 | 4.5 | 2 | 1.5 | 2.2 | 4 | 2 | 1.5 | 2.2 | ACS850-04-04A8-5 | A |
| 6 | 8.8 | 3 | 2.2 | 3 | 5.5 | 3 | 2.2 | 3 | 5 | 3 | 2.2 | 2.2 | ACS850-04-06A0-5 | A |
| 8 | 10.5 | 5 | 3 | 4 | 7.6 | 5 | 3 | 4 | 6 | 3 | 2.2 | 3 | ACS850-04-08A0-5 | A |
| 10.5 | 13.5 | 5 | 4 | 5.5 | 9.7 | 5 | 4 | 5.5 | 9 | 5 | 4 | 4 | ACS850-04-010A-5 | B |
| 14 | 16.5 | 7.5 | 5.5 | 7.5 | 13 | 7.5 | 5.5 | 7.5 | 11 | 7.5 | 5.5 | 5.5 | ACS850-04-014A-5 | B |
| 18 | 21 | 10 | 7.5 | 11 | 16.8 | 10 | 7.5 | 7.5 | 14 | 10 | 7.5 | 7.5 | ACS850-04-018A-5 | B |
| 25 | 33 | 15 | 11 | 15 | 23 | 15 | 11 | 11 | 19 | 10 | 7.5 | 11 | ACS850-04-025A-5 | C |
| 30 | 36 | 20 | 15 | 18.5 | 28 | 20 | 15 | 15 | 24 | 15 | 11 | 15 | ACS850-04-030A-5 | C |
| 35 | 44 | 25 | 18.5 | 22 | 32 | 20 | 15 | 18.5 | 29 | 20 | 15 | 18.5 | ACS850-04-035A-5 | C |
| 44 | 53 | 30 | 22 | 30 | 41 | 30 | 22 | 22 | 35 | 25 | 18.5 | 22 | ACS850-04-044A-5 | C |
| 50 | 66 | 30 | 22 | 30 | 46 | 30 | 22 | 30 | 44 | 30 | 22 | 30 | ACS850-04-050A-5 | C |
| 61 | 78 | 40 | 30 | 37 | 57 | 40 | 30 | 37 | 52 | 40 | 22 | 30 | ACS850-04-061A-5 | D |
| 78 | 100 | 60 | 37 | 45 | 74 | 50 | 37 | 45 | 66 | 50 | 37 | 45 | ACS850-04-078A-5 | D |
| 94 | 124 | 60 | 45 | 55 | 90 | 60 | 45 | 55 | 75 | 50 | 37 | 45 | ACS850-04-094A-5 | D |
| 103 | 138 | 75 | 55 | 55 | 100 | 75 | 55 | 55 | 83 | 60 | 45 | 55 | ACS850-04-103A-5 | E0 |
| 144 | 170 | 100 | 75 | 90 | 141 | 100 | 75 | 90 | 100 | 75 | 55 | 55 | ACS850-04-144A-5 | E0 |
| 166 | 202 | 125 | 90 | 110 | 155 | 125 | 75 | 90 | 115 | 75 | 55 | 75 | ACS850-04-166A-5 | E |
| 202 | 282 | 150 | 110 | 132 | 184 | 150 | 90 | 110 | 141 | 100 | 75 | 90 | ACS850-04-202A-5 | E |
| 225 | 326 | 150 | 110 | 132 | 220 | 150 | 110 | 132 | 163 | 125 | 90 | 110 | ACS850-04-225A-5 | E |
| 260 | 326 | 200 | 132 | 160 | 254 | 200 | 132 | 160 | 215 | 150 | 110 | 132 | ACS850-04-260A-5 | E |
| 290 | 348 | 200 | 160 | 200 | 286 | 200 | 160 | 200 | 232 | 150 | 132 | 160 | ACS850-04-290A-5 | E |
| 430 | 588 | 350 | 200 | 250 | 425 | 350 | 200 | 250 | 340 | 250 | 160 | 200 | ACS850-04-430A-5 | G |
| 521 | 588 | 450 | 250 | 355 | 516 | 450 | 250 | 355 | 370 | 300 | 200 | 250 | ACS850-04-521A-5 | G |
| 602 | 840 | 500 | 315 | 400 | 590 | 500 | 315 | 400 | 477 | 400 | 250 | 315 | ACS850-04-602A-5 | G |
| 693 | 1017 | 550 | 355 | 450 | 679 | 550 | 355 | 450 | 590 ¹⁾ | 500 | 315 | 400 | ACS850-04-693A-5 | G |
| 720 | 1017 | 600 | 400 | 500 | 704 | 600 | 400 | 500 | 635 ²⁾ | 500 | 355 | 450 | ACS850-04-720A-5 | G |
| 387 | 470 | 300 | 200 | 250 | 377 | 300 | 200 | 250 | 300 | 200 | 160 | 200 | ACS850-04-387A-5 | G1* |
| 460 | 533 | 350 | 250 | 315 | 450 | 350 | 250 | 315 | 355 | 250 | 200 | 250 | ACS850-04-460A-5 | G1* |
| 558 | 640 | 450 | 315 | 355 | 550 | 450 | 315 | 355 | 414 | 350 | 200 | 250 | ACS850-04-558A-5 | G1* |
| 680 | 710 | 500 | 355 | 400 | 664 | 500 | 355 | 400 | 477 | 400 | 250 | 315 | ACS850-04-680A-5 | G1* |
| 710 | 850 | 600 | 400 | 500 | 700 | 600 | 400 | 500 | 566 | 450 | 315 | 400 | ACS850-04-710A-5 | G2* |

Notes

- For ambient temperature of less than 95 °F (35 °C), maximum overload is 150% of I_{Hd} . For ambient temperature of 104 °F (40 °C), maximum overload is 145% of I_{Hd} .
- For ambient temperature of less than 86 °F (30 °C), maximum overload is 150% of I_{Hd} . For ambient temperature of 104 °F (40 °C), maximum overload is 140% of I_{Hd} .

* Available during 2011.

| Nominal ratings | |
|--|---|
| I_{2N} | Rated current available continuously without overloading at 104 °F (40 °C). |
| I_{max} | Maximum output current. Available for 10 s at start, otherwise as long as allowed by drive temperature. Note: max. motor shaft power is 150% P_{Hd} . |
| Typical ratings: No-overload use | |
| P_N | Typical motor power in no-overload use. |
| Light-duty use | |
| I_{Ld} | Continuous current allowing 110% I_{Ld} for 1 min / 5 min at 104 °F (40 °C). |
| P_{Ld} | Typical motor power in light-duty use. |
| Heavy-duty use | |
| I_{Hd} | Continuous current allowing 150% I_{Hd} for 1 min / 5 min at 104 °F (40 °C). |
| P_{Hd} | Typical motor power in heavy-duty use. |
| The current ratings are the same regardless of the supply voltage within one voltage range. The ratings apply at 104 °F (40 °C) ambient temperature. | |

Ratings, types and dimensions

| | | | | | | | | |
|--------|---|----|---|------|---|---|---|------|
| ACS850 | - | 04 | - | XXXX | - | 2 | + | XXXX |
| | | | | | | 5 | | |

