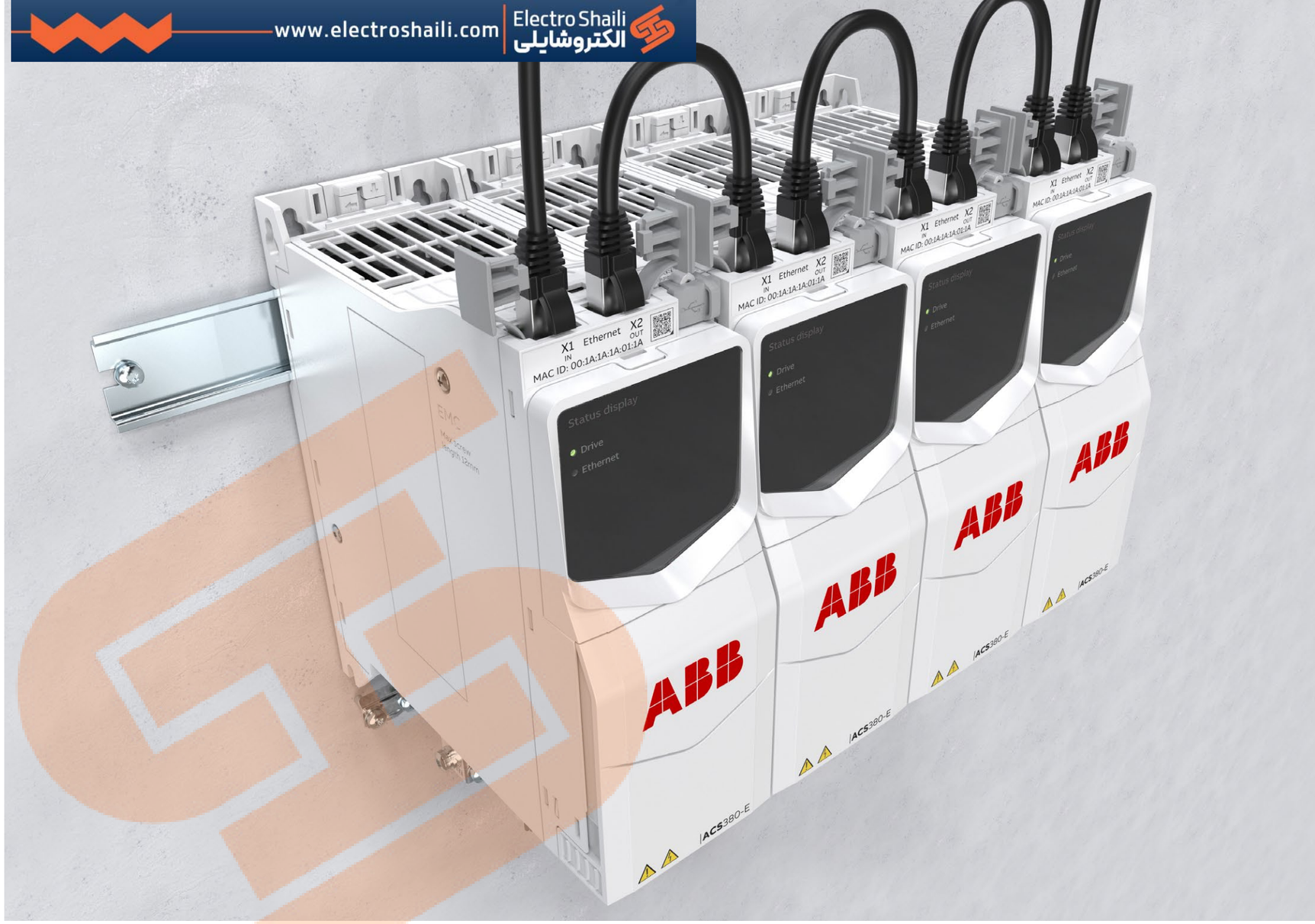
www.electroshaili.com Electro Shaili الکتروشایلی



LOW VOLTAGE AC DRIVES

ABB MACHINERY DRIVES

ACS380-E, 0.25 to 22 kW/0.37 to 30 hp

ENGINEERED TO OUTRUN

For more information, please contact your local ABB representative or visit

new.abb.com/drives
new.abb.com/drives/drivespartners
new.abb.com/motors-generators

Learn more from ACS380-E website

3AXD50001342326 REV A EN 10.6.2025

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www.electroshaili.ir ۰۲۱-۶۶۳۴۴۷۱۴ ۰۹۱۲-۶۳۹۸۹۶۱ ۰۹۱۰-۷۲۴۹۰۷۴ ۰۲۱-۶۶۱۷۰۰۶۲-۵ ۰۲۱-۹۲۰۰۶۶۱۷ (ده خط)

ACS380-E
combines speed and flexible connectivity with future-ready security, ensuring seamless integration and optimal performance for machine builders.

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MACHINERY DRIVES FAMILY

High efficiency machinery drives from ABB deliver unmatched reliability, advanced security and seamless scalability, ensuring optimal performance, protection and growth for machine builders.

Powering scalable control for agile, capable machines

Scalable

The scalable qualities of ABB Machinery drives mean they offer **unmatched flexibility** for machine builders. ABB drives a**dapt to different operational needs**, accommodating small-scale projects and larger machine applications.

Our drives grow with your business, **maximizing efficiency** and making them an invaluable component in an evolving technological landscape.

Reliable

Machinery drives from ABB deliver **consistent operational performance** for machine builders.

Designed to withstand demanding industrial environments, their **robust construction** and **advanced technology** provide dependable and circular outcomes and enhance the longevity and stability of your projects.

Secure

Engineered with **advanced security features**, machinery drives from ABB **protect against cyber threats** and **unauthorized access**, while also ensuring **safe, reliable operations** from features like functional safety remote access.

Invest in a solution that prioritises the protection of your people, equipment and data.

Productive

ABB variable speed drives' efficiency credentials **offer significant benefits** for machine builders.

By optimizing motor speed and torque, you unlock faster and more reliable processes, leading to **higher output and improved product quality**. This ability to fine-tune operations means you can make more, do more and achieve more.

ACS180

Everything you need, nothing you don't. ACS180 provides the quality you expect from ABB in a simple, essential package for machinery applications.

ACS380

Consistent performance throughout their whole life cycle and offers a wider range of standard and optional features for optimal machine building.

ACS380-E

ACS380-E combines speed and flexible connectivity with future-ready security, ensuring seamless integration and optimal performance for machine builders.

+ **Adaptable**
+ **Connected**
+ **Secure**

PERFORMANCE, CONNECTIVITY, CYBER SECURITY

ACS380-E

Introducing the new machinery drive

Adaptable, secure and connected, for seamless machine control

ACS380-E combines speed and flexible connectivity with future-ready security, ensuring seamless integration and optimal performance for machine builders.

