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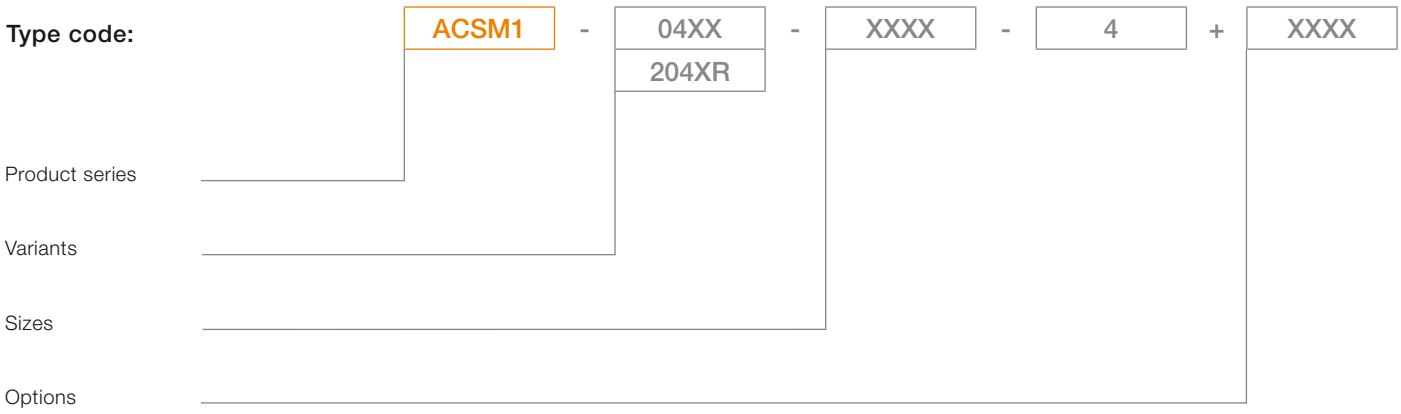
Low voltage AC drives

ABB motion control drives
ACSM1
0.75 to 355 kW/1 to 450 hp
Catalog

Power and productivity
for a better world™

Selecting and ordering your drive

Build up your own ordering code using the type code 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.



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Introduction to ACSM1

ACSM1	-	04XX 204XR	-	XXXX	-	4	+	XXXX

ABB motion control drives, ACSM1

Our motion control solutions include human-machine interfaces (HMI), programmable logic controllers (PLC), safety technology and extend to multi-axis motion controllers, high performance servo drives, rotary servo motors and linear motors. All of which seamlessly interface to provide a complete machine control solution.

ACSM1 motion control drives provide general speed and torque as well as versatile motion control features for use in demanding applications. They can control induction, synchronous and asynchronous servo and high torque motors with various feedback devices. The compact hardware, different variants and programming flexibility ensure the optimum system solution. The innovative memory unit concept enables flexible drive configuration.



Highlights

- Designed for demanding machinery applications with synchronous and induction motors
- Compact design for single and multidrive systems
- Regenerative supply for applications with high braking power duty cycles
- Extension of functionality using a block programming tool
- Functional safety as standard

Industries and applications

The high performance machinery drives are ideal for:

Plastics and rubber

- Extruders
- Calenders
- Winders and unwinders
- Injection moulding machines
- Blow moulding machines

Sheet-fed printing

- Commercial printing
- Label printing
- Web printing
- Bindery machines

Paper and paperboard, film and foil converting

- Slilter
- Sheeter
- Winders
- Calendering
- Coating
- Laminating

Material handling

- Conveyors
- Palletising
- Elevators
- Automatic storage
- Pick and place systems

Textile

- Knitting/weaving machines
- Needle punching machines
- Non-woven machines
- Fibre processing machines
- Spinning/speeder machines
- Textile coating machines

Food and beverage

- Conveyors, mixers and extruders
- Rolling, pressing and cutting
- Stamping
- Slicing
- Bottling and labeling
- Packaging

Other industries and applications

- Packaging machinery
- Woodworking machinery
- Wire and cable drawing machinery
- Plywood and chipboard industry
- Flying and rotary shear