Cooling characteristics and noise levels

| Power loss (BTU/hr) (Watts) Load 100% | Air flow ft ³ /min (m ³ /h) | Noise level dBA | Type designation | Frame size |
|--|--|--------------------|------------------|------------|
| U_N = 200 to 240 V | | | | |
| 312 (91) | 14 (24) | 47 | ACS850-04-03A0-2 | A |
| 332 (97) | 14 (24) | 47 | ACS850-04-03A6-2 | A |
| 390 (114) | 14 (24) | 47 | ACS850-04-04A8-2 | A |
| 457 (134) | 14 (24) | 47 | ACS850-04-06A0-2 | A |
| 526 (154) | 14 (24) | 47 | ACS850-04-08A0-2 | A |
| 626 (183) | 28 (48) | 39 | ACS850-04-010A-2 | B |
| 733 (215) | 28 (48) | 39 | ACS850-04-014A-2 | B |
| 936 (274) | 28 (48) | 39 | ACS850-04-018A-2 | B |
| 1109 (325) | 84 (142) | 71 | ACS850-04-025A-2 | C |
| 1438 (421) | 84 (142) | 71 | ACS850-04-030A-2 | C |
| 1507 (442) | 84 (142) | 71 | ACS850-04-035A-2 | C |
| 1576 (462) | 118 (200) | 71 | ACS850-04-044A-2 | C |
| 1894 (555) | 118 (200) | 71 | ACS850-04-050A-2 | C |
| 2492 (730) | 171 (290) | 70 | ACS850-04-061A-2 | D |
| 3034 (889) | 171 (290) | 70 | ACS850-04-078A-2 | D |
| 3597 (1054) | 171 (290) | 70 | ACS850-04-094A-2 | D |
| U_N = 400 to 500 V | | | | |
| 340 (100) | 14 (24) | 47 | ACS850-04-03A0-5 | A |
| 363 (106) | 14 (24) | 47 | ACS850-04-03A6-5 | A |
| 430 (126) | 14 (24) | 47 | ACS850-04-04A8-5 | A |
| 504 (148) | 14 (24) | 47 | ACS850-04-06A0-5 | A |
| 586 (172) | 14 (24) | 47 | ACS850-04-08A0-5 | A |
| 722 (212) | 28 (48) | 39 | ACS850-04-010A-5 | B |
| 852 (250) | 28 (48) | 39 | ACS850-04-014A-5 | B |
| 1084 (318) | 28 (48) | 39 | ACS850-04-018A-5 | B |
| 1282 (375) | 84 (142) | 71 | ACS850-04-025A-5 | C |
| 1654 (485) | 84 (142) | 71 | ACS850-04-030A-5 | C |
| 1750 (513) | 84 (142) | 71 | ACS850-04-035A-5 | C |
| 1846 (541) | 118 (200) | 71 | ACS850-04-044A-5 | C |
| 2205 (646) | 118 (200) | 71 | ACS850-04-050A-5 | C |
| 2867 (840) | 171 (290) | 70 | ACS850-04-061A-5 | D |
| 3481 (1020) | 171 (290) | 70 | ACS850-04-078A-5 | D |
| 4096 (1200) | 171 (290) | 70 | ACS850-04-094A-5 | D |
| 4061 (1190) | 99 (168) | 65 | ACS850-04-103A-5 | E0 |
| 4915 (1440) | 238 (405) | 65 | ACS850-04-144A-5 | E0 |
| 6621 (1940) | 238 (405) | 65 | ACS850-04-166A-5 | E |
| 7884 (2310) | 238 (405) | 65 | ACS850-04-202A-5 | E |
| 9591 (2819) | 238 (405) | 65 | ACS850-04-225A-5 | E |
| 11126 (3260) | 238 (405) | 65 | ACS850-04-260A-5 | E |
| 14335 (4200) | 238 (405) | 65 | ACS850-04-290A-5 | E |
| 23379 (6850) | 718 (1220) | 72 | ACS850-04-430A-5 | G |
| 26621 (7800) | 718 (1220) | 72 | ACS850-04-521A-5 | G |
| 27645 (8100) | 718 (1220) | 72 | ACS850-04-602A-5 | G |
| 31058 (9100) | 718 (1220) | 72 | ACS850-04-693A-5 | G |
| 33106 (9700) | 718 (1220) | 72 | ACS850-04-720A-5 | G |

Cooling characteristics and noise level data for frames G1 and G2 will be available during 2011.

Dimensions

| Frame size | Height ¹⁾ | | Depth ^{2) 3)} | | Width | | Weight | |
|-----------------|----------------------|------|------------------------|-----|-------|-----|-----------|-----------|
| | in | mm | in | mm | in | mm | lb | kg |
| A | 14.3 | 364 | 7.8 | 197 | 3.7 | 93 | 7 | 3 |
| B | 15.0 | 380 | 10.8 | 274 | 4.0 | 101 | 11 | 5 |
| C | 22.3 | 567 | 10.9 | 276 | 6.5 | 166 | 35 | 16 |
| D | 22.3 | 567 | 10.9 | 276 | 8.7 | 221 | 51 | 23 |
| E0 | 23.7 | 602 | 13.9 | 354 | 10.9 | 276 | 77 | 35 |
| E | 27.6 | 700 | 17.4 | 443 | 12.3 | 312 | 147 | 67 |
| G ⁴⁾ | 61.6 | 1564 | 22.4 | 568 | 22.1 | 562 | 441 | 205 |
| G1* | 62.5 | 1587 | 20.2 | 512 | 13.1 | 332 | 428 - 448 | 194 - 203 |
| G2* | 68.4 | 1737 | 20.2 | 512 | 13.1 | 332 | 505 | 229 |

Notes

All dimensions and weights are without options.

¹⁾ Height is the maximum measure without clamping plates.

²⁾ An additional 2 in (50 mm) should be reserved for feedback cabling if FEN-01, -11 or -21 options are used (except for frame G1 and G2 with integrated control unit).

³⁾ Assistant control panel adds 0.9 in (23 mm) in to the depth (except for frame G1 and G2 with integrated control unit).

⁴⁾ Frame G includes separately mounted control section, 12.8 in (325 mm) H x 4.5 in (114 mm) D x 3.7 in (94 mm) W, 3 lb (1.3 kg) (except for frame G1 and G2 with integrated control unit).

* Available during 2011.

Standard control program

Based on direct torque control technology, the ACS850 offers highly advanced features as standard. The ACS850 standard program provides solutions to virtually all AC drives applications such as mixers, separators, extruders and conveyors, to name a few.

Fast and easy commissioning

The ACS850 standard program offers flexibility and extensive parameter settings. It consists of a simple, ready-made program that can easily be modified to meet specific application needs. Commissioning is also simplified by several software features that come standard with every drive.

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

Furthermore the standard control program offers an integrated emergency stop and supports the functionality of prevention of unexpected start-up.

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

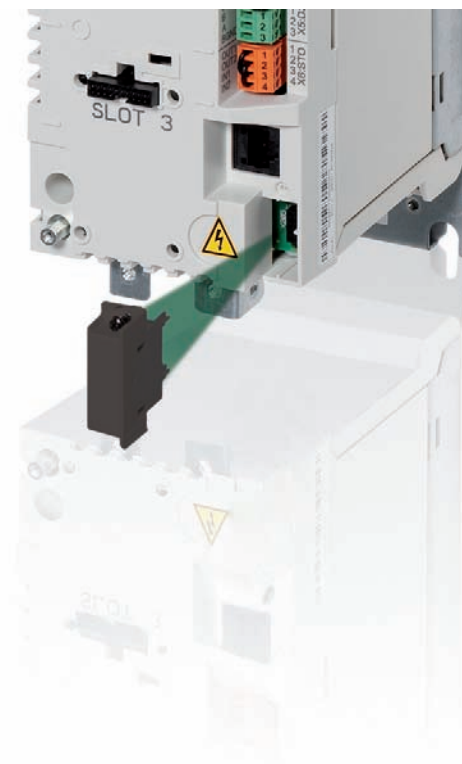
Program customization

In addition to standard control program functionalities, ACS850 offers, function block programming, which makes it possible to replace relays or even a PLC.

Removable memory unit

A removable memory unit provides easy maintenance by storing the complete firmware, including all user settings and motor data. Thus, if the power unit or control unit is replaced, the drive can be re-commissioned without any reprogramming, just move the memory unit.

- Stores the drive software and parameter settings
- Fast and easy recommissioning
- Enables software and parameter configuration at workshop instead of doing it on-site



Standard software features

ACS850 drives have many features to enhance their reliability and durability as well as the easiness of use. Among those, several macros for parameter settings and several advanced functions such as short and long parameter menus, input and output mapping and changed parameters list, making the drive easy to use.

