

ABB industrial drives

ACS800, regenerative drives, 5.5 to 5200 kW



Complete regenerative drives

The ACS800 regenerative drives are equipped with an active supply unit. It allows full power flow both in motoring and generating modes at a voltage range from 208 to 690 V (ACS800-17LC: 380 - 690 V). This complete regenerative solution includes everything that is needed, including the line filter, in one compact package.

Wall-mounted regenerative drive ACS800-11, 5.5 to 110 kW

With the wall-mounted ACS800-11 the user gets everything in a single and complete IP21 package. All important features and options such as LCL filter and EMC filter are built inside the drive.

Cabinet-built regenerative drive ACS800-17, 45 to 2500 kW

The ACS800-17 is a cabinet-built solution for drive applications where regenerative operation is required. It covers a wide power range and, like other cabinet-built drives, it has a wide range of built-in features and options. It is available with IP21, IP22, IP42, IP54, IP54R protection classes and module package.

Liquid-cooled regenerative drive ACS800-17LC, 75 to 5200 kW

The ACS800-17LC is a cabinet-built drive that is equipped with both liquid cooling and regenerative capabilities. Liquid cooling eliminates the need for air cooling in equipment rooms and delivers effective heat transfer for high overall efficiency. Direct liquid cooling also allows to make the drive extremely compact and silent. This drive can be provided with DNV, LR and ABS marine certifications and comes in IP42 as standard, with optional IP54.

High performance

The ACS800 regenerative drives are especially suitable for demanding applications. Transition between motoring and generating is fast due to the DTC control method.

The active supply unit is able to boost output voltage, which guarantees full motor voltage even when the supply voltage is below nominal. The active supply unit combined with DTC control can even compensate for fast variations in line voltage. There is no risk of fuse blow or component damage due to voltage drops in the network.

Energy savings

The regenerative drive offers significant energy savings compared with other braking methods such as mechanical and resistor braking, as energy is fed back to the supply network. No external brake resistor is needed, which translates into simplified installation and no wasted heat.

Technical data

| Mains connection | |
|--|---|
| Voltage and power range | 3-phase, $U_{2IN} = 208$ to 240 V, $\pm 10\%$ 3-phase, $U_{3IN} = 380$ to 415 V, $\pm 10\%$ 3-phase, $U_{5IN} = 380$ to 500 V, $\pm 10\%$ 3-phase, $U_{7IN} = 525$ to 690 V, $\pm 10\%$ (600 V UL, CSA) |
| Frequency | 48 to 63 Hz |
| Power factor | $\cos\phi_1 = 1$ (fundamental) $\cos\phi_1 = 0.99$ (total) |
| TDHI (total harmonic distortion of current) | < 5% |
| Efficiency (at nominal power) | 97% |
| Motors connection | |
| Frequency | 0 to ± 300 Hz 0 to ± 120 Hz with external du/dt filters |
| Field weakening point | 8 to 300 Hz |
| Motor control software | ABB's direct torque control (DTC) |
| Torque control | Torque step rise time: Open loop <5 ms with nominal torque Closed loop <5 ms with nominal torque Non-linearity: Open loop $\pm 4\%$ with nominal torque Closed loop $\pm 3\%$ 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 0 to +50 °C, no frost allowed 40 to 50 °C at reduced output current (1% / 1 °C) ACS800-17LC 0 to 45 °C, no frost allowed 45 to 55 °C at reduced output current (0.5% / 1 °C) |
| Cooling method | Dry clean air Cooling liquid: Direct liquid-cooling +45 °C max. customer circuit, fresh water or sea water (optional liquid-cooling unit) +38 to +45 °C at reduced output current 1% / 1 °C +48 °C max converter circuit, fresh water +42 to +48 °C at reduced output current 1% / 1 °C |
| Altitude | 0 to 1000 m without derating 1000 to 4000 m with derating ~ (1% / 100 m) (690 V units 1000 to 2000 m with derating) |
| Relative humidity | 5 to 95%, no condensation allowed |
| Degree of protection | ACS800-11 / -17 IP21 As option for ACS800-17 IP22, IP22R, IP42, IP42R, IP54 and IP54R ACS800-17LC IP42 As option IP54 |

| | |
|--|--|
| Paint colour | ACS800-11: NCS 1502-Y ACS800-17/ -17LC: RAL 7035 |
| 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 (chemical gases), Class 2S2 (solid particles) |
| Operation | IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles without air inlet filters) |
| Vibration | IEC 60068-2-6, 10 to 58 Hz 0.075 mm displacement amplitude 58 to 150 Hz 10m/s ² (1 g) |
| Vibration marine classification | 2 to 13.2 Hz: ± 1.0 mm amplitude (peak) 13.2 to 100 Hz: 0.7g acceleration |

C = chemically active substances
S = mechanically active substances

| Product compliance |
|---|
| CE 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 ACS800-11 / -17: UL, cUL 508A or 508C and CSA C22.2 NO.14-95, C-Tick, GOST R ACS800-17LC: UL, CSA Marine type approvals for ACS800-17LC: ABS, DNV, Lloyd's Register |

| EMC according to EN 61800-3 |
|---|
| 2 nd environment, unrestricted distribution category C3 as option 1 st environment, restricted distribution category C2 as option up to 1000 A input current |

For more information please contact:

www.abb.com/drives
www.abb.com/drivespartners

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