Main features

Feature	Advantage	Benefit
Control and performance		
Two control variants	Optimized control variants for centralized and decentralized motion control applications.	Cost-effective motion solutions.
Compatible with a wide range of motors and feedback sensors	Various motor types from standard induction to synchronous servo motors can be controlled in open or closed loop mode. Most commonly used speed and position feedback sensors are supported.	Saves time and cost by using one drive type for a variety of motors and feedback sensors.
Direct torque control (DTC)	Accurate speed and positioning control with excellent torque response even in open loop control.	Good performance even without feedback sensor. Saves costs and increases system reliability.
Integrated drive-to-drive link	Fast and powerful drive-to-drive link allows synchronized peer-to-peer communication of multiple machine axes.	Eliminates the need for an external dedicated motion controller.
Fieldbus communication options	Supporting most commonly used fieldbuses and Ethernet based networks, including cyclic synchronous communication.	Single drive product with flexible network communication ability.
Integrated safe torque-off (STO) function up to SIL 3	Safe torque-off prevents unexpected startup and can be used in combination with external functional safety devices.	Improves machine operator safety. Eliminates the need for external contactor. Cost-effective and certified solution for safe machine maintenance.
Emergency supply	Drives can be powered from a 230 VAC UPS or a 48 to 96 V battery supply backup, ensuring control in critical machinery when power supply is lost.	Improves end user safety and machine performance in situations when power supply is lost.
Optional I/O extensions	Plug-in I/O extensions adding analog and digital inputs/outputs.	The functionality of the drive can be easily extended in a cost-effective way.
Modular and compact design		
Regenerative supply modules	Feeds power via common DC bus to drives, or braking power can be fed back to supply network.	No need for braking resistors with continuous braking. Energy saving and size reduction. Low network emissions due to dedicated regenerative filter module.
Modular design	Many standard features and a wide range of options allow different system configurations.	Fits many application needs. Offers flexibility in system design.
Various mounting and cooling options	Installation flexibility as a variety of cabinet designs can be used.	Allows customer to make cost optimized and competitive installations.
Common DC link	Enables exchange of energy between drives over a common DC link.	Saves on cabling costs, reduces line currents, provides simpler braking arrangements and lowers the component count while increasing system efficiency, reliability and space savings.
User interface and programming		
Predefined functions	Wide variety of standard motion control functions that can be configured from the control panel or the PC tool.	Fast realization of motion functionality without the need for application programming.
Drive programming	Easily extends drive firmware functionality.	Create tailor-made applications thereby avoiding additional hardware or software costs.
Dedicated application programs	Ready-made functions for dedicated applications (winders, lifts and CAM).	Saves time and engineering design costs.
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 service.

Overview

The ACSM1 series of ABB motion control drives offers versatile features for machinery applications.

Designed for machine builders

The ACSM1 is the optimum choice for machine builders. It is able to control induction motors, asynchronous and synchronous servo motors both with and without feedback device. It uses proven DTC (direct torque control) motor control technology to guarantee high performance. The mechanical design is very compact and drives can be installed side-by-side. In addition to covering standard features there are three slots for control and communication options. Drive tools support commissioning, tuning and programming. The ACSM1 offers optimum selection for each machine control philosophy.

Modular and compact design

Several compact frame sizes

- 0.75 kW (1 hp) to 355 kW (450 hp)/200 (400) to 500 V
- IP20
- AC or DC supply from top
- Motor and braking resistor connection from bottom
- Built-in braking chopper as standard

Optimum assembly and cooling solutions

- Side-by-side installation
- Air-cooled variant including support for DIN-rail mounting or back plate mounting
- Cold plate variant for external cooling method
- Push-through variant to separate power side cooling from control side cooling
- Removable control terminals and power terminals enable fast assembly and maintenance

Flexibility with different external options

- Regenerative supply to feed ACSM1 drive modules with full braking power capacity
- Optionally drives (A -D frames) can be powered from 230 V AC UPS or a 48 to 96 V backup battery supply
- Mains filters to meet EMC requirements
- Mains chokes to limit harmonic distortion (THD)
- Braking resistors for various braking power needs
- Possibility for different common DC configurations

Global compatibility with machinery environment and standards

- Standard approvals for CE, UL, cUL, CSA, C-Tick
- With external mains filter: EN 61800-3, category C2 (A-limits)
- Integrated safe torque-off (STO) function (SIL3), certified by TÜV
- Conformal coated boards as standard increasing the reliability of the drive in harsh environments

Control and communication

Control interface with versatile standard connections

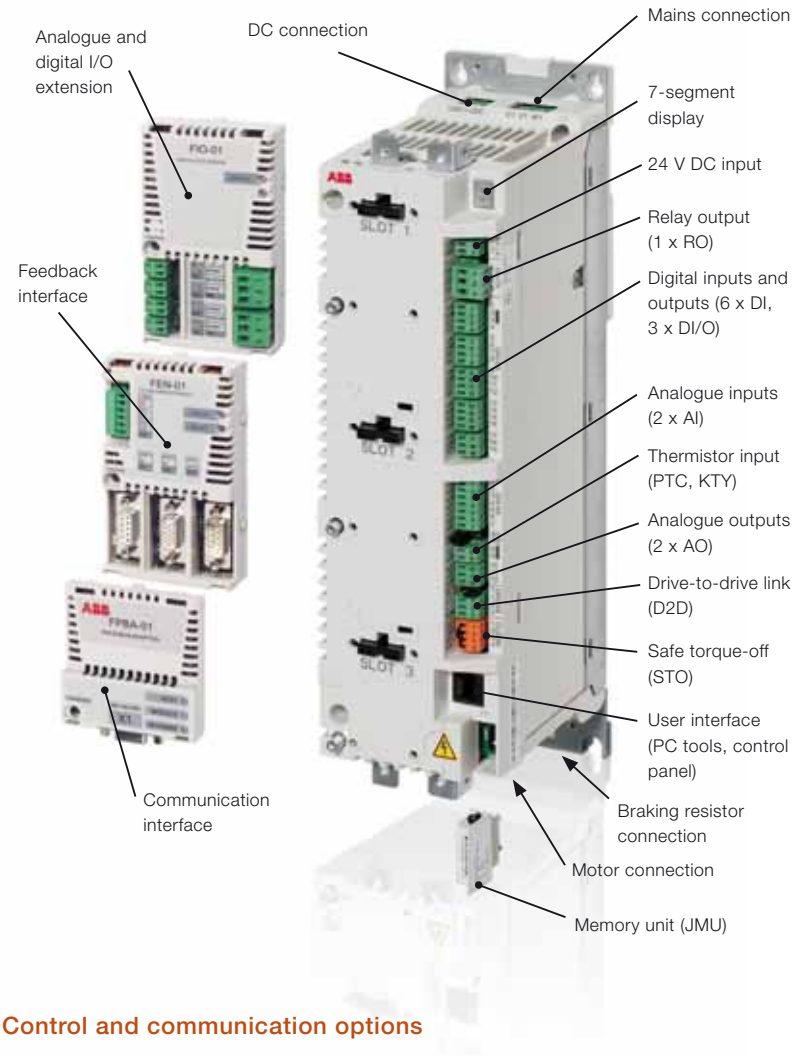
- Digital input/output: 6DI, 3DI/O, 1 relay output
- Analog input/output: 2AI + 2AO
- Motor thermistor input (PTC/KTY)
- Drive-to-drive communication link (RS 485)
- Complete drive configuration and settings are stored in memory unit