All these functions can be accessed either via the user-friendly assistant control panel or DriveStudio PC tool.

Macros

Several macros which have pre-set, application-specific parameter settings are available as standard in each drive. These pre-programmed parameter settings enable fast and easy commissioning by adjusting all the relevant parameters in just a couple of clicks.

Start-up assistant

The intelligent and intuitive start-up assistant allows first-time users to quickly get up-to-speed and customize the drive according to their needs. This is complemented by a built-in help function to make parameter-by-parameter setting easy. This way the drive can be quickly commissioned, even without manuals.



Maintenance assistant

The maintenance assistant reminds the user about the drive's preventive maintenance schedule or routine, or that of its associated components such as motor, cabinet air inlet filters and input contactors. It reminds users of planned maintenance needs based on running hours, operating hours or relay switching to reduce unplanned process interruptions.

Diagnostic assistant

Each ACS850 drive is equipped with a diagnostic assistant that helps in locating the cause of any disturbance to the drive and even suggests possible remedies. This reduces process downtime by making repair or adjustments quicker and easier.

Energy saving features

- A calculator showing the used and saved energy, displayed in kWh, currency (€ or \$) or volume of CO₂ emission. Data is calculated by reference values stored in the drive by the user.
- An energy efficiency optimizer that adjusts the motor flux in such a way that the total efficiency is maximized.
- A load analyzer showing the load profile of the drive.

Short/long menus

The user interface can be configured so that it displays only the most common parameters. This short menu allows users to quickly access the parameters they need without having to go through all the drive's parameters.

A long menu is available, displaying a complete list of parameters for a more advanced configuration.

Input and output mapping

This functionality allows the user to easily go through the input and output configuration of the drive.

List of changed parameters

This feature allows users to go through the list of changed parameters. This way, the user does not have to go through all the drive's parameters making it quick to identify the ones recently modified.

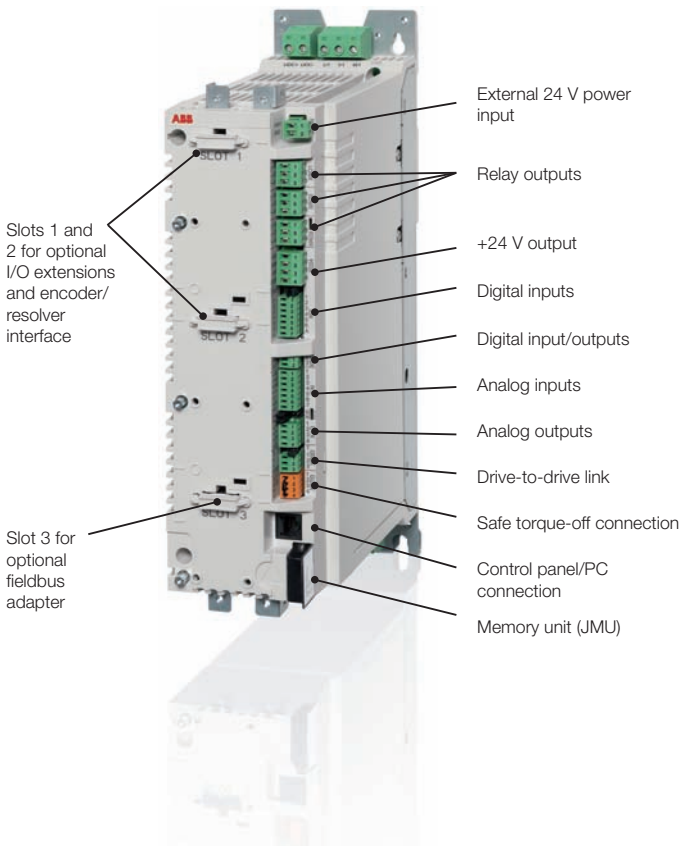
Standard I/O



Standard I/O connections

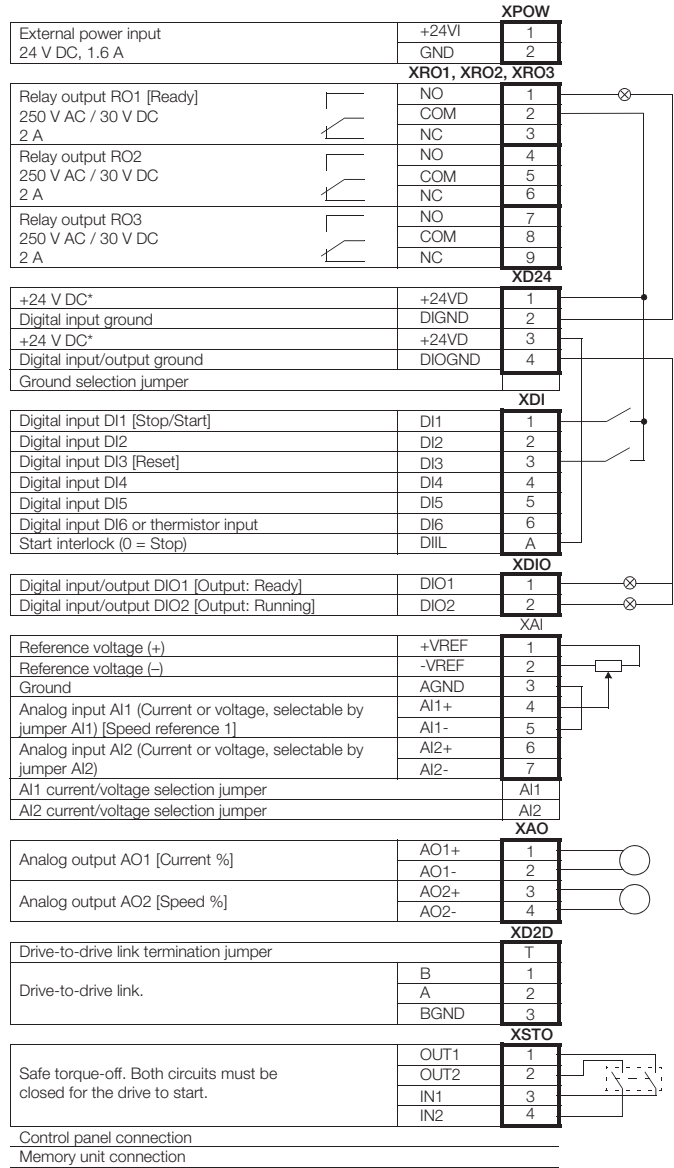
ACS850 drives have one of the most extensive offering of standard I/Os on the market. Analog and digital I/O channels are used for different functions such as control, monitoring and measurement purposes (eg, motor temperature).

- Control voltage supply: external supply (24 V DC) input for the control unit
- Digital I/O: 6 x DI, 2 x DI/O (can be used also for pulse train inputs or outputs, max 32 kHz), 3 x RO
- Analog I/O: 2 x AI (mA or V), 2 x AO (mA)
- Thermistor input: motor thermistor (PTC)
- Start interlock: drive interlock input
- Embedded Modbus link as standard, galvanically isolated for trouble-free operation and can be alternatively configured as a high speed drive-to-drive link for master-follower operation
- Safe torque-off (STO): designed for Safety Integrity Level 3 (SIL 3) according to IEC 61508
- Control panel connection: PC tools and control panel connection (RJ45)
- Memory unit connection: complete drive configuration and settings are stored in the removable memory unit



Control unit

The control unit of the ACS850 consists of various control connections, which can be configured as required by the customer application.