01 Adaptable connectivity + **02** Versatile simplicity + **03** Robust cyber security

01

Adaptable connectivity

All major automation ecosystems supported

- Multiple Ethernet protocols – Profinet IO RT, EtherNet/IP and Modbus TCP/IP
- Commissioning over Ethernet
- Remote access supported
- FW download, parameter backup and restore over Ethernet as a file
- High performance fieldbus and motor control
- Built in I/O for most typical machinery applications

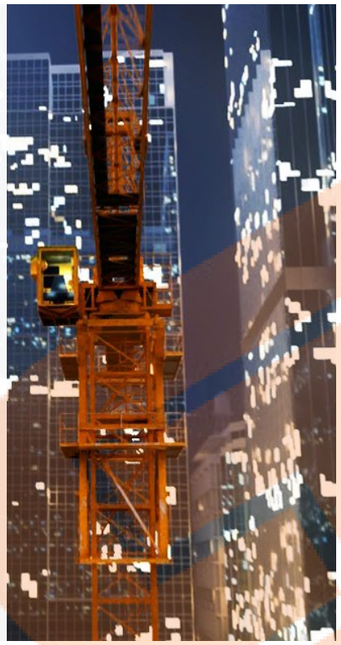
ACS380-E
Introducing the new machinery drive

02

Versatile simplicity

A single product for diverse applications worldwide
- "All-compatible" platform – learn it once, use it everywhere
- Supports all rotary AC motors (IM, PM, PM servo, SynRM)
- Always the same product for multiple applications via I/O, encoder, thermistor and safety options *)
- Supports all global voltages from 100 V to 600 V (released in 2026)

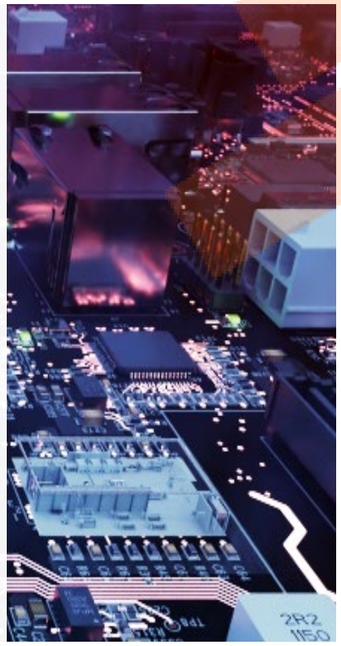
*) To be introduced in phases in 2025 and 2026



03

Robust cyber security

Future-proof drive for future compliance
- SL2 readiness
- Secure boot
- Only ABB signed firmware can be run
- Tamper-proof supply chain



ACS380-E

0.25 to 22 kW/0.37 to 30 hp

POWERING PRODUCTIVITY FOR MACHINE BUILDERS

Faster installation with integrated features and simplified cabling

EMC category C2 compliance across all ratings up to 22 kW

Save panel space with side-by-side installation – no derating required

Daisy-chain Ethernet connectivity – simplifies wiring, no external switch needed

One drive for all industrial Ethernet protocols

Commission via Ethernet – save time during startup

Spring terminals ensure fast, tool-free wiring

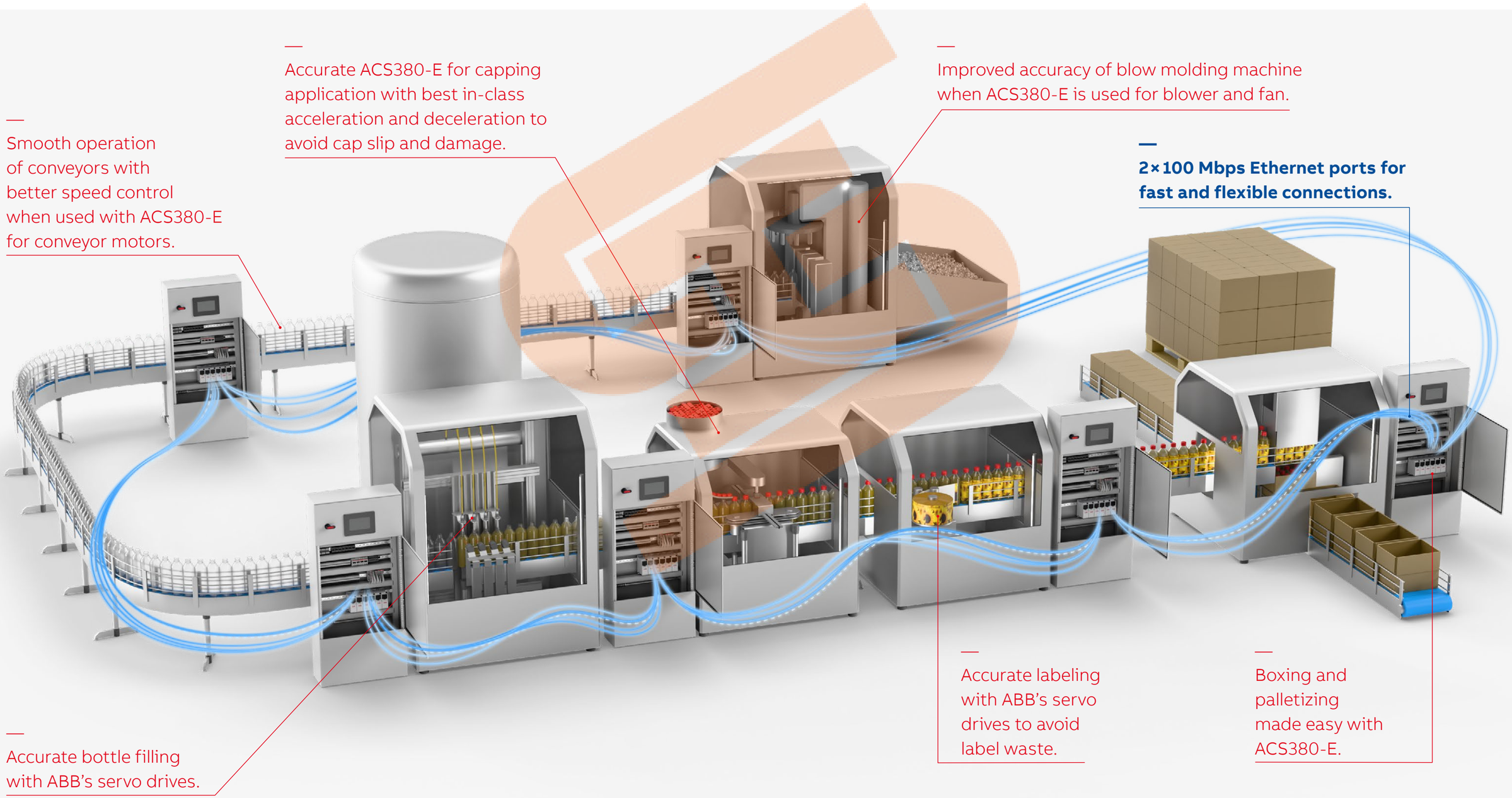
Easily removable front-mount options for easy maintenance