Scalability with different plug-in control options

- Three options slots for control options
- Analog and digital I/O extension modules
- Interfaces for different feedback types (TTL, Resolver, Sin/Cos, Endat, Hiperface, SSI)
- Communication via typical fieldbusses (PROFIBUS, DeviceNet™, CANopen®), Ethernet or realtime synchronous communication (PROFINET, EtherCAT®, SERCOS, EtherNet/IP™, Ethernet PowerLink)



Options
Internal



Description of control unit (JCU) connections

		X1
External power input 24 V DC, 1.6 A	+24VI	1
	GND	2
		X2
Relay output 250 V AC / 30 V DC 2 A	NO	3
	COM	4
	NC	5
		X3
+24 V DC	+24VD	1
Digital I/O ground	DGND	2
Digital input 1	DI1	3
Digital input 2	DI2	4
+24 V DC	+24VD	5
Digital I/O ground	DGND	6
Digital input 3	DI3	7
Digital input 4	DI4	8
+24 V DC	+24VD	9
Digital I/O ground	DGND	10
Digital input 5	DI5	11
Digital input 6	DI6	12
+24 V DC	+24VD	13
Digital I/O ground	DGND	14
Digital input/output 1	DIO1	15
Digital input/output 2	DIO2	16
+24 V DC	+24VD	17
Digital I/O ground	DGND	18
Digital input/output 3	DIO3	19
		X4
Reference voltage (+)	+VREF	1
Reference voltage (-)	-VREF	2
Ground	AGND	3
Analogue input 1 (Current or voltage,selectable by jumper J1)	AI1+	4
	AI1-	5
Analogue input 2 (Current or voltage,selectable by jumper J2)	AI2+	6
	AI2-	7
AI1 current/voltage selection		J1
AI2 current/voltage selection		J2
Thermistor input	TH	8
Ground	AGND	9
Analogue output 1 (current)	AO1 (I)	10
Analogue output 2 (voltage)	AO2 (U)	11
Ground		12
		X5
Drive-to-drive link termination J3		
Drive-to-drive link.	B	1
	A	2
	BGND	3
		X6
Safe torque-off. Both circuits must be closed for the drive to start.	OUT1	1
	OUT2	2
	IN1	3
	IN2	4
PC tools, control panel connection (RS 232)		
Memory unit connection		

Control and communication options

Options	Data	Slot 1	Slot 2	Slot 3
Analogue & digital extension				
FIO-01	4 x DI/O, 2 x RO	O	O	–
FIO-11	3 x AI, 1 x AO, 2 x DI/O	O	O	–
Feedback interface				
FEN-01	2 inputs (TTL incremental encoder), 1 output	O	O	–
FEN-11	2 inputs (SinCos absolute, TTL incremental encoder), 1 output	O	O	–
FEN-21	2 inputs (Resolver, TTL incremental encoder), 1 output	O	O	–
FEN-31	1 input (HTL incremental encoder), 1 output	O	O	–
Communication				
FPBA-01	PROFIBUS DP, DPV0/DPV1	–	–	O
FCAN-01	CANopen®	–	–	O
FDNA-01	DeviceNet™	–	–	O
FENA-11	EtherNet/IP™, Modbus TCP, PROFINET IO	–	–	O
FSCA-01	Modbus RTU	–	–	O
FECA-01	EtherCAT®	–	–	O
FSEA-21 *	SERCOS II	–	–	O
FEPL-02 *	Ethernet PowerLink	–	–	O

O = option
– = not available
* = in preparation

Supply modules with full regenerative capability

ACSM1 - 204XR - XXXX - 4 + XXXX

Regenerative supply for ACSM1 drives

The ACSM1 regenerative supply can be used in single drive and multidrive configurations. The regenerative filter module on the supply side keeps the line side harmonics at a very low level. The filter module includes EMC filtering to meet category C2 emission levels.