*Total maximum current: 200 mA

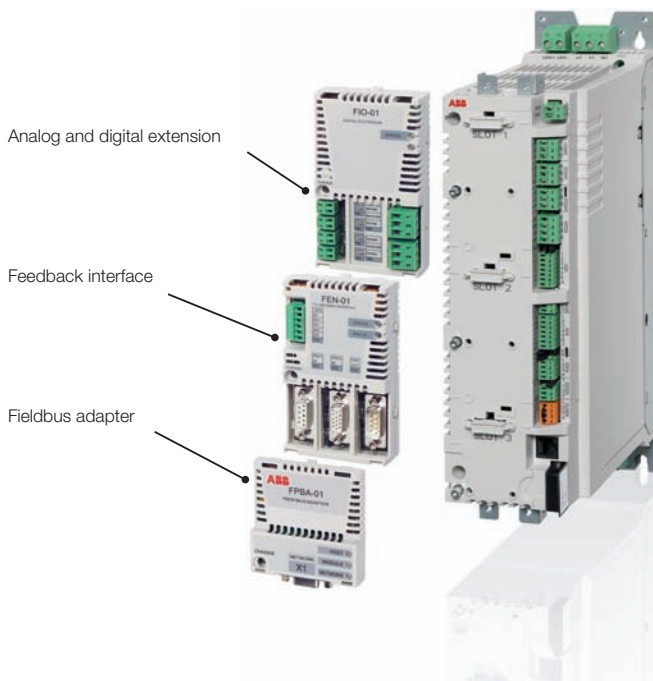
Options

Control and communication modules



Optional I/O

The optional I/O extension modules provide additional connectivity possibilities for ACS850 drives. Extensions include analog and digital modules and speed feedback interface modules which are mounted in the slots on the ACS850 control board. The control board has two slots available for I/O extension modules. Additionally, there is a third slot available for fieldbus adapter modules.



Fieldbus adapter modules

A wide range of fieldbus protocols are supported to enable the ACS850 to connect to major automation systems. Fieldbus adapter modules allow manufacturing flexibility, reduced installation and engineering effort via:

- Drive control
- Drive monitoring
- Drive diagnostics (via alarms, limit and fault words)
- Drive parameter handling

| Options | Option codes | Data | Install in |
|---|--------------|---|-------------|
| Analog and digital extension modules | | | |
| FIO-01 | +L501 | 4 x DI/O, 2 x RO | Slot 1 or 2 |
| FIO-11 | +L500 | 3 x AI (mA/V), 1 x AO (mA), 2 x DI/O | |
| FIO-21 | +L519 | 1 x AI (mA/V), 1 x AO (mA), 1 x DI, 2 x RO | |
| Feedback interface modules | | | |
| FEN-01 | +L517 | 2 inputs (TTL incremental encoder), 1 output ¹⁾ | Slot 1 or 2 |
| FEN-11 | +L518 | 2 inputs (SinCos absolute, TTL incremental encoder), 1 output ¹⁾ | |
| FEN-21 | +L516 | 2 inputs (Resolver, TTL incremental encoder), 1 output ¹⁾ | |
| FEN-31 | +L502 | 1 input (HTL incremental encoder), 1 output | |
| Fieldbus adapter modules | | | |
| FPBA-01 | +K454 | PROFIBUS-DP, DPV0/DPV1 | Slot 3 |
| FCAN-01 | +K457 | CANopen [®] | |
| FDNA-01 | +K451 | DeviceNet [™] | |
| FENA-01 | +K466 | EtherNet/IP [™] , Modbus TCP, PROFINET IO ²⁾ | |
| FSCA-01 | +K458 | Modbus RTU | |
| FECA-01 | +K469 | EtherCAT [®] | |

¹⁾ When this module is used, the lower part of the control unit cover cannot be used.

²⁾ Available during 2011.

Options

Control panel



Assistant control panel

The assistant control panel features a multilingual alphanumeric display for easy drive configuration. It is an ideal tool for service engineers, providing the following features:



- A large alphanumeric display
- Easy to navigate
- Soft and convenient keys
- Local control keys (start/stop/reference)
- Parameter setting and monitoring
- Status and history data
- Real-time clock
- Assisting functionalities like
 - Start-up assistant
 - Maintenance assistant
 - Diagnostic assistant



Assistant control panel options

There are various cover assembly options for the ACS850. The cover is mounted on the drive depending on the specific need of the customer application.

Standard control unit cover

Comes as standard without assistant control panel and holder.



Control unit cover with assistant control panel (+J400)

Includes assistant control panel, control unit cover with panel holder and internal interface cable.



Control unit cover with panel holder (+J414)

Includes control unit cover with panel holder, panel cover and internal interface cable.



Door mounting kit with assistant control panel (+J410)

Includes assistant control panel and panel holder for cabinet door mounting, with IP54 kit and 10 ft (3 m) cable.



Options

EMC filters



Electromagnetic Compatibility (EMC) and modules

The electrical/electronic equipment must be able to operate without problems within an electromagnetic environment. This is called immunity. The ACS850 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 ACS850 model can be equipped with a built-in filter to reduce high frequency emission.

EMC standards

The EMC product standard (EN 61800-3 (2004)) covers the specific EMC requirements stated for drives (tested with motor and cable) within the EU.

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

1st environment vs 2nd environment

1st environment (category C1 to C2)

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

2nd environment (category C3 to C4)

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

Selecting an EMC filter

The following table (below) gives the correct filter selection.

EMC standards

| EN61800-3 (2004) product standard | EN 55011, product family standard for industrial, scientific and medical (ISM) equipment | EN 61000-6-4, generic emission standard for industrial environments | EN 61000-6-3, generic emission standard for residential, commercial and light-industrial environment |
|--|--|---|--|
| Category C1 (1 st environment) | Group 1 Class B | Not applicable | Applicable |
| Category C2 (1 st environment) | Group 1 Class A | Applicable | Not applicable |
| Category C3 (2 nd environment) | Group 2 Class A | Not applicable | Not applicable |
| Category C4 (2 nd environment) | Not applicable | Not applicable | Not applicable |

| EMC category / frame | Option code | A to B | C to D | E0 to E | G |
|--|-------------|-----------------|--------------------------|--------------------------|--------------------------|
| C3 filter, earthed/unearthed network * | +E210 | – | – | <input type="checkbox"/> | <input type="checkbox"/> |
| C3 filter earthed network only * | +E200 | ■ ¹⁾ | <input type="checkbox"/> | – | – |
| C2 filter, earthed network only * | +E202 | – | – | <input type="checkbox"/> | – |
| C2 filter, earthed network only * | | ■ ²⁾ | ■ ²⁾ | – | – |

= option, built-in = option, external – = not available

EMC category for frame G1 will be released during 2011. In frame G2 EMC category 3 comes as standard.

Notes

¹⁾ External, plug-in

²⁾ External accessory, no plus code

* Max. cable length 328 ft (100 m)

Options

Mains circuit



Mains chokes

Mains chokes are typically used to reduce harmonics in the mains current. Frames C to G2 are equipped with built-in choke as standard. For frames A and B, the ACS850

drives do not necessarily need a separate mains choke for operation. If, however, separate mains choke are needed, they are available to meet different system design requirements.

| Frame size | Drive type designation | Type | Dimensions | | | | | | Weight | |
|------------|------------------------|--------|------------|-----|--------|-----|-------|-----|--------|-----|
| | | | Width | | Length | | Depth | | lb | kg |
| | | | in | mm | in | mm | in | mm | | |
| A | ACS850-04-03A0-5 | CHK-01 | 4.72 | 120 | 5.75 | 146 | 3.11 | 79 | 4.0 | 1.8 |
| A | ACS850-04-03A6-5 | CHK-01 | 4.72 | 120 | 5.75 | 146 | 3.11 | 79 | 4.0 | 1.8 |
| A | ACS850-04-04A8-5 | CHK-02 | 5.91 | 150 | 6.89 | 175 | 3.39 | 86 | 8.4 | 3.8 |
| A | ACS850-04-06A0-5 | CHK-02 | 5.91 | 150 | 6.89 | 175 | 3.39 | 86 | 8.4 | 3.8 |
| B | ACS850-04-08A0-5 | CHK-02 | 5.91 | 150 | 6.89 | 175 | 3.39 | 86 | 8.4 | 3.8 |
| B | ACS850-04-010A-5 | CHK-03 | 5.91 | 150 | 6.89 | 175 | 3.39 | 100 | 11.9 | 5.4 |
| B | ACS850-04-014A-5 | CHK-03 | 5.91 | 150 | 6.89 | 175 | 3.39 | 100 | 11.9 | 5.4 |
| B | ACS850-04-018A-5 | CHK-04 | 5.91 | 150 | 6.89 | 175 | 3.39 | 100 | 11.5 | 5.2 |

Resistor braking

Depending on the application, an external braking resistor may be needed to dissipate the generated kinetic energy thermally. For this, ACS850 uses its braking chopper and external braking resistor.