01: Mounted option in place
02: Eject button for easy removal

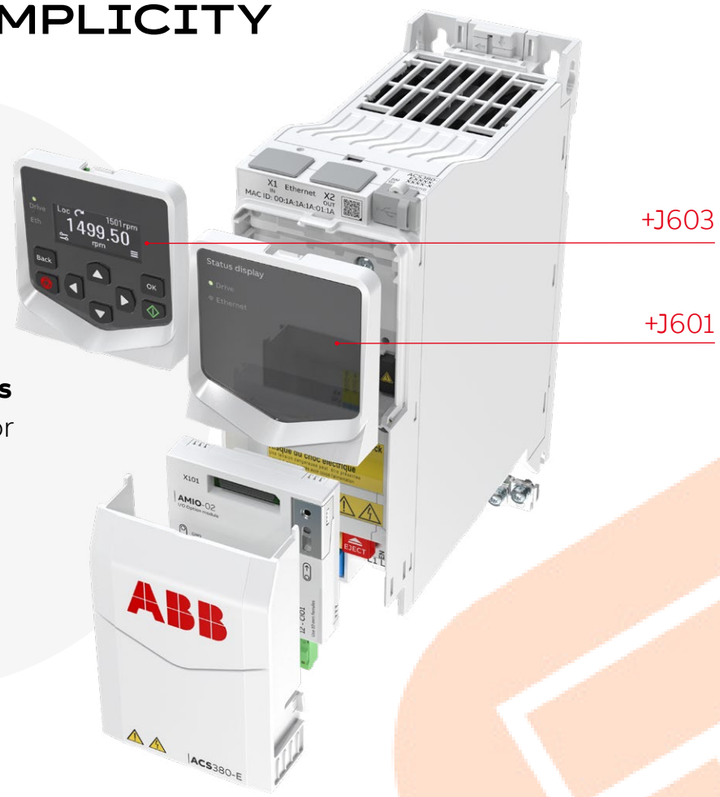
ACS380-E
Keeping your production fast, stable and precise

Complete bottling and packaging application can be operated on Ethernet network for faster, smoother, stable, and more precise operation.

ACS380-E drives improve process performance, increase productivity, reduce external components, and ensure machine and personnel safety.



VERSATILE SIMPLICITY



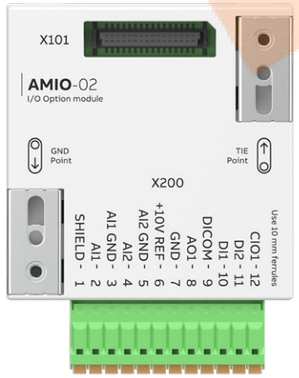
Display options
Status display or keypad display

ACS380-E display and AMIO card options			
Plus code	**MRP code**	**Type designation**	**Description**
+J601	3AXD5000152420	EMIC-30	Status display panel. Drive comes as default with this.
+J603	3AXD50001197490	EMID-30	Control panel. For basic diagnostics and commissioning. Replaces blank panel cover EMIC-30.
+L601	3AXD50001127671	AMIO-02	A-series I/O ext adapter (3x DI, 2x AI,1x AO), includes connectors to put encoder module on top.

AMIO card – extended I/O capability

The optional **AMIO-02 card** expands the drive's I/O for advanced machine control:

- **Digital inputs**: PNP/NPN selectable, two general purpose DI and one CIO1 (configurable input) as DI, counter or frequency input (0-16 kHz)
- **Analog inputs**: Unipolar differential, measures 0-11 V or 0-22 mA, mode change by drive software
- **Analog outputs**: Configurable as 0-11 V or 0-22 mA, mode change by drive software
- **Compact and easy to install**, the AMIO-02 card enhances system integration and enables greater control flexibility in demanding automation environments.



ADAPTABLE CONNECTIVITY

Access drive via Ethernet using Drive Composer or USB-C.

Faster USB-C interface for PC interface

- Fast access for Drive Composer, firmware updates, and diagnostics
- Cold configuration via PC – even when the drive is not powered

Offline configuration via USB-C for parameter and firmware loading.

Know source of parameter backup

- The drive now stores backup source information to ease service and maintenance engineers' tasks

Let's talk Ethernet!

Easy, secure, and reliable integration with the leading automation ecosystems

Thanks to embedded protocol, ACS380-E drive provides reliable connectivity with your automation systems, with a simplified interface to select and configure it.

Multiple protocols are supported:

- PROFINET
- EtherNet/IP
- Modbus TCP

DRIVE COMPOSER 3 WITH ACS380-E

New generation of integration between drives and user tools

Drive Composer 3 is the latest version of our easy-to-use, reliable, and secure tool for faster commissioning, monitoring, and troubleshooting ABB all-compatible drives. The tool can also be used for optimizing drive performance.

01

More efficient than ever

- Fast, reliable connectivity options
- Quick, effortless commissioning
- Advanced features for power users

02

Easy to use

- Backward compatible and future-proof
- Easy to get started
- Faster commissioning and reduced risk

03

Reliable and secure

- Reliable remote troubleshooting
- Secure by design

Versatile PC connectivity

- Connectivity with ACS380-E and other selected drives
  - USB-C connectivity on drive
  - Ethernet connectivity for tool network and fieldbus communication
- Connectivity with other drive models
  - USB connection via Assistant Control Panel (ACP)
  - Ethernet connectivity via Ethernet fieldbus adapter modules
- ACS380-E supports
  - The new Drive Composer 3 as well as earlier 2.x versions
- Supported operating systems
  - Windows 10 and 11

01

02

03

Find out more and download the tool:

ABB ACCESS

Scan the QR code to access 24/7 self-services for ABB drives, motors and PLCs

With ABB Access, you can unlock all aspects of your drives, motors or PLCs, from one central location: the palm of your hand.

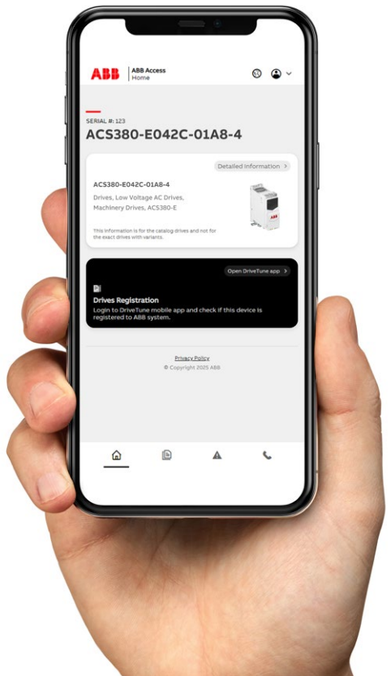
Simply scan the QR code on the ABB product to get started
ABB Access, helps you easily find up-to-date product online data. It also provides easy access to documentation and manuals. If you happen to experience issues with your ABB product, these can be quickly and easily reported online to reach expert support from ABB.