Compact supply for different systems

The regenerative supply modules cover a power range from 5 to 60 kW with four frame sizes. Regenerative supply needs only two modules, the regenerative filter module and the regenerative supply module. These modules take care of all supply side functions.

Highlights

- Full braking power (100% rated power)
- Line side power factor controlled to 1
- Clean power with very low harmonic content (THD < 5%) and integrated EMC filtering (category C2)
- Immunity to supply voltage due to controlled DC voltage
- Connect and run. Started automatically, when supply connected
- No need for large braking resistors with continuous braking power



Regenerative filter module WFU-22 and regenerative supply module ACSM1-204 (frame D).



Regenerative filter module WFU-02 and regenerative supply module ACSM1-204 (frame B).

Regenerative supply module type	ACSM1-204xR-	07A0-4	016A-4	031A-4	046A-4	090A-4
Regenerative supply module, frame size		A	B	C	C	D
Regenerative filter module		WFU-01	WFU-02	WFU-11	WFU-21	WFU-22
Input connection (AC)						
Supply voltage	U_2 (V AC)	3-phase 380 to 480 V AC +10/-15%				
Rated supply power at 400 V AC	S_N (kVA)	5.5	12.5	24	34	64
Rated supply current at 400 V AC	I_2 (A)	8	18	35	50	93
Rated supply current at 480/500 V AC	I_2 (A)	6.7	15	29	41	77
Frequency	f_2 (Hz)	50 to 60 Hz +/-5%				
Output connection (DC)						
DC voltage	U_{DC} (V DC)	548 to 721 V DC +/-10% ($U_{DC} \geq 1{,}442 \times U_2$)				
Rated power (DC)	P_{DC} (kW)	5.3	12	23	33	61
Rated power (DC)	P_{DC} (hp)	7	16	30	44	81
Rated DC current (U_2 = 400 V AC, U_{DC} = 577 V DC)	I_{DC} (A)	9	21	40	58	107
Rated DC current (U_2 = 480 V AC, U_{DC} = 692 V DC)	I_{DC} (A)	7.6	17	34	47	88
Braking resistor connection						
Braking chopper		As standard in all types				
Braking resistor		External resistor connected to supply module				
Dimensions and weights						
Regenerative supply module	H x W x D (mm)	364 x 90 x 146	380 x 100 x 223	467 x 165 x 225		467 x 220 x 225
	Weight (kg)	3	5	10		17
Regenerative filter module	H x W x D (mm)	315 x 213 x 218		386 x 288 x 272	406 x 318 x 299	
	Weight (kg)	11	14	35	45	51

Power ratings apply to the line voltage range from 400 to 500 V AC.
Regenerative supply modules dimensions are without options.

Options
External

Mains choke

The ACSM1 drive does not necessarily need a mains choke for operation. Each individual case should be checked to ascertain whether a mains choke needs to be installed. Mains chokes are typically used to:

- Reduce harmonics in the mains current
- Achieve a reduction in the r.m.s. mains current
- Reduce mains disturbance and low frequency interference
- Increase the allowed DC bus continuous power

A mains choke series is available to meet different system design needs.

Mains filter (EMC)

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 equipment and systems including drive component inside. Drive units complying with requirements of EN 61800-3 are always complient 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 in general

EN 61800-3/A11 (2000), product standard	EN 61800-3 (2004), product standard	EN 55011, product family standard for industrial, scientific and medical (ISM) equipment
1st environment, unrestricted distribution	Category C1	Group 1 Class B
1st environment, restricted distribution	Category C2	Group 1 Class A
2nd environment, unrestricted distribution	Category C3	Group 2 Class A
2nd environment, restricted distribution	Category C4	Not applicable

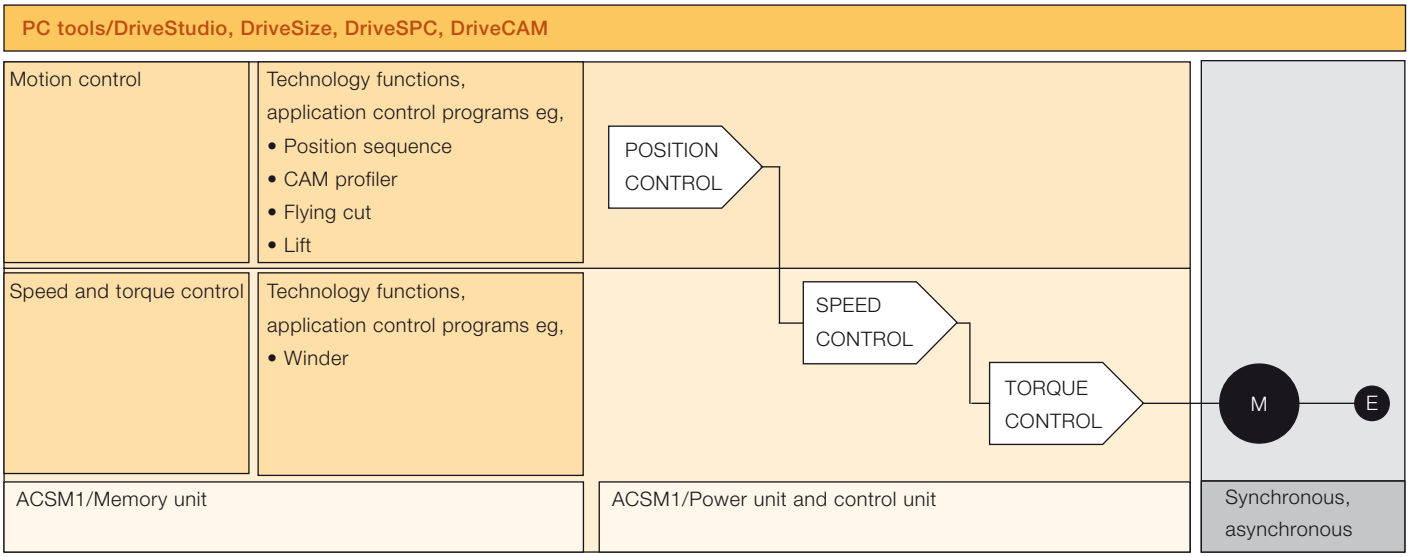
Mains filters are available to meet category C2 level with the ACSM1 drive installation, including a motor with a max. 50 m cable. This level corresponds to the A limits for Group 1 equipment according to EN 55011.