Brake chopper

The ACS850 series has built-in brake choppers in frames A to D (up to 60 hp (45 kW) at 480 V) as standard. Above this, brake choppers are available as built-in options.

Brake control

Brake control keeps the intermediate circuit voltage level to set limits, detects possible failures like brake chopper or resistor overtemperature, braking chopper, resistor or resistor cable short circuit.

Brake resistor

Preselected brake resistors are separately available for all ACS850 types. Resistors include intergrated thermal sensor as standard. Resistors other than standard offering 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 ACS850 drives, no separate fuses in the brake circuit are required if the following conditions are met:

- The ACS850 mains cable is protected by fuses
- No mains cable/fuse overrating takes place

ACS850 drives

Three phase 380–480 V applications, stopping duty only

Standard Enclosed Resistor packages ¹

| | | DutyCycle=3sec on/27sec off | | | | DutyCycle=10sec on/50sec off | | | |
|------------|-----|-----------------------------|------|-------|--------------|------------------------------|------|-------|--------------|
| Drive P/N | HP | Resistor Part No. | Ohms | Watts | Dimensions | Resistor Part No. | Ohms | Watts | Dimensions |
| ACS850-04- | ND | | | | | | | | |
| 06A0-5 | 3 | P14494-61 | 120 | 300 | 12Wx5Dx5H | P14494-61 | 120 | 300 | 12Wx5Dx5H |
| 08A0-5 | 5 | P14494-61 | 120 | 300 | 12Wx5Dx5H | ABB-48431-110 | 120 | 600 | 12Wx7Dx5H |
| 010A-5 | 5 | ABB-48431-050 | 80 | 400 | 12Wx5Dx5H | ABB-48431-052 | 80 | 800 | 12Wx7Dx5H |
| 014A-5 | 7,5 | ABB-41152 | 45 | 600 | 12Wx7Dx5H | P14494-25 | 45 | 800 | 12Wx7Dx5H |
| 018A-5 | 10 | ABB-41152 | 45 | 600 | 12Wx7Dx5H | P14494-26 | 45 | 1260 | 12Wx10Dx5H |
| 025A-5 | 15 | ABB-48431-002 | 22 | 819 | 12Wx7Dx5H | ABB-48431-004 | 22 | 1408 | 12Wx13Dx5H |
| 030A-5 | 20 | ABB-41154 | 22 | 900 | 12Wx10Dx5H | ABB-48431-005 | 22 | 1862 | 12Wx16Dx5H |
| 035A-5 | 20 | ABB-48431-003 | 22 | 1140 | 12Wx10Dx5H | ABB-44472 | 22 | 1904 | 12Wx16Dx5H |
| 044A-5 | 30 | ABB-48431-030 | 13 | 1433 | 12Wx13Dx5H | ABB-48431-033 | 13 | 3328 | 19Wx10Dx5H |
| 050A-5 | 30 | ABB-48431-030 | 13 | 1433 | 12Wx13Dx5H | ABB-48431-033 | 13 | 3328 | 19Wx10Dx5H |
| 061A-5 | 40 | ABB-48431-031 | 13 | 1872 | 12Wx16Dx5H | ABB-48431-033 | 13 | 3328 | 19Wx10Dx5H |
| 078A-5 | 50 | ABB-48431-033 | 13 | 3328 | 19Wx10Dx5H | ABB-44495 | 13 | 4153 | 26.5Wx10Dx5H |
| 094A-5 | 60 | ABB-48431-033 | 13 | 3328 | 19Wx10Dx5H | ABB-48431-036 | 13 | 6292 | 26.5Wx13Dx5H |
| 103A-5 | 75 | ABB-41170 | 8 | 4600 | 26.5Wx10Dx5H | ABB-48431-120 | 8 | 6272 | 26.5Wx16Dx5H |
| 144A-5 | 100 | ABB-41161 | 6 | 4600 | 26.5Wx10Dx5H | ABB-44499 | 6,1 | 9444 | 28Wx10Dx10H |
| 166A-5 | 125 | ABB-48431-183 | 4,3 | 6209 | 26.5Wx13Dx5H | ABB-48431-184 | 4,3 | 10750 | 28Wx10Dx10H |
| 202A-5 | 150 | ABB-44479 | 4,26 | 9872 | 26.5Wx16Dx5H | ABB-44480 | 4,26 | 11696 | 28Wx10Dx10H |
| 225A-5 | 150 | ABB-44479 | 4,26 | 9872 | 26.5Wx16Dx5H | ABB-44480 | 4,26 | 11696 | 28Wx10Dx10H |
| 260A-5 | 200 | ABB-44479 | 4,26 | 9872 | 26.5Wx16Dx5H | ABB-48431-185 | 4,3 | 17067 | 28Wx13Dx10H |

| | | DutyCycle=3sec on/27sec off | | | | DutyCycle=10sec on/50sec off | | | |
|------------|-----|-----------------------------|------|-------|-------------|------------------------------|------|-------|-------------|
| Drive P/N | HP | Resistor Part No. | Ohms | Watts | Dimensions | Resistor Part No. | Ohms | Watts | Dimensions |
| ACS850-04- | ND | | | | | | | | |
| 290A-5 | 200 | ABB-48431-271 | 2,9 | 14210 | 28Wx10Dx10H | ABB-48431-272 | 2,9 | 16313 | 28Wx10Dx10H |
| | 300 | ABB-48431-330 | 2,2 | 14080 | 28Wx16Dx10H | ABB-48431-332 | 2,2 | 26620 | 30Wx18Dx24H |
| 430A-5 | 350 | ABB-48431-331 | 2,2 | 17820 | 28Wx13Dx10H | ABB-48431-333 | 2,2 | 31680 | 30Wx18Dx24H |
| | 400 | ABB-48431-392 | 1,7 | 17000 | 28Wx13Dx10H | ABB-48431-394 | 1,7 | 30983 | 30Wx18Dx32H |
| 521A-5 | 450 | ABB-48431-393 | 1,7 | 24480 | 30Wx18Dx16H | ABB-44508 | 1,72 | 43916 | 30Wx18Dx32H |
| 602A-5 | 500 | ABB-48431-450 | 1,35 | 24604 | 30Wx18Dx16H | ABB-48431-453 | 1,35 | 46204 | 30Wx18Dx32H |
| 693A-5 | 550 | ABB-48431-512 | 1 | 27225 | 30Wx18Dx24H | ABB-48431-516 | 1 | 50625 | 30Wx18Dx24H |
| 720A-5 | 600 | ABB-48431-512 | 1 | 27225 | 30Wx18Dx24H | ABB-48431-516 | 1 | 50625 | 30Wx18Dx24H |