Device information
Easy Access to detailed product information and EcoDesign data

Documentation
Quick Access to user manuals and step-by-step instructions

Report issues
Fast Access to online issue reporting

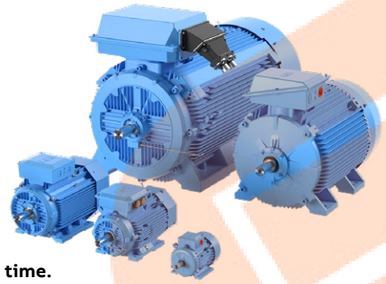
Contact
Access ABB contacts and search channel partners



ACS380-E – THE NEXT EVOLUTION IN ABB'S MOTOR CONTROL

Carrying forward ACS380 legacy. ACS380-E can control:

- **AC induction motors**
- **Permanent magnet motors**
- **Synchronous reluctance motors**

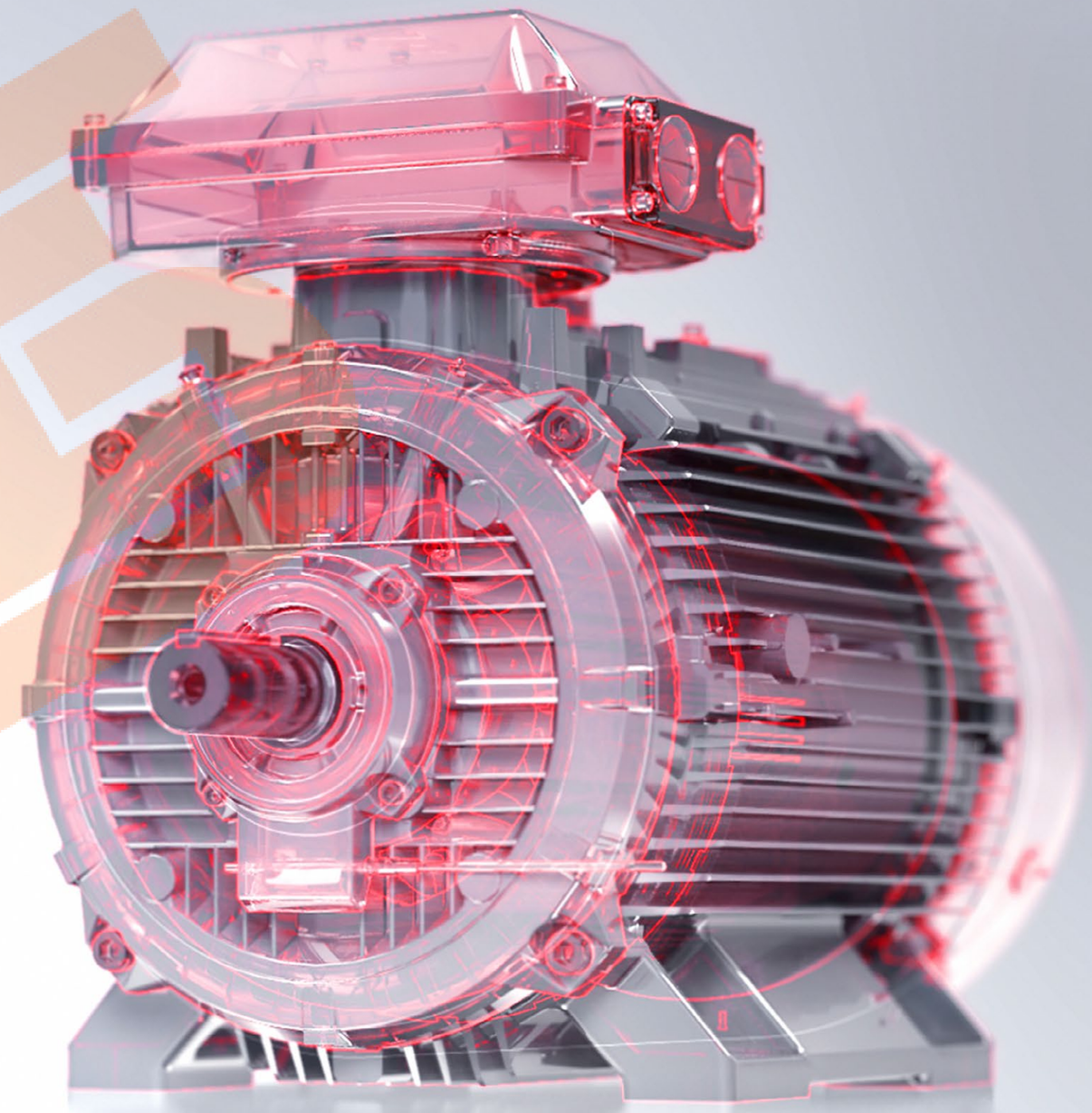


8x times faster speed and torque control cycle time.

The drive exhibits up to 10x lower jitter in response to control commands.

With a significant step forward in motor control loop timing for, **better, faster, and more accurate motor for improved machine performance** making ACS380-E better suited for cyclic and dynamic motor control applications.

Newly introduced floating value for Switching frequency for further optimizing motor control performance.



As part of ABB's sustainability strategy, the company will provide Environmental Product Declarations for relevant products, contributing to transparent and environmentally conscious business practices.

Environmental Product Declarations (EPDs) are standardized, third party verified, documents that provide information about the environmental performance of a product throughout its life cycle. They are based on Life Cycle Assessment (LCA) data and provide information on a range of environmental impacts such as carbon footprint, energy consumption, and resource use. EPDs are part of ABB's commitment to transparency and environmental sustainability.

ABB Drives EPDs include:

1. Raw materials extraction and processing:
   Information about the materials used in the product.
2. Manufacturing process:
   Details about the manufacturing process, energy consumption, and emissions during production.
3. Transportation:
   Information on the transportation of raw materials to the manufacturing site, and the transportation of the finished product to the end-user.
4. Installation:
   Environmental impacts associated with the installation process, including energy use and emissions.
5. Use phase:
   Energy consumption during the operation of the frequency converter based on efficiency its rating.
6. Maintenance:
   Information about the environmental impact of maintaining and servicing the frequency converter during its operational life.
7. End of life:
   Details about the recyclability of the product and the environmental impact of its disposal.

Environmental impact categories:
EPDs include information on a range of environmental impact categories, such as global warming potential, ozone depletion, acidification, eutrophication, and others.

Declaration of Global Warming Potential (GWP):
Information about the product's contribution to climate change, expressed in terms of carbon dioxide equivalent (CO_2-eq).

ABB Group EPDs follow the ISO 14025 standard.

The ABB EPD's can be found here:
Environmental Product Declarations – ABB Group (global.abb)

ABB AC DRIVES COMPLY WITH THE EU ECODESIGN REQUIREMENTS

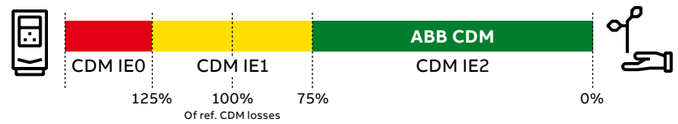
The Ecodesign regulation (EU) 2019/1781 is the legislative framework that sets minimum energy efficiency requirements for low voltage induction motors and variable speed drives. AC drives and power drive systems are classified according to their power losses. From July 2021, the minimum requirement for non-regenerative AC drives in EU is IE2.

ABB's AC drives (micro and machinery, general purpose, industrial and industry-specific drives) comply with the strictest requirements of the standard for energy efficiency and are classified as IE2.

Energy efficiency classes for a Complete Drive Module (CDM)

Losses compared to reference CDM *)

*) Complete drive module



Markings on the ABB LV AC drives

Unique identifier QR code for Ecodesign information

IE class and % loss of rated apparent power 50 Hz, 400 V — IE2 (90;100) 2.3 %

Unique QR codes are located on the rating plate and/or the front of the drive.

Web-based ABB EcoDesign Tool

- Calculates absolute and relative losses and efficiency data at standard and user-defined operating points according to EU regulation 2019/1781 for complete drive module (CDM), LV motors with VSD supply, and power drive system (PDS)
- Losses and efficiency data at operating points in graphical and table format
- Printable efficiency report with possibility to customize title and additional details
- Report can be converted to PDF or CSV format and shared via email

The regulation was implemented in two steps:

Step 1: July 1, 2021
- Power range: from 0.12 to 1000 kW
- 3-phase LV AC drives with diode rectifier
- Drive manufacturers must declare power losses as a percentage of the rated apparent output power at 8 different operating points, as well as standby losses. The international IE level is given at the nominal point. Drives fulfilling the requirements are CE-marked.