Braking resistors

Depending on the application, an external braking resistor may be needed to convert the kinetic energy generated into thermal energy. A selection of resistors is available for different kinds of pulse duty performance. All braking resistors are equipped with a thermal sensor as standard.

Control and programming

Scalable control and programming environment



Two control variants

The ACSM1 provides a basic ***speed and torque control variant*** and alternatively an advanced ***motion control variant.***

Speed and torque control

- Open and closed loop DTC (direct torque control)
- Control of synchronous and asynchronous motors
- Ideal for speed and torque control applications with high bandwidth

Motion control

- Advanced positioning and synchronization control with high bandwidth
- Point-to-point positioning with extensible positioning profile sets
- Synchronization of multiple axes (line shaft encoder or drive-to-drive link)
- Register control based on fast probe inputs
- Multiple homing methods



Application control programming

In addition to multiple parameter programmable speed and position control functions, drive functionality can be easily modified or extended using application control programming of the DriveSPC tool.

- Standard function blocks to modify a basic control interface or make extensible PLC-tasks
- Technology function blocks to meet machine specific application requirements. Technology function block libraries are optional.

Application control programs

In addition to the control variants several ready-made solutions for dedicated applications are available such as:

- Winder, lift control, CAM profiler, flying shear

Memory unit

The memory unit contains the complete firmware including drive configuration data and application programs. The memory unit concept fully separates the drive firmware from the drive hardware allowing:

- Fast commissioning of the drive
- Easy maintenance of the drive
- Fast exchange of the drive with minimum process downtime

Drive tools

DriveStudio

User friendly PC environment both for simple drive commissioning tasks and for the more demanding drive tuning and programming tasks.

- Drive overview screen for fast parameter and function block navigation
- Parameter setting and signal monitoring
- Parameter set comparison
- Data logger and online signal monitoring for drive tuning (multiple signal channels and triggering conditions)
- Backup and restore tool for drive parameter cloning and life time support
- Case sensitive help with detailed drive parameter, event and function descriptions
- Wizards for configuring communications options (PROFIBUS DP, CANopen®) and motor setup.

DriveSPC

- Simple, easy to understand solution program composer connecting a function block interface with drive firmware functions for signal monitoring and parameter setting
- Same interface enables the adding of user defined function block programs even on the fastest time levels of the drive control
- Function block programming with standard function block library
- Structured text programming
- Optional and customizable function block library expands the variety of functions
- Professional programming environment allowing: hierarchy levels, custom circuits, user defined parameters, etc.
- Copy protection prevents users from uploading or viewing password protected parameters
- In addition fixed connections between firmware blocks can be disconnected and firmware block time levels can be changed with DriveSPC Pro

DriveCAM

- Cam control program for designing electronic cams (flying shear, flying cut, traverse control, etc.)
- Built-in cam function library
- Upload/download multiple profiles to drive memory

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 main features:



- A large graphical display
- Extremely easy to navigate
- Soft and convenient keys
- Local control keys (start/stop/reference)
- Parameter setting and monitoring
- Status and history data

The control panel is an external option and can be connected by cable to the ACSM1 drive. The panel mounting kit JPMP-01 enables mounting of control panels on cabinet doors or inside the control cabinet.

Sizing tool

DriveSize helps the machine designer select the optimum ACSM1 drive, motor and gear combination for the required motion and speed profiles, and for typical mechanical applications.