| | | DutyCycle=30sec on/180sec off | | | | DutyCycle=60sec on/180sec off | | | |
|------------|-----|-------------------------------|------|-------|--------------|-------------------------------|------|-------|--------------|
| Drive P/N | HP | Resistor Part No. | Ohms | Watts | Dimensions | Resistor Part No. | Ohms | Watts | Dimensions |
| ACS850-04- | ND | | | | | | | | |
| 06A0-5 | 3 | ABB-48431-110 | 120 | 600 | 12Wx7Dx5H | P14494-17 | 150 | 900 | 12Wx10Dx5H |
| 08A0-5 | 5 | ABB-48431-110 | 120 | 600 | 12Wx7Dx5H | P14494-18 | 150 | 1200 | 12Wx13Dx5H |
| 010A-5 | 5 | ABB-48431-052 | 80 | 800 | 12Wx7Dx5H | ABB-48431-053 | 80 | 1600 | 12Wx13Dx5H |
| 014A-5 | 7,5 | P14494-26 | 45 | 1260 | 12Wx10Dx5H | P14494-27 | 45 | 1920 | 12Wx16Dx5H |
| 018A-5 | 10 | P14494-26 | 45 | 1260 | 12Wx10Dx5H | P14494-28 | 45 | 2450 | 19Wx13Dx5H |
| 025A-5 | 15 | ABB-48431-005 | 22 | 1862 | 12Wx16Dx5H | ABB-48431-008 | 22 | 3168 | 19Wx13Dx5H |
| 030A-5 | 20 | ABB-48431-007 | 22 | 2426 | 19Wx10Dx5H | ABB-48431-009 | 22 | 5632 | 26.5Wx10Dx5H |
| 035A-5 | 20 | ABB-44515 | 22 | 2910 | 19Wx13Dx5H | ABB-48431-009 | 22 | 5632 | 26.5Wx10Dx5H |
| 044A-5 | 30 | ABB-44474 | 13 | 3558 | 19Wx10Dx5H | ABB-48431-036 | 13 | 6292 | 26.5Wx13Dx5H |
| 050A-5 | 30 | ABB-44474 | 13 | 3558 | 19Wx10Dx5H | ABB-48431-036 | 13 | 6292 | 26.5Wx13Dx5H |
| 061A-5 | 40 | ABB-44517 | 13,3 | 5093 | 26.5Wx13Dx5H | ABB-48431-037 | 13 | 8125 | 26.5Wx16Dx5H |
| 078A-5 | 50 | ABB-48431-036 | 13 | 6292 | 26.5Wx13Dx5H | ABB-48431-038 | 13 | 11700 | 28Wx13Dx10H |
| 094A-5 | 60 | ABB-48431-037 | 13 | 8125 | 26.5Wx16Dx5H | ABB-48431-038 | 13 | 11700 | 28Wx13Dx10H |
| 103A-5 | 75 | ABB-48431-122 | 8 | 11552 | 28Wx10Dx10H | ABB-48431-123 | 8 | 15488 | 28Wx16Dx10H |
| 144A-5 | 100 | ABB-44500 | 6,44 | 10892 | 28Wx10Dx10H | ABB-44544 | 6,39 | 21955 | 28Wx16Dx10H |
| 166A-5 | 125 | ABB-48431-185 | 4,3 | 17067 | 28Wx13Dx10H | ABB-48431-187 | 4,3 | 27520 | 30Wx18Dx24H |
| 202A-5 | 150 | ABB-48431-186 | 4,3 | 21070 | 28Wx16Dx10H | ABB-48431-188 | 4,3 | 34830 | 30Wx18Dx24H |
| 225A-5 | 150 | ABB-48431-186 | 4,3 | 21070 | 28Wx16Dx10H | ABB-48431-188 | 4,3 | 34830 | 30Wx18Dx24H |
| 260A-5 | 200 | ABB-48431-187 | 4,3 | 27520 | 30Wx18Dx24H | ABB-48431-189 | 4,3 | 43000 | 30Wx18Dx24H |

¹ When using "Low Noise Mode" (parameter 40.01) for high output frequency, see recommendations in the hardware manual

ACS850 drives

| | | DutyCycle=3sec on/27sec off | | | | DutyCycle=10sec on/50sec off | | | |
|------------|-----|-----------------------------|------|-------|-------------|------------------------------|------|--------|-----------------|
| Drive P/N | HP | Resistor Part No. | Ohms | Watts | Dimensions | Resistor Part No. | Ohms | Watts | Dimensions |
| ACS850-04- | ND | | | | | | | | |
| 290A-5 | 200 | ABB-48431-273 | 2,9 | 23490 | 28Wx16Dx10H | ABB-48431-275 | 2,9 | 41760 | 30Wx18Dx32H |
| | 300 | ABB-48431-334 | 2,2 | 40095 | 30Wx18Dx32H | ABB-43503 | 2,27 | 68450 | 30Wx18Dx48H |
| 430A-5 | 350 | ABB-48431-334 | 2,2 | 40095 | 30Wx18Dx32H | ABB-43503 | 2,27 | 68450 | 30Wx18Dx48H |
| | 400 | ABB-44508 | 1,72 | 43916 | 30Wx18Dx32H | ABB-43504 | 1,72 | 82280 | 30Wx18Dx40H |
| 521A-5 | 450 | ABB-48431-396 | 1,7 | 58183 | 30Wx18Dx32H | ABB-43504 | 1,72 | 82280 | 30Wx18Dx40H |
| 602A-5 | 500 | ABB-48431-455 | 1,35 | 68344 | 30Wx18Dx32H | ABB-44553 | 1,38 | 104527 | 30Wx18Dx72H |
| 693A-5 | 550 | ABB-48431-517 | 1 | 67600 | 30Wx18Dx40H | ABB-48431-519 | 1 | 122500 | (2) 30Wx18Dx40H |
| 720A-5 | 600 | ABB-48431-518 | 1 | 90000 | 30Wx18Dx48H | ABB-48431-519 | 1 | 122500 | (2) 30Wx18Dx40H |

Three phase 200–240 V applications, stopping duty only

Standard Enclosed Resistor packages ¹

| | | DutyCycle=3sec on/27sec off | | | | DutyCycle=10sec on/50sec off | | | |
|------------|-----|-----------------------------|------|-------|------------|------------------------------|------|-------|------------|
| Drive P/N | HP | Resistor Part No. | Ohms | Watts | Dimensions | Resistor Part No. | Ohms | Watts | Dimensions |
| ACS850-04- | ND | | | | | | | | |
| 06A0-2 | 1,5 | P14494-61 | 120 | 300 | 12Wx5Dx5H | P14494-61 | 120 | 300 | 12Wx5Dx5H |
| 08A0-2 | 2 | P14494-61 | 120 | 300 | 12Wx5Dx5H | P14494-61 | 120 | 300 | 12Wx5Dx5H |
| 010A-2 | 3 | ABB-48431-050 | 80 | 400 | 12Wx7Dx5H | ABB-48431-050 | 80 | 400 | 12Wx7Dx5H |
| 014A-2 | 3 | ABB-41139 | 44 | 300 | 12Wx5Dx5H | ABB-43390 | 40 | 800 | 12Wx7Dx5H |
| 018A-2 | 5 | ABB-41139 | 44 | 300 | 12Wx5Dx5H | ABB-43390 | 40 | 800 | 12Wx7Dx5H |
| 025A-2 | 7,5 | P14494-40 | 21 | 750 | 12Wx7Dx5H | P14494-40 | 21 | 750 | 12Wx7Dx5H |
| 030A-2 | 10 | P14494-40 | 21 | 750 | 12Wx7Dx5H | P14494-41 | 21 | 1050 | 12Wx10Dx5H |
| 035A-2 | 10 | P14494-40 | 21 | 750 | 12Wx7Dx5H | P14494-41 | 21 | 1050 | 12Wx10Dx5H |
| 044A-2 | 15 | ABB-41144 | 13 | 1200 | 12Wx10Dx5H | ABB-48431-031 | 13 | 1872 | 12Wx16Dx5H |
| 050A-2 | 15 | ABB-41144 | 13 | 1200 | 12Wx10Dx5H | ABB-48431-031 | 13 | 1872 | 12Wx16Dx5H |
| 061A-2 | 20 | ABB-41144 | 13 | 1200 | 12Wx10Dx5H | ABB-48431-031 | 13 | 1872 | 12Wx16Dx5H |
| 078A-2 | 25 | ABB-48431-031 | 13 | 1872 | 12Wx16Dx5H | ABB-41157 | 13 | 2100 | 19Wx10Dx5H |
| 094A-2 | 30 | ABB-48431-031 | 13 | 1872 | 12Wx16Dx5H | ABB-44494 | 13 | 3333 | 19Wx10Dx5H |