Out of scope of the regulation:
- All drives without CE marking
- The following low voltage AC drives: regenerative drives, low-harmonic drives (THD < 10%), multiple AC-output drives and single-phase drives.
- Medium-voltage drives, DC drives and traction drives
- Drive cabinets that already have conformity-assessed modules

Step 2: July 1, 2023
No changes for AC drives

For more information, see: ecodesign.drivesmotors.abb.com

TECHNICAL DATA

Mains connection	
Voltage and power range	3-phase, 380 to 480 V, +10%/-15% 0.25 to 22 kW (0.37 to 30 hp)
Frequency	50/60 Hz ± 5%
Efficiency class (IEC 61800-9-2)	IE2
Common DC connection	
DC voltage level	-4 types 513 to 648 V ±10%
Charging circuit	Internal charging circuit
Motor connection	
Voltage	0 to U_N, 3-phase
Frequency	0 to 599 Hz
Motor control	Scalar control Vector control
Switching frequency	1 to 12 kHz, default 4 kHz
Dynamic braking	Flux braking (moderate or full) Resistor braking (optional)
Motor control performance	
Speed control performance, open loop	
Static accuracy	20% of motor rated slip
Dynamic accuracy	1% seconds with 100% torque step
Speed control performance, closed loop	
Static accuracy	0.1% of motor rated speed
Dynamic accuracy	<1% seconds with 100% torque step
Torque control performance	
Torque step rise time	< 10 ms, rated torque step
Non-linearity	±5% with rated torque
Braking power connection	
Brake chopper	Built-in brake chopper as standard
Brake resistor	External resistor connected to drive
Functional safety	
Built-in safety features	Safe Torque Off (STO) EN/IEC61800-5-2: IEC61508 ed2: SIL 3, IEC 61511: SIL 3, IEC 62061: SIL CL 3, EN ISO 13849-1: PL e/cat. 3

Environmental limits	
Ambient temperature	
Transportation and storage	-40 to +70 °C (-40 to +158 °F)
Operation	-10 to +50 °C (14 to 122 °F), with derating up to 60 °C (except R0, which has max. temperature of 50 °C)
Cooling method	Air-cooled, dry clean air
Altitude	0 to 4000 m, (0 to 13000 ft) for 400 V units (see allowed power systems in HW manual) 0 to 2000 m, (0 to 6600 ft) for 200 V units derating above 1000 m (3300 ft)
Relative humidity	5 to 95%, no condensation allowed
Degree of protection	IP20 as standard
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)
Product compliance	
	CE Low Voltage Directive 2014/35/EU 2, EN 61800-5-1: 2007 Machinery Directive 2006/42/EC, EN 61800-5-2: 2007 EMC Directive 2014/30/EU, EN 61800-3: 2004 + A1: 2012 UL, cUL certification – file E211945 TUV Certification for functional safety Quality assurance system ISO 9001 Ecodesign (EU) 2019/1781 Environmental system ISO 14001 Waste electrical and electronic equipment directive (WEEE) 2002/96/EC RoHS directive 2011/65/EU EAC, KC, RCM

ACS380-E DRIVE

Types and codes

3-phase, U_N = 400 V

Drive type	Frame size	Ordering codes	EAN Codes
ACS380-E042C-01A8-4	R1	3AXD50001141288	6438177722083
ACS380-E042C-02A6-4	R1	3AXD50001141295	6438177722090
ACS380-E042C-03A3-4	R1	3AXD50001141301	6438177722106
ACS380-E042C-04A0-4	R1	3AXD50001141417	6438177722410
ACS380-E042C-05A6-4	R1	3AXD50001141424	6438177722427
ACS380-E042C-07A2-4	R1	3AXD50001141431	6438177722434
ACS380-E042C-09A4-4	R1	3AXD50001141448	6438177722441
ACS380-E042C-12A6-4	R2	3AXD50001141455	6438177722458
ACS380-E042C-17A0-4	R3	3AXD50001141462	6438177722465
ACS380-E042C-25A0-4	R3	3AXD50001141479	6438177722472
ACS380-E042C-033A-4	R3	3AXD50001141486	6438177722489
ACS380-E042C-038A-4	R4	3AXD50001141493	6438177722496
ACS380-E042C-045A-4	R4	3AXD50001141509	6438177722502
ACS380-E042C-050A-4	R4	3AXD50001141516	6438177722519

ORDERING INFORMATION

The type designation indicates the specifications and configuration of the drive.
The table shows the primary drive variants.
Sample type code: ACS380-E042C-01A8-4 (Standard variant, not possible to add options as pluscode)

Segment		A	B	C		D		E		F
ACS380-E	-	04	2	C	-	01A8	-	4	+	Option codes

Product series
Types and construction
Rating
Voltage
Option code

Basic codes

Segment	Option	Description
A	Construction	04 = Module, IP20
B	EMC filter	2 = C2 *) (3-phase 400 V)
C	Connectivity	C = Configured variant
D	Current rating	For example, 02A6 refers to a nominal output current of 2.6 A
E	Voltage rating	1 = 1-phase 230 V, 2 = 3-phase 230 V, 4 = 3-phase 400 V

*) C2 filter drive can be used in C3 environment for motor cables up to 100 meters.

Option codes for configured variant (ACS380-E04xC) and MRP codes for loose items

Segment	Option	Option code	MRP code	Type designation	Description
F	IO extension modules	+L601	3AXD50001127671	AMIO-02	A-series I/O ext adapter (3x DI, 2x AI,1x AO), includes connectors to put encoder module on top.
	User interface options	+J601	3AXD5000152420	EMIC-30	Status display panel. Drive comes as default.
		+J603	3AXD50001197490	EMID-30	Control panel for basic diagnostics and commissioning. Replaces blank panel cover EM-IC-30.
	Services	+P992			Pre-assembled options (front and side options)
	Printed manual The product package includes a quick installation guide in severallanguages.	+R700			English

RATINGS, TYPES AND VOLTAGES

IEC ratings

3-phase, U_N = 400 V (range 380 to 480 V). The power ratings are valid at nominal voltage 400 V (0.25 to 22 kW).