Ready defined input sheets make it very easy to specify the dimensions of different kinds of linear or rotary movement mechanisms such as

- Lead screws
- Rack and pinion combinations
- Belt and pulley
- Conveyor
- Feed roll
- Rotating table



Technical data

ACSM1	-	04XX	-	XXXX	-	4	+	XXXX

Main connections	
Supply voltage	3-phase 200 to 500 V AC +/-10% (A to D frames) 3-phase 400 to 500 V AC + 10 /-15% (E, G1 and G2 frames)
Frequency	50 to 60 Hz +/- 5%
Total harmonic distortion (THD)	With mains choke to meet limits acc. to EN 61000-3-2, IEC 61000-3-12, IEC 61000-3-4
DC connection	
DC voltage level	270 to 675 V DC +/-10% (A to D frames) 540 to 675 V DC +10% / -15% (E, G1 and G2 frames)
Charging circuit	Internal: A to D frames External: E, G1 and G2 frames
Common DC	See engineering manual
Motor connection	
Motor types	Asynchronous motors (standard induction, servo) and synchronous motors (servo, high torque)
Motor nominal frequency	0 to 500 Hz
Switching frequency (f_{sw})	1 to 16 kHz, 4 kHz as default. Output current derating above 4 kHz
Braking power connection	
Braking chopper	As standard in all types
Braking resistor	External resistor connected to drive

Operating conditions	
Degree of protection	IP20 acc. to EN 60529; (Option in G1, G2 frames) Open Type acc. to UL 508.
Ambient temperature	-10 to +55 °C, derating above 40 °C
Installation altitude	0 to 4000 m, derating above 1000 m
Relative humidity	max. 95%
Climatic/environmental conditions	Class 3K3, 3C2 acc. 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 acc. to EN 60721-3-3
EMC (According to EN 61800-3)	With mains filter: Category C2
Functional safety	Safe torque-off function (STO acc. EN 61800-5-2). IEC 61508: SIL 3 EN 954-1: Category 4 IEC 62061: SILCL 3 EN ISO 13849-1: PL e Certified by TÜV
Compliance	CE, UL, cUL, CSA, C-Tick, GOST R

Frame size	A	B	C	D	E	G1	G2
Typical motor power							
230 V AC/P_N (kW)	0.37 to 1.5	2.2 to 4	5.5 to 11	15 to 22	-	-	-
400 V AC/P_N (kW)	0.75 to 3	4 to 7.5	11 to 22	30 to 45	55 to 110	200 to 250	315 to 355
500 V AC/P_N (kW)	0.75 to 3	4 to 7.5	11 to 22	30 to 45	55 to 110	200 to 250	315 to 355
230 V AC/P_N (hp)	0.5 to 2	3 to 5	7.5 to 15	20 to 30	–	–	–
480 V AC/P_N (hp)	1 to 3	5 to 10	15 to 30	40 to 60	75 to 150	250 to 350	450
Features							
Braking chopper	●	●	●	●	●	●	●
Braking resistor	□	□	□	□	□	□	□
Mains choke	□	□	□	□	●	●	●
Mains filter (EMC)/C2	□	□	□	□	●	–	–
Mains filter (EMC)/C3	□	□	–	–	–	●	●
Coated boards	●	●	●	●	●	●	●
Mounting and cooling							
Removable connectors Control/Power	● / ●		● / –				
Air cooling/ACSM1-04Ax	■	■	■	■	■	■	■
Side-by-side mounting	●	●	●	●	●	●	●
DIN rail mounting	●	●	–	–	–	–	–
Horizontal mounting	●	●	●	●	–	–	–
Push through/ACSM1-04Px	–	–	■	■	–	–	–
Cold plate/ACSM1-04Cx	–	–	■	■	–	–	–

● = Standard
□ = Option, external
■ = Product variant
– = Not available

Ratings, types and dimensions

ACSM1 - 04XX - XXXX - 4 + XXXX

Ratings U_N = 230/400 V AC

f_{sw} = 4 kHz					f_{sw} = 8 kHz		f_{sw} = 16 kHz		Type code	Frame
I_{2N} [1] A	I_{2max} [2] A	P_N [3] (kW) 230 V AC	P_N [3] (hp) 230 V AC	P_N [3] (kW) 400 V AC	I_{2N} [1] A	I_{2max} [2] A	I_{2N} [1] A	I_{2max} [2] A	ACSM1-04x[4]x[5]	size
3	5.3	0.37	0.5	0.75	2.5	5.3	2	5.3	-02A5-4	A
3.6	6.3	0.55	0.75	1.1	3	6.3	2.2	5.8	-03A0-4	A
4.8	8.4	0.75	1	1.5	4	8.4	2.4	5.8	-04A0-4	A
6	10.5	1.1	1.5	2.2	5	8.4	2.5	5.8	-05A0-4	A
8	14.7	1.5	2	3	5.5	11.3	3	7.5	-07A0-4	A
10.5	16.6	2.2	3	4	9.5	13.2	5	9	-09A5-4	B
14	21	3	3	5.5	12	21	6	15.2	-012A-4	B
18	28	4	5	7.5	13	22	7.5	15.2	-016A-4	B
27	42	5.5	7.5	11	24	42	18	29	-024A-4	C
35	54	7.5	10	15	31	43	20	29	-031A-4	C
44	70	11	15	18.5	35	63	22	42	-040A-4	C
50	81	11	15	22	38	63	24	42	-046A-4	C
65	105	15	20	30	55	84	28	57	-060A-4	D
80	130	18.5	25	37	60	117	31	78	-073A-4	D
93	150	22	30	45	65	117	34	78	-090A-4	D
110	165	–	–	55	75	125	–	–	-110A-4	E
135	202	–	–	75	90	150	–	–	-135A-4	E
175	282	–	–	90	115	206	–	–	-175A-4	E
210	326	–	–	110	135	232	–	–	-210A-4	E
390	560	–	–	200	–	–	–	–	-390A-4	G1
500	660	–	–	250	–	–	–	–	-500A-4	G1
580	850	–	–	315	–	–	–	–	-580A-4	G2
635	900	–	–	355	–	–	–	–	-635A-4	G2