| | | DutyCycle=30sec on/180sec off | | | | DutyCycle=60sec on/180sec off | | | |
|------------|-----|-------------------------------|------|-------|--------------|-------------------------------|------|-------|--------------|
| Drive P/N | HP | Resistor Part No. | Ohms | Watts | Dimensions | Resistor Part No. | Ohms | Watts | Dimensions |
| ACS850-04- | ND | | | | | | | | |
| 06A0-2 | 1,5 | P14494-61 | 120 | 300 | 12Wx5Dx5H | ABB-48431-110 | 120 | 600 | 12Wx7Dx5H |
| 08A0-2 | 2 | P14494-61 | 120 | 300 | 12Wx5Dx5H | ABB-48431-110 | 120 | 600 | 12Wx7Dx5H |
| 010A-2 | 3 | ABB-48431-050 | 80 | 400 | 12Wx7Dx5H | ABB-48431-052 | 80 | 800 | 12Wx7Dx5H |
| 014A-2 | 3 | ABB-43390 | 40 | 800 | 12Wx7Dx5H | ABB-44490 | 41 | 980 | 12Wx10Dx5H |
| 018A-2 | 5 | ABB-43390 | 40 | 800 | 12Wx7Dx5H | ABB-44512 | 40,6 | 1303 | 12Wx13Dx5H |
| 025A-2 | 7,5 | P14494-41 | 21 | 1050 | 12Wx10Dx5H | P14494-43 | 21 | 2000 | 12Wx16Dx5H |
| 030A-2 | 10 | P14494-42 | 21 | 1500 | 12Wx13Dx5H | ABB-44515 | 22 | 2910 | 19Wx13Dx5H |
| 035A-2 | 10 | P14494-42 | 21 | 1500 | 12Wx13Dx5H | ABB-44515 | 22 | 2910 | 19Wx13Dx5H |
| 044A-2 | 15 | ABB-48431-031 | 13 | 1872 | 12Wx16Dx5H | ABB-44494 | 13 | 3333 | 19Wx10Dx5H |
| 050A-2 | 15 | ABB-48431-031 | 13 | 1872 | 12Wx16Dx5H | ABB-44494 | 13 | 3333 | 19Wx10Dx5H |
| 061A-2 | 20 | ABB-44494 | 13 | 3333 | 19Wx10Dx5H | ABB-48431-035 | 13 | 4212 | 26.5Wx10Dx5H |
| 078A-2 | 25 | ABB-44494 | 13 | 3333 | 19Wx10Dx5H | ABB-48431-036 | 13 | 6292 | 26.5Wx13Dx5H |
| 094A-2 | 30 | ABB-48431-035 | 13 | 4212 | 26.5Wx10Dx5H | ABB-48431-036 | 13 | 6292 | 26.5Wx13Dx5H |

¹ When using "Low Noise Mode" (parameter 40.01) for high output frequency, see recommendations in the hardware manual

Options

Mains circuit



du/dt filters

du/dt filtering suppresses inverter output voltage spikes and rapid voltage changes that stress motor insulation.

Additionally, du/dt filtering reduces capacitive leakage currents and high frequency emission of the motor cable as well as high frequency losses and bearing currents in the motor.

The need for du/dt filtering depends on the motor age and insulation. For information on the construction of the motor insulation, consult the motor manufacturer. If the motor does not fulfil the requirements of the filter selection table, the lifetime of the motor might decrease. Insulated non-driven end (N-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 ACS850 hardware manual.

External du/dt filters

| ACS850-04 | | du/dt filter type (3 filters included in kits marked *) | | | | | | | |
|-----------|---------|---|-------------|--------------|---------------|---------------|-------------|-------------|-------------|
| | | Unprotected (IP00) | | | | | | | |
| | | NOCH0016-60 | NOCH0030-60 | NOCH0070-620 | * NOCH0120-60 | * NOCH0260-60 | FOCH0260-70 | FOCH0320-50 | FOCH0610-70 |
| 230 V | 500 V | | | | | | | | |
| -03A0-2 | -03A0-5 | ■ | - | - | - | - | - | - | - |
| -03A6-2 | -03A6-5 | ■ | - | - | - | - | - | - | - |
| -04A8-2 | -04A8-5 | ■ | - | - | - | - | - | - | - |
| -06A0-2 | -06A0-5 | ■ | - | - | - | - | - | - | - |
| -08A0-2 | -08A0-5 | ■ | - | - | - | - | - | - | - |
| -010A-2 | -010A-5 | ■ | - | - | - | - | - | - | - |
| -014A-2 | -014A-5 | ■ | - | - | - | - | - | - | - |
| -018A-2 | -018A-5 | ■ | - | - | - | - | - | - | - |
| -025A-2 | -025A-5 | - | ■ | - | - | - | - | - | - |
| -030A-2 | -030A-5 | - | ■ | - | - | - | - | - | - |
| -035A-2 | -035A-5 | - | ■ | - | - | - | - | - | - |
| -044A-2 | -044A-5 | - | - | ■ | - | - | - | - | - |
| -050A-2 | -050A-5 | - | - | ■ | - | - | - | - | - |
| -061A-2 | -061A-5 | - | - | ■ | - | - | - | - | - |
| -078A-2 | -078A-5 | - | - | ■ | - | - | - | - | - |
| -094A-2 | -094A-5 | - | - | - | ■ | - | - | - | - |
| -103A-2 | -103A-5 | - | - | - | ■ | - | - | - | - |
| -144A-2 | -144A-5 | - | - | - | ■ | - | - | - | - |
| -166A-2 | -166A-5 | - | - | - | ■ | - | - | - | - |
| -202A-2 | -202A-5 | - | - | - | - | ■ | - | - | - |
| -225A-2 | -225A-5 | - | - | - | - | - | ■ | - | - |
| -260A-2 | -260A-5 | - | - | - | - | - | ■ | - | - |
| -290A-2 | -290A-5 | - | - | - | - | - | ■ | - | - |
| -430A-2 | -430A-5 | - | - | - | - | - | - | ■ | - |
| -521A-2 | -521A-5 | - | - | - | - | - | - | - | ■ |
| -602A-2 | -602A-5 | - | - | - | - | - | - | - | ■ |
| -693A-2 | -693A-5 | - | - | - | - | - | - | - | ■ |
| -720A-2 | -720A-5 | - | - | - | - | - | - | - | ■ |

■ = option, external - = not applicable

du/dt filter selection table

| Motor type | Nominal mains voltage (U_N) | Motor insulation requirement |
|-------------------------------------|---------------------------------|---|
| ABB M2 and M3 motors | $U_N \leq 500$ V | Standard insulation system. |
| ABB form-wound HXR and AM motors | 380 V < $U_N \leq 500$ V | Standard insulation system. |
| ABB random-wound HXR and AM motors | 380 V < $U_N \leq 500$ V | Check motor insulation system with the motor manufacturer. |
| Non-ABB random-wound and form-wound | $U_N \leq 420$ V | If the insulation system withstands $\hat{U}_{LL} = 1600$ V and $\Delta t = 0.2$ μ s, du/dt filtering is not required. With du/dt filtering the insulation system must withstand $\hat{U}_{LL} = 1300$ V. |

U_N Nominal mains voltage.

\hat{U}_{LL} Peak line-to-line voltage at motor terminals.

Δt Rise time, ie, interval during which line-to-line voltage at motor terminals changes from 10% to 90% of full voltage range.