Drive type	Frame size	Input current		Output ratings						
		No choke	With choke	Max. current	Nominal use		Light-duty use		Heavy-duty use	
		I_{1N} (A)	I_{1N} (A)	I_{MAX} (A)	I_N (A)	P_N (kW)	I_{Ld} (A)	P_{Ld} (kW)	I_{Hd} (A)	P_{Hd} (kW)
ACS380-E042C-01A8-4	R1	2.8	1.8	2.2	1.8	0.55	1.7	0.55	1.2	0.37
ACS380-E042C-02A6-4	R1	3.5	2.6	3.2	2.6	0.75	2.5	0.75	1.8	0.55
ACS380-E042C-03A3-4	R1	4.8	3.3	4.7	3.3	1.1	3.1	1.1	2.6	0.75
ACS380-E042C-04A0-4	R1	6.1	4	5.9	4	1.5	3.8	1.5	3.3	1.1
ACS380-E042C-05A6-4	R1	8.5	5.6	7.2	5.6	2.2	5.3	2.2	4	1.5
ACS380-E042C-07A2-4	R1	10.1	7.2	10.1	7.2	3	6.8	3	5.6	2.2
ACS380-E042C-09A4-4	R1	12.9	9.4	13	9.4	4	8.9	4	7.2	3
ACS380-E042C-12A6-4	R2	16.5	12.6	16.9	12.6	5.5	12	5.5	9.4	4
ACS380-E042C-17A0-4	R3	23.4	17	22.7	17	7.5	16.2	7.5	12.6	5.5
ACS380-E042C-25A0-4	R3	31.8	25	30.6	25	11	23.8	11	17	7.5
ACS380-E042C-033A-4	R3	40.9	32	45	32	15	30.5	15	25	11
ACS380-E042C-038A-4	R4	49	38	57.6	38	18.5	36	18.5	32	15
ACS380-E042C-045A-4	R4	55.7	45	68.4	45	22	42.8	22	38	18.5
ACS380-E042C-050A-4	R4	55.7	50	81	50	22	48	22	45	22

UL (NEC) ratings

U_N = 400 V (range 380 to 480 V). The power ratings are valid at nominal voltage 480 V, 1/2 to 30 hp (0.37 to 22 kW).

Drive type	Frame size	Input current		Output ratings				
		No choke	With choke	Max. current	Light-duty use		Heavy-duty use	
		I_{1Ld} (A)	I_{1Ld} (A)	I_{MAX} (A)	I_{Ld} (A)	P_{Ld} (hp)	I_{Hd} (A)	P_{Hd} (hp)
ACS380-E042C-01A8-4	R1	2.2	1.6	2.2	1.6	0.75	1.1	0.5
ACS380-E042C-02A6-4	R1	2.7	2.1	3.2	2.1	1	1.6	0.75
ACS380-E042C-03A3-4	R1	3.9	3	4.7	3	1.5	2.1	1
ACS380-E042C-04A0-4	R1	4.5	3.4	5.9	3.4	2	3	1.5
ACS380-E042C-05A6-4	R1	6.6	4.8	7.2	4.8	3	3.5	2
ACS380-E042C-07A2-4	R1	6.2	6	10.1	6	3	4.8	3
ACS380-E042C-09A4-4	R1	9.8	7.6	13	7.6	5	6	3
ACS380-E042C-12A6-4	R2	13.9	11	16.9	11	7.5	7.6	5
ACS380-E042C-17A0-4	R3	18.8	14	22.7	14	10	11	7.5
ACS380-E042C-25A0-4	R3	26.6	21	30.6	21	15	14	10
ACS380-E042C-033A-4	R3	33.9	27	45	27	20	21	15
ACS380-E042C-038A-4	R4	41.3	34	57.6	34	25	27	20
ACS380-E042C-045A-4	R4	46.9	40	68.4	40	30	34	25
ACS380-E042C-050A-4	R4	46.9	42	81	42	30	40	30

Nominal ratings	
I_N	Rated current available continuously without overload ability at 50 °C.
P_N	Typical motor power in no-overload use.
Light-duty use	
I_{Ld}	Continuous current allowing 110% I_{Ld} for 1 minute every 10 minutes at 50 °C.
P_{Ld}	Typical motor power in light-duty use.
Heavy-duty use	
I_{Hd}	Continuous current allowing 150% I_{Hd} for 1 minute every 10 minutes at 50 °C.
P_{Hd}	Typical motor power in heavy-duty use.
Maximum output current	
I_{max}	Maximum output current. Available for 2 seconds at start, then as long as allowed by drive temperature.

For derating at higher altitudes, temperatures or switching frequencies, see the user's HW manual, document code: 3AXD50001141677

Note: Availability of products may vary. Kindly check with your local ABB representative to confirm availability in your region.

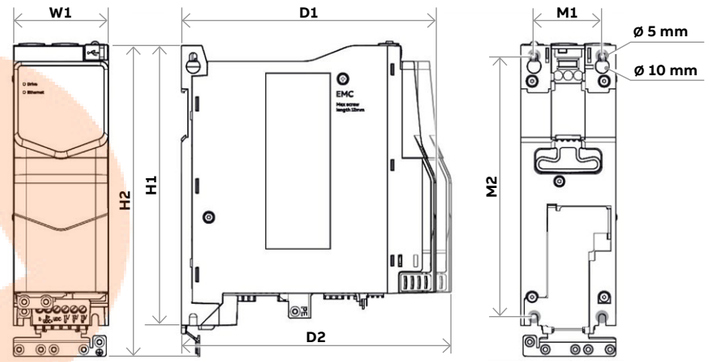
DIMENSIONS

Dimensions and weights (IP20 / UL open type)

Frame size	H1		H2		W		D1		D2		M1		M2	
	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
R1	205	8.07	227.5	8.96	70	2.76	186.8	7.35	198.2	7.8	50	197	191	7.52
R2	205	8.07	227.6	8.96	95	3.74	186.8	7.35	198.2	7.8	75	2.95	191	7.52
R3	205	8.07	241.3	9.5	170	6.69	185.7	7.31	198.2	7.8	148	5.83	191	7.52
R4	205	8.07	240.4	9.46	260	10.24	192	7.56	203.4	8.01	234	9.21	191	7.52

Frame size	Drive without front panel and clamps		Drive with standars components	
	(kg)	(lb)	(kg)	(lb)
R1	1.6	3.5	1.7	3.8
R2	2.2	4.8	2.3	5
R3	3.7	8.1	3.8	8.3
R4	5.8	12.7	5.9	13

H1 = Height rear mounting
H2 = Height rear total
W = Width
D1 = Depth, front cover inner position
D2 = Depth, front cover outer position
M1 = Mounting hole distance, horizontal
M2 = Mounting hole distance, vertical

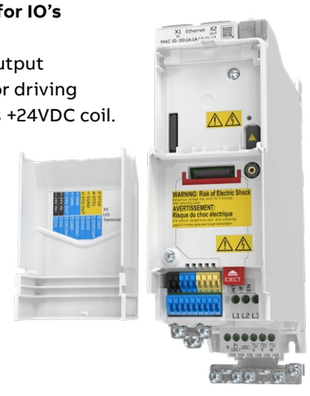


CONNECTION

Spring connectors for IO's
- 2×Digital input
- 2×Digital input/output

DIO1 is optimized for driving external contactor's +24VDC coil.

Now on-board
External +24 VDC supply to keep control unit alive.



STANDARD I/O CONNECTIONS

Terminals	Descriptions	
	Auxiliary voltage output and digital connections	
24V IN+	External +24 V DC input	
24V IN-	External +24 V DC common	
24V OUT	Auxiliary voltage output +24 V DC, max. 200 mA	
GND	Auxiliary voltage output common	
DICOM	Digital input 1 and 2 common	
DI1	Digital input 1	
DI2	Digital input 2	
DIO1	Digital input/output 1	
DIO2	Digital input/output 2	
DIOSRC	Digital output 1 and 2 auxiliary voltage	
DIOCOM	Digital input/output 1 and 2 common	
	Safe Torque Off (STO)	
STO OUT	STO 24 V output	Safe Torgue Off function. Factory connection. Both circuits must be closed for the drive to start.
SGND	STO ground	
STO1	STO 1 input	
S TO2	STO 2 input	

RESISTOR BRAKING

Brake chopper
The brake chopper is built in as standard for the ACS380. It not only controls braking, but also supervises system status and detects failures such as brake resistor and resistor cable short-circuits, chopper short-circuit, and calculated resistor over-temperature. See the tables for internal brake chopper specifications for each drive type.