Ratings U_N = 480/500 V AC

f_{sw} = 4 kHz				f_{sw} = 8 kHz		f_{sw} = 16 kHz		Type code	Frame
I_{2N} [1] A	I_{2max} [2] A	P_N [3] (kW) 500 V AC	P_N [3] (hp) 480 V AC	I_{2N} [1] A	I_{2max} [2] A	I_{2N} [1] A	I_{2max} [2] A	ACSM1-04x[4]x[5]	size
2.5	5.3	0.75	1	2.1	5.3	1.7	5.3	-02A5-4	A
3	6.3	1.1	1.5	2.5	6.3	1.8	5.8	-03A0-4	A
4	8.4	1.5	2	3.3	8.4	2	5.8	-04A0-4	A
5	10.5	2.2	3	4.1	8.4	2.1	5.8	-05A0-4	A
6.6	14.7	3	3	4.5	11.3	2.5	7.5	-07A0-4	A
8.7	16.6	4	5	7.8	13.2	4.1	9	-09A5-4	B
11.6	21	5.5	7.5	9.9	21	5	15.2	-012A-4	B
14.9	28	7.5	10	10.7	22	6.2	15.2	-016A-4	B
22	42	11	15	20	42	15	29	-024A-4	C
29	54	15	20	26	43	16.5	29	-031A-4	C
36	70	18.5	25	29	63	18	42	-040A-4	C
41	81	22	30	31	63	20	42	-046A-4	C
53	105	30	40	45	84	23	57	-060A-4	D
66	130	37	50	50	117	26	78	-073A-4	D
77	150	45	60	54	117	28	78	-090A-4	D
96	165	55	75	62	125	–	–	-110A-4	E
118	202	75	100	74	150	–	–	-135A-4	E
153	282	90	125	95	206	–	–	-175A-4	E
184	326	110	150	111	232	–	–	-210A-4	E
350	500	200	250	–	–	–	–	-390A-4	G1
450	600	250	350	–	–	–	–	-500A-4	G1
530	774	315	450	–	–	–	–	-580A-4	G2
580	840	355	450	–	–	–	–	-635A-4	G2

Notes

1)	I_{2N}: Continuous rms output current. No overload capability at 40 °C (104 °F). With 230 V AC single phase supply output current and power is derated by 50%.
2)	I_{2max}: Maximum output current. Available for 10 seconds at start, otherwise as long as allowed by drive temperature.
3)	P_N: Typical motor nominal power in no-overload use based on I_{2N} with 4 kHz switching frequency. When C and D frame sizes are used without mains choke, motor nominal power should be derated by 50%.
4)	Cooling variant (A = Air cooling, C = Cold plate, P = Push-through)
5)	Control variant (S = Speed and torque, M = Motion)

Ratings, types and dimensions

ACSM1 - 04XX - XXXX - 4 + XXXX

Cooling characteristics and noise levels

Type code	Frame size	Heat dissipation (W)	Air flow		Noise level
			m^3/h	ft^3/min	dBA
ACSM1-04Ax-02A5-4	A	100	24	14	47
ACSM1-04Ax-03A0-4	A	106	24	14	47
ACSM1-04Ax-04A0-4	A	126	24	14	47
ACSM1-04Ax-05A0-4	A	148	24	14	47
ACSM1-04Ax-07A0-4	A	172	24	14	47
ACSM1-04Ax-09A5-4	B	212	48	28	39
ACSM1-04Ax-012A-4	B	250	48	28	39
ACSM1-04Ax-016A-4	B	318	48	28	39
ACSM1-04Ax-024A-4	C	375	142	84	63
ACSM1-04Ax-031A-4	C	485	142	84	63
ACSM1-04Ax-040A-4	C	541	200	118	71
ACSM1-04Ax-046A-4	C	646	200	118	71
ACSM1-04Ax-060A-4	D	840	290	171	70
ACSM1-04Ax-073A-4	D	1020	290	171	70
ACSM1-04Ax-090A-4	D	1200	290	171	70
ACSM1-04Ax-110A-4	E	1270	405	238	65
ACSM1-04Ax-135A-4	E	1590	405	238	65
ACSM1-04Ax-175A-4	E	2050	405	238	65
ACSM1-04Ax-210A-4	E	2570	405	238	65
ACSM1-04Ax-390A-4	G1	4950	1200	707	72
ACSM1-04Ax-500A-4	G1	6365	1200	707	72
ACSM1-04Ax-580A-4	G2	7495	1200	707	72
ACSM1-04Ax-635A-4	G2	8200	1420	848	71

