

# Product Note

## Low Voltage AC Drive

### ACS850, drive modules, 0.5 to 700 Hp (0.37 to 560 kW)

ABB ACS850 drive modules are designed for fast, cost effective installation and integration into cabinets. The compact size helps minimize cabinet floor space. The 10 hp drive, for example, is only four inches wide and the 60 hp drive is less than nine inches wide, with zero side clearance required.

Drives 60 horsepower and below have power leads at the top and motor leads out the bottom, simplifying cabinet wiring and layout. Other features, such as an intelligent control panel loaded with time-saving features and an internal brake chopper across the power range, make the drive easy to use and easy to apply, ultimately providing a control cabinet that lowers cost of both time and material.

The ACS850 drive modules are designed for industrial machinery and applications such as extruders, cranes, mixers, web handling and converting in the power range 1.5 to 700 hp at 480 Vac and 0.5 to 30 hp at 230 Vac.

#### Integrated safety

Safety as standard is provided by an integrated Safe Torque Off (STO) feature, which removes the torque from the motor shaft. This safety feature conforms with the requirements of SIL 3 / IEC 61508, EN ISO 13849-1:PL e. There also are solutions available for Safe Stop 1 (SS1), Safe Limited Speed (SLS), Safe Brake Control (SBC), Safe Speed Monitor (SSM) and Safe Direction (SDI).

#### Removable memory block

A removable memory block increases the flexibility of the drive and provides for easy maintenance. The memory block stores the complete firmware plus all user settings and motor data. If the drive is replaced, it can be re-commissioned without any special knowledge by simply plugging the existing memory block into the replacement drive.

#### Intelligent user interface

The intelligent user interface with advanced assistants significantly decreases the need to refer to manuals while saving time during commissioning.

- The motor set-up assistant guides the user through the commissioning process of loading motor data and running tuning tests, allowing for trouble-free and fast commissioning.
- The start/stop, reference, and fieldbus assistants continue the commissioning process by guiding the user through setup of the start/stop control, speed/torque control, and setup for the high-speed serial communications.



IEC protection class IP20\*\*, NEMA protection class Open

- Other features:
  - Input/Output setup
  - changed parameters log
  - parameter backup and restore
  - fault log with real time stamp

#### High speed serial interface options

The ACS850 is engineered to work with the latest generation of ABB high speed serial interface modules. Supported protocols include DeviceNet, Modbus RTU, Profibus, and CANopen. Early in 2011, the ACS850 will also support Ethernet/IP and Modbus-TCP.

#### Energy saving calculator

ACS850 has an automatic energy optimizer that provides for optimum drive efficiency. An on-board energy saving calculator monitors energy usage and indicates the amount of energy saved in kW hours, dollars, and tons of CO<sub>2</sub>. It also shows the duration curve showing the load profile of the drive.

The drive's internal fan features an automatic on/off control which provides additional energy savings by switching the cooling fan off when the drive is not active. The same on/off control can control another fan, to cool the cabinet for example, saving more energy and reducing control room noise.

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## Enhanced Direct Torque Control (DTC)

Direct Torque Control, the feature made famous by world leader ACS800, is enhanced in the ACS850 to provide unsurpassed performance at low speed and with permanent magnet (synchronous) motors, yielding higher productivity and a higher overall efficiency.

## Maintenance counter, load curve and load analyzer

The **maintenance counter** can be programmed to give advanced warning of maintenance needs for the drive, motor and machine components, increasing up-time and easing machine maintenance.

The **load curve** consists of a user-defined underload and overload curve to define normal operation, alarming when outside this window. The **load analyzer** records the peak value of a user-selectable signal and the time the peak occurred. It also records a histogram of output current showing percent of time the drive is utilized at various levels from zero to 100%, letting you know how hard the machine is really working.

## Wide range of options

The wide range of options such as serial adapters, input/output extensions and various encoder interfaces, increases the level of drive customization. Other available options include various control panel configurations, C2 and C3 EMC filters, internal brake chopper (frames E0 - G), brake resistors, and AC chokes (frames A and B). These options provide the ability to tailor a drive for a specific application. See chart for more details.

## DriveStudio and the Programmability of DriveSPC

The ACS850 uses ABB's most up-to-date PC tool, DriveStudio, with new, easy-to-use setup wizards that simplifies parameter configuration and with a graphical monitor displaying up to eight signals simultaneously. Parameter compare, save and restore is also available.

Drive SPC allows the user to become the drive programmer, providing about 30 function blocks from a large library to customize the program to individual needs.

Feature / frame size	A	B	C	D	E0	E	G**	G1*	G2*
<b>Current and power</b>									
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)	0.5 to 2 hp	3 to 5 hp	7.5 to 15 hp	20 to 30 hp	—	—	—	—	—
(480 V)	1.5 to 5 hp	5 to 10 hp	15 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)	0.37 to 1.5 kW	2.2 to 4 kW	5.5 to 11 kW	15 to 22 kW	—	—	—	—	—
(400 V)	1.1 to 3 kW	4 to 7.5 kW	11 to 22 kW	30 to 45 kW	55 to 75 kW	90 to 160 kW	200 to 400 kW	200 to 355 kW	400 to 500 kW
(500 V)	1.5 to 4 kW	5.5 to 11 kW	15 to 30 kW	37 to 55 kW	55 to 90 kW	110 to 200 kW	250 to 500 kW	250 to 400 kW	500 to 560 kW
Braking chopper	●	●	●	●	□	□	□	□	□
Braking resistor	■	■	■	■	■	■	■	■	■
Input choke	■	■	●	●	●	●	●	●	●
EMC filter / C2	■	■	■	■	□	□	—	—	—
EMC filter / C3	■	■	□	□	□	□	□	●	●
<b>Mounting and cooling</b>									
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

\*\* Frame G IEC protection class is IP00

## Dimensions

Frame size	Height <sup>1)</sup>		Depth <sup>2)</sup>		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	21	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	61.6	1564	22.4	568	22.1	562	451	205

### Notes

All dimensions and weights are without options.

<sup>1)</sup> Height is the maximum measure without clamping plates.

<sup>2)</sup> An additional 50 mm should be reserved for feedback cabling if FEN-01, 11 or 21 options is used.

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