Brake resistor
The brake resistors are separately available for the ACS380. Resistors other than the standard option resistors may be used, provided that the specified resistance value is higher than the minimum resistance and that heat dissipation capacity of the resistor is sufficient for the drive application (see hardware manual). No separate fuses in the brake circuit are required if the conditions for the mains cable, for example, are protected with fuses and no mains cable/fuse overrating occurs.

Drive type	Frame size	Internal brake chopper						Example resistor types [1) 2)]
		R_{min} (ohm)	R_{max} (ohm)	P_{BRcont} (kW)	P_{BRcont} (hp)	P_{BRmax} (kW)	P_{BRmax} (hp)	Danothem
3-phase 400 V								
ACS380-E042C-01A8-4	R1	99	933	0.37	0.5	0.56	0.74	
ACS380-E042C-02A6-4	R1	99	628	0.55	0.75	0.83	1.1	CBH 360 C T 406 210R
ACS380-E042C-03A3-4	R1	99	428	0.75	1	1.13	1.5	or
ACS380-E042C-04A0-4	R1	99	285	1.1	1.5	1.65	2.2	CAR 200 D T 406 210R
ACS380-E042C-05A6-4	R1	99	206	1.5	2	2.25	3	
ACS380-E042C-07A2-4	R1	53	139	2.2	2	3.3	4.4	
ACS380-E042C-09A4-4	R1	53	102	3	3	4.5	6	CBR-V 330 D T 406 78R UL
ACS380-E042C-12A6-4	R2	32	76	4	5	6	8	
ACS380-E042C-17A0-4	R3	32	54	5.5	7.5	8.25	11	CBT-H 560 D HT 406 39R
ACS380-E042C-25A0-4	R3	23	39	7.5	10	11.25	15	
ACS380-E042C-033A-4	R3	16	33	11	15	17	22	CBT-H 560 D HT 406 19R
ACS380-E042C-038A-4	R4	6	24	15	20	23	30	
ACS380-E042C-045A-4	R4	6	20	18.5	25	28	37	CBT-H 760 D HT 406 16R
ACS380-E042C-050A-4	R4	6	20	22	30	30	40	

[1)] Braking cycle differs from that of the drive. Refer to brake resistor manufacturer's documentation.
[2)] If brake resistors from other manufacturers are used, the characteristics must agree with the values in the table.

Definitions
P_{BRmax} = The maximum braking capacity of the drive, when the length of the braking pulse is at most 1 minute for each 10 minutes (P_{BRcont} × 1.5). The maximum braking capacity must be more than the desired braking power.
P_{BRcont} = The continuous braking capacity of the drive
R_{max} = The maximum resistance value of the brake resistor that can provide P_{BRcont}

EMC – ELECTROMAGNETIC COMPATIBILITY

The ACS380-E machinery drive has a built-in EMC filter, category C2, for 3-phase 400 V ratings.

EMC standards
The EMC product standard (EN 61800-3) 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 equipment and systems including components inside the drive. Drive units complying with the 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 or require a motor to be connected as a load. The emission limits are comparable to EMC standards according to the table below.

Domestic environments versus public low voltage networks
The first environment includes domestic premises. It also includes establishments directly connected without an intermediate transformer to a low voltage power supply network that supplies buildings used for domestic purposes. The second environment includes all establishments directly connected to public low voltage power supply networks.

Comparison of EMC standards

EMC according to EN 61800-3 product standard	EN 61800-3 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 environments
1st environment, unrestricted distribution	Category C1	Group 1, Class B	Not applicable	Applicable
1st environment, restricted distribution	Category C2	Group 1, Class A	Applicable	Not applicable
2nd environment, unrestricted distribution	Category C3	Group 2, Class A	Not applicable	Not applicable
2nd environment, restricted distribution	Category C4	Not applicable	Not applicable	Not applicable

EMC compliance and maximum motor cable length

Voltage (Product variant)	Frame size	EMC category (EN 61800-3), max. motor cable length		
		C1	C2 *)	C3
		With internal / external filter		
3-phase 400 V (ACS380-E04xx-xxxx-4)	R0	– / 30 m	10 m / 30 m	30 m / 30 m
	R1	– /40 m	10 m / 40 m	30 m / 40 m
	R2			20 m / 40 m
	R3			30 m / 40 m
	R4	– / 30 m	10 m / 30 m	30 m / 30 m

*) ACS380-E drives frames R1 to R4 with C2 filters: maximum motor cable length is 100 m in C3 environment without external EMC filters.

FILTERS AND CHOKES

It is advisable to use a mains choke if the short-circuit capacity of the network at the drive terminals is higher than specified in the table.

Frame size / voltage rating	R0, R1, R2	R3, R4
3-phase 380...480 V	>5.0 kA	>10 kA

3-phase U_N = 400 V (range 380 to 480 V)

Drive type	Frame size	C1 filter ABB type / Schaffner type	Mains choke Max. ambient temp. 40 °C
ACS380-E042C-01A8-4	R1	RFI 32 / FN 3258-16-44	CHK-01
ACS380-E042C-02A6-4	R1	RFI 32 / FN 3258-16-44	CHK-01
ACS380-E042C-03A3-4	R1	RFI 32 / FN 3258-16-44	CHK-01
ACS380-E042C-04A0-4	R1	RFI 32 / FN 3258-16-44	CHK-02
ACS380-E042C-05A6-4	R1	RFI 32 / FN 3258-16-44	CHK-02
ACS380-E042C-07A2-4	R1	RFI 32 / FN 3258-16-44	CHK-02
ACS380-E042C-09A4-4	R1	RFI 32 / FN 3258-16-44	CHK-03
ACS380-E042C-12A6-4	R2	RFI-33 /FN 3258-30-33	CHK-03
ACS380-E042C-17A0-4	R3	RFI-33 /FN 3258-30-33	CHK-04
ACS380-E042C-25A0-4	R3	RFI-34 / FN3258-100-35	CHK-04
ACS380-E042C-033A-4	R3	RFI-34 / FN3258-100-35	CHK-05
ACS380-E042C-038A-4	R4	RFI-34 / FN3258-100-35	CHK-06
ACS380-E042C-045A-4	R4	RFI-34 / FN3258-100-35	CHK-06
ACS380-E042C-050A-4	R4	RFI-34 / FN3258-100-35	CHK-07

COOLING, FUSES AND CIRCUIT BREAKERS

Losses, cooling data, and noise

The drives have cooling fan. The cooling air inlet is at the bottom of the drive and the exhaust vent is at top of the drive.