Dimensions

Frame size	Height		Width		Depth		Weight	
	mm	in	mm	in	mm	in	kg	lb
ACSM1-04Ax/Air cooled variant								
A	364	14.3	90	3.5	146	5.7	3	6.6
B	380	15.0	100	3.9	223	8.8	5	11.0
C	467	18.4	165	6.5	225	8.9	10	22.0
D	467	18.4	220	8.7	225	8.9	17	37.5
E	700	27.6	314	12.4	398	15.7	67	147.7
G1	1462	57.6	305	12.0	505	19.9	171	377.0
G2	1662	65.4	305	12.0	505	19.9	208	459.0
ACSM1-04Cx/Cold plate variant								
C	467	18.4	165	6.5	161	6.3	8	17.6
D	467	18.4	220	8.7	161	6.3	14	30.9
ACSM1-04Px/Push through variant								
C	467	18.4	165	6.5	273	10.7	11	24.3
D	467	18.4	220	8.7	293	11.5	18	39.7

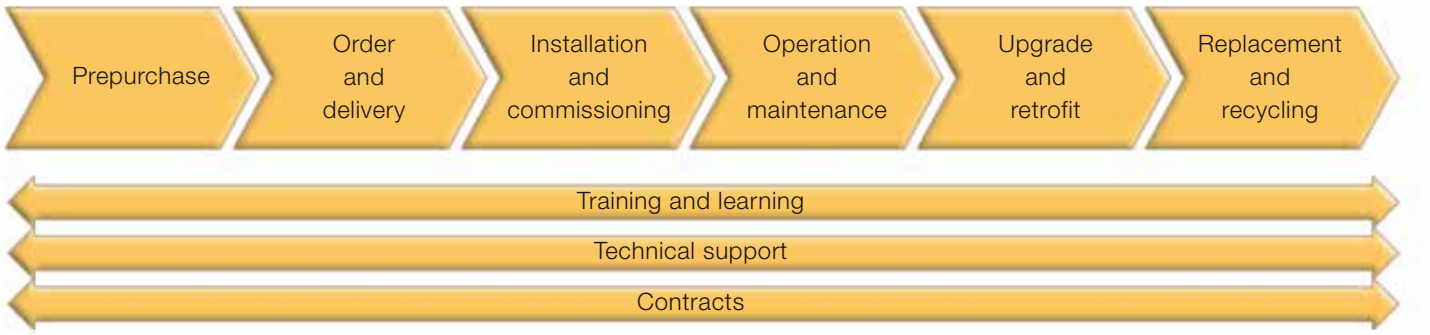
Notes

All dimensions and weights are without options

Height is maximum measure without clampping plates

Depth will increase by 30 mm (1.2 in) with control options in frames A-D and by 25 mm (1 in) in frame E.
Additionally 50 mm (2 in) should be reserved for feedback cabling with FEN-xx.

Expertise at every stage of the value chain



Whether you operate in industry, commerce or a utility your aims remain the same: to keep your motor-driven applications running consistently and efficiently. The life cycle services for ABB drives can help you achieve these aims by maximizing the uptime of your process while ensuring the optimum lifetime of ABB drives in a predictable, safe and low-cost manner.

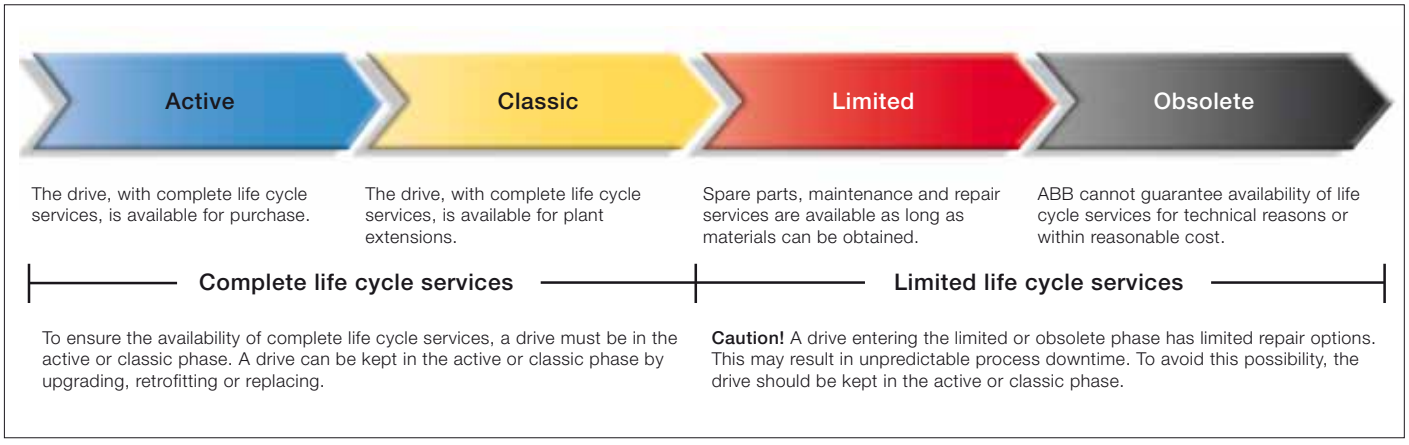
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The four-phase drive life cycle management model provides you with a transparent method for managing your investment in drives. In each phase, you clearly see what life cycle services are available, and more importantly, what services are not available. Decisions on upgrading, retrofitting or replacing drives can be made with confidence.

ABB drive life cycle management model



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