Dimensions and weights of du/dt filters

| du/dt filter | Height | | Width | | Depth | | Weight | |
|--------------|--------|-----|-------|-----|-------|-----|--------|-----|
| | in | mm | in | mm | in | mm | lb | kg |
| NOCH0016-60 | 7.7 | 195 | 5.5 | 140 | 4.5 | 115 | 5.28 | 2.4 |
| NOCH0030-60 | 8.5 | 215 | 6.5 | 165 | 5.1 | 130 | 10.34 | 4.7 |
| NOCH0070-60 | 10.3 | 261 | 7.1 | 180 | 5.9 | 150 | 20.9 | 9.5 |
| NOCH0120-60* | 7.9 | 200 | 6.1 | 154 | 4.2 | 106 | 15.4 | 7 |
| NOCH0260-60* | 15.1 | 383 | 7.3 | 185 | 4.4 | 111 | 26.4 | 12 |
| FOCH0260-70 | 15.0 | 382 | 7.5 | 190 | 10.0 | 254 | 103.4 | 47 |
| FOCH0320-50 | 26.1 | 662 | 12.6 | 319 | 11.1 | 282 | 143 | 65 |
| FOCH0610-70 | 26.1 | 662 | 12.6 | 319 | 11.1 | 282 | 143 | 65 |

* 3 filters included, dimensions apply for one filter.

Options PC tools

DriveStudio

User-friendly PC tool for quick drive startup, drive tuning and advanced programming tasks.

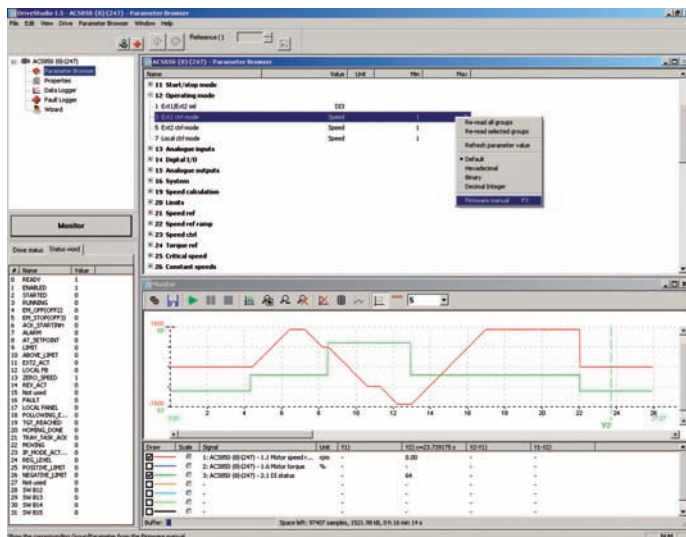
Start-up and maintenance tools:

- Fast parameter navigation
- Parameter setting
- Data logging and online drive signal monitoring of multiple signal channels for drive tuning
- Back-up and restore tool for drive parameter and DriveSPC program cloning
- Case sensitive help with detailed descriptions of drive parameters, events and functions
- Overview of the drive performance and status

DriveSPC

DriveSPC is a programming tool that enables easy modification or extension of drive functionality:

- Simple, easy-to-learn function block interface showing drive firmware functions, signals and parameters
- Easy to add user-defined function block programs even on the fast time levels of the drive control
- Function block programming with standard IEC61131 function block library
- Professional programming environment with hierarchy levels, custom circuits, user parameters and copy protection of DriveSPC programs



DriveStudio

DriveSize

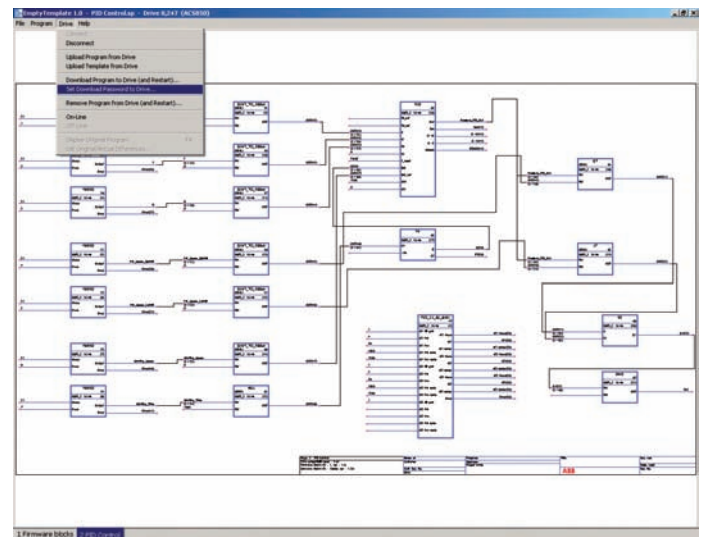
DriveSize is a PC program for helping the user select the optimal motor, frequency converter and transformer, especially in the case where a straightforward selection from a catalog is not possible. Additionally it can be used to compute currents, network harmonics and to create documents about the dimensioning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

DriveSize contains the current versions of the ABB motor and AC drive catalogs.

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

DriveSize features:

- Selects the optimal motor, drive unit, supply unit and transformer
- Calculates network harmonics for a single supply unit or for the whole system
- Allows importation of own motor database
- Supplies dimensioning results in graphical and numerical format
- Prints and saves the results



DriveSPC

Options

Remote monitoring and diagnostic tools

SREA-01 enables remote access

With drives increasingly being installed in remote locations, it is vital that operational and process data is monitored locally in real time and transmitted to a central location for analysis. Often there is no qualified service personnel stationed at these sites, which makes remote monitoring and diagnosis of the drive and application crucial to process availability.

ABB's SREA-01 Ethernet adapter performs all these remote access tasks. Designed as an optional remote interface module for the drives, the SREA-01 can send process data, data logs and event messages independently, without a PLC or a dedicated on-site computer, and has an internal web server for configuration and drive access.

Connect multiple drives to an Ethernet or GPRS network

In addition to a standard Ethernet port, the SREA-01 has a serial port for connection to a standard GSM/GPRS modem for Internet connectivity in isolated places. The modem connection enables sending e-mail or SMS messages, uploading data files by FTP, or accessing the SREA-01 web pages.

The SREA-01 is connected to the panel port, or alternatively to the Modbus interface, of a drive. A maximum of 10 drives can be connected to a single SREA-01 module over Ethernet or EIA-485 serial communication networks. Simultaneous use of the two connection methods is possible, allowing access to different types of drives. In addition, Modbus TCP commands from a PLC to a drive are supported in the remote monitoring mode.

Collect data logs and integrate drive data in SCADA applications

For collecting data from the drive, process or data analysis, the SREA-01 has a configurable data logger that can store values from the devices to a file, with sample intervals between ten seconds and one hour. The files are stored internally for visualization with a web browser. Data in standard comma separated values (CSV) file format can be imported to applications such as Microsoft Excel for processing.

The collected data logs can be sent by e-mail or FTP, either through a local area network or the Internet. The sending interval can be configured by the user, with logs sent, for example, hourly or weekly. In addition to its data logging functionality, the SREA-01 also has an internal Modbus TCP gateway, providing a standard interface that can be used by supervisory control and data acquisition (SCADA) applications to display drive information in real time.

Receive event messages and alarms, and access the drive remotely

The SREA-01 can be used to monitor the drive and application parameters such as process temperatures, and send alarm messages to maintenance personnel if a set limit is exceeded. Event and alarm messages are sent as SMS messages or by e-mail using the user's own messages. The event conditions and messages can be configured by the user to make them suitable for a number of applications.

At any time, the internal web server of the SREA-01 provides an intuitive user interface for accessing the drives. Travel to sites can often be avoided by using a standard web browser to view and change the drive parameters, monitor the status of all connected devices, and browse the actual faults or history of the installation.



Notes

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Notes

A series of horizontal dotted lines for taking notes.

Contact us

www.abb.us/drives

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