Drive type	Frame size	Typical power loss [1]		Air flow		Noise [2]	IEC fuses		IEC fuses		UL fuses	
		(W)	BTU/h	(m^3/h)	CFM	(dBA)	(A)	Fuse type	(A)	Fuse type	(A)	Fuse type
3-phase U_N = 400 V (range 380 to 480 V)												
ACS380-E042C-01A8-4	R1	36	123	57	33	65	4	gG	25	gR	6	UL class T
ACS380-E042C-02A6-4	R1	44	150	57	33	65	6	gG	25	gR	6	UL class T
ACS380-E042C-03A3-4	R1	53	181	57	33	65	6	gG	25	gR	6	UL class T
ACS380-E042C-04A0-4	R1	58	198	57	33	65	10	gG	32	gR	10	UL class T
ACS380-E042C-05A6-4	R1	81	276	57	33	65	10	gG	32	gR	10	UL class T
ACS380-E042C-07A2-4	R1	98	334	57	33	65	16	gG	40	gR	20	UL class T
ACS380-E042C-09A4-4	R1	134	457	57	33	65	16	gG	40	gR	20	UL class T
ACS380-E042C-12A6-4	R2	168	573	63	37	65	25	gG	50	gR	25	UL class T
ACS380-E042C-17A0-4	R3	247	843	128	75	74	32	gG	63	gR	35	UL class T
ACS380-E042C-25A0-4	R3	388	1324	128	75	74	50	gG	80	gR	40	UL class T
ACS380-E042C-033A-4	R3	514	1754	128	75	74	63	gG	100	gR	60	UL class T
ACS380-E042C-038A-4	R4	603	2058	150	88	77	80	gG	125	gR	80	UL class T
ACS380-E042C-045A-4	R4	628	2143	150	88	77	100	gG	160	gR	100	UL class T
ACS380-E042C-050A-4	R4	729	2487	150	88	77	100	gG	160	gR	100	UL class T

[1] Typical drive losses when it operates at 90% of the motor nominal frequency and 100% of the drive nominal output current.
[2] During operation, the R3 and R4 drives can cause more than 70 dB(A) on noise.

Circuit breakers

The miniature circuit breakers listed below are tested and approved for use with the ACS380 drives.
Other circuit breakers can also be used with the drive if they provide the same electrical characteristics.

Drive type	Frame size [1]	Miniature circuit breaker ABB Type	Network SCC [2] (kA)
3-phase U_N = 400 V (range 380 to 480 V)			
ACS380-E042C-01A8-4	R1	S303P-B4 / S303P-C4	10
ACS380-E042C-02A6-4	R1	S303P-B6 / S303P-C6	10
ACS380-E042C-03A3-4	R1	S303P-B6 / S303P-C6	10
ACS380-E042C-04A0-4	R1	S303P-B8 / S303P-C8	10
ACS380-E042C-05A6-4	R1	S303P-B10 / S303P-C10	10
ACS380-E042C-07A2-4	R1	S303P-B16 / S303P-C16	10
ACS380-E042C-09A4-4	R1	S303P-B16 / S303P-C16	10
ACS380-E042C-12A6-4	R2	S303P-B25 / S303P-C25	10
ACS380-E042C-17A0-4	R3	S303P-B32 / S303P-C32	10
ACS380-E042C-25A0-4	R3	S303P-B50 / S303P-C50	10
ACS380-E042C-033A-4	R3	S303P-B63 / S303P-C63	10
ACS380-E042C-038A-4	R4	S8035-B80	5
ACS380-E042C-045A-4	R4	S8035-B100	5
ACS380-E042C-050A-4	R4	S8035-B100	5

[1] Enclosures for all frame sizes must have a solid bottom directly below the drive: fans (other than internal stirrings fans), filters or louvers cannot be directly below the drive but can be mounted in adjacent areas at the bottom of the enclosure.
[2] Maximum permitted rated conditional short-circuit current (IEC 61800-5-1) of the electrical power network.

ACS380-E DRIVES ARE COMPATIBLE
with the extensive ABB product offering

Programmable Logic Controllers PLCs
The AC500, AC500-eCo, AC500-S and AC500-XC scalable PLC ranges provide solutions for small, medium and high-end applications. Our AC500 PLC platform offers different performance levels and is the ideal choice for high availability, extreme environments, condition monitoring, motion control or safety solutions, and applications where the highest level of security is mandatory.

All-compatible drives portfolio
The all-compatible drives share the same architecture: software platform; tools; user interfaces; and options. However, there is an optimal drive, from the smallest water pump to the biggest cement kiln, and everything in between.

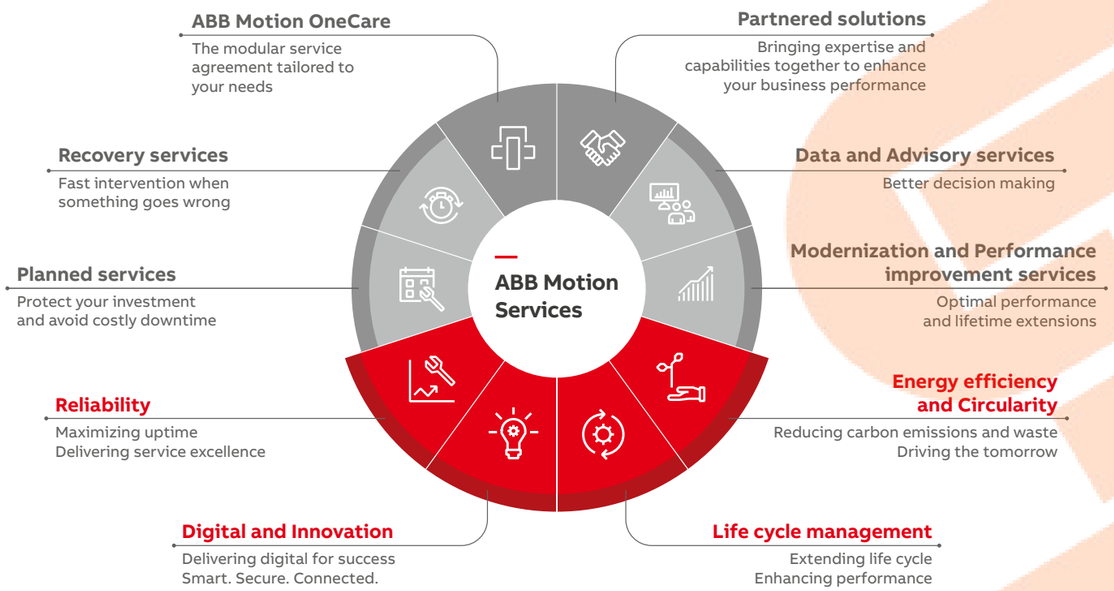
AC motors
ABB's low-voltage AC motors are designed to save energy, reduce operating costs and minimize unscheduled downtime. General performance motors ensure convenience, while process performance motors provide a broad set of motors for the process industries and heavy-duty applications.

Safety products
ABB safety products help machine builders create production-friendly and safe work environments for operators. We deliver machine safety solutions for single machines or entire production lines. Our long experience of helping customers making solutions for demanding environments has made us experts in combining production demands with safety demands for production-friendly solutions.

Control panels
CP600-eCo, CP600 and CP600-Pro control panels offer a wide range of features and functionalities for maximum operability. ABB control panels are distinguished by their robustness and easy usability, providing all the relevant information from production plants and machines at a single touch. Also, includes the CCE protocol – ABB's internal drive communication protocol – for seamless integration with ABB drives, