

ABB high performance machinery drives

ACSM1, liquid-cooled drives, 55 to 160 kW



ABB high performance machinery drives

ABB high performance machinery drives provide speed, torque and motion control for demanding applications. The drives control induction, synchronous and asynchronous servo and high torque motors with various feedback devices. The drive's small size gives options to install it within existing designs, without modifications to the machine. A variety of programming tools means that the drive can be configured for virtually any application. With a detachable memory unit the drive can be configured as near to its point of commissioning as is practical.

Highlights

- Suited to demanding machinery applications
- For use with synchronous and induction motors
- Wide range of feedback interfaces
- Memory unit for flexible drive configuration
- Safe torque-off function as standard
- Two control variants; speed and torque or motion

Liquid-cooling for higher output power

The liquid-cooled ABB high performance machinery drives conduct heat away by circulating liquid through the heat sink. The cooling method enables more power output from the same frame size. The drive can be cabinet mounted with higher degree of protection enabling installations in harsh environmental conditions and high ambient temperatures.

Various control and communication options

- Control interface with versatile standard connections
- Complete drive configuration and settings are stored in detachable memory unit
- Scalability with different plug-in control options (Analog and digital I/O, feedback interfaces, master communication)

Advanced programming tool

In addition to standard programmable speed and position, drive functionality can be easily modified or extended using a block programming tool, DriveSPC (Solution Program Composer). The programming tool utilizes optional technology function blocks and ready-made application programs.

All encompassing drive tools

- DriveStudio provides assistance from programming to start-up
- DriveSPC enables easy modification or extension of drive functionality
- DriveSize helps to select the optimum drive, motor, transmission and gear combination for the required motion profile
- Assistant control panel for easy drive configuration

Types, ratings and dimensions



Ratings				Type code	Frame size	$I_{2cont4k}^{(6)}$ 4 kHz A	$I_{2cont8k}^{(6)}$ 8 kHz A
$P_N^{(1)}$ kW	$P_N^{(1)}$ hp	$I_{2N}^{(2)}$ A	$I_{2max}^{(3)}$ A				
55	75	110	165	ACSM1-04Lx ⁽⁵⁾ -110A-4	E	110	75
75	100	135	202	ACSM1-04Lx ⁽⁵⁾ -135A-4	E	135	90
90	125	175	282	ACSM1-04Lx ⁽⁵⁾ -175A-4	E	175	115
110	150	210	326	ACSM1-04Lx ⁽⁵⁾ -210A-4	E	210	135
160 ⁽⁴⁾	200 ⁽⁴⁾	304 ⁽⁴⁾	351	ACSM1-04Lx ⁽⁵⁾ -260A-4	E	260	165

- ¹⁾ P_N : Typical motor power.
²⁾ I_{2N} : Nominal output current.
³⁾ I_{2max} : Maximum short time output current.
⁴⁾ I_{2max} : Nominal output current and typical motor power values at a switching frequency of 3 kHz.
⁵⁾ x⁽⁵⁾: Control (speed and torque, or motion)
⁶⁾ $I_{2cont4k}$: Continuous output current at a switching frequency of 4 or 8 kHz at 40 °C (104 °F).

Main connections

Supply voltage	3-phase 380 to 480 V +10 /- 15%
Frequency	50 to 60 Hz +/- 5%
Total harmonic distortion (THD)	Meets limits acc. to EN 61000-3-2, IEC 61000-3-12, IEC 61000-3-4.
Mains choke	As standard
Mains filter (EMC)	As standard

DC connection

DC voltage level	485 to 648 V DC ± 10 %
Charging circuit	External

Motor connection

Motor types	Asynchronous motors (standard induction motors, servo) and synchronous motors (servo, high torque)
Output frequency	0 to 500 Hz
Switching frequency	2 to 8 kHz, 4 kHz as default. Output current derating above 4 kHz

Braking power connection

Braking chopper	As standard
Braking resistor	Optional external resistor connected to drive

Liquid cooling

Coolant	Industrial water and water based glycol mixtures (max. 60% of glycol)
Inlet temperature	+5 to 42 °C, with derating 42 to 55 °C, 1% / 1 °C
Operating pressure	0 to 1000 kPa
Flow rate	7 to 12 l/min
Pipe and pipe connectors	According to EN 1.4401 / 1.4404 (AISI316/316L)
Pipe connectors	Included in the delivery, not installed
Material	Stainless steel AISI 316L
Type	Male stud connector
Size	Withworth ISO7/1 R1/2" K

Operating conditions

Degree of protection	IP20 acc. to EN 60529; Open Type acc. to UL 508.
EMC (According to EN 61800-3)	Category C2
Compliance	CE, GOST R (UL, cUL pending)

Dimensions and weight

Dimensions (H x D x W)	700 x 398 x 314 mm
Weight	67 kg
Mounting	Backplate mounting or Push-through mounting with an optional kit

Control interface

Control connectors	Removable connectors
Control voltage supply	Internal or 24 V DC external
PC-tools / control panel	Connection as standard
Status display	7-segment display as standard
Memory unit	Standard
Drive to drive link	Galvanic RS-485 as standard
Digital I/O	6 x DI, 3 x DI/O, 1 x RO
Analogue I/O	2 x AI, 2 x AO
Thermistor input	PTC, KTY
Safe torque off (EN 61800-5-2)	SIL 3 / IEC 61508, IEC 62061 PL e / EN ISO 13849-1, Cat. 4 / EN 954-1
Option slots	Three slots to have plug-in options for analogue and digital I/O, feedback and communication

Control and communication options

Analogue & digital extension	
FIO-01	4 x DI/O, 2 x RO
FIO-11	3 x AI, 1 x AO, 2 x DO
Feedback interface	
FEN-01	2 inputs (TTL incremental encoder), 1 output
FEN-11	2 inputs (SinCos absolute, TTL incremental encoder), 1 output
FEN-21	2 inputs (Resolver, TTL incremental encoder), 1 output
FEN-31	1 input (HTL incremental encoder), 1 output
Communication	
FPBA-01	PROFIBUS
FCAN-01	CANopen
FDNA-01	DeviceNet

For more information see ACSM1, high performance machinery drives, technical catalogue, code 3AFE68675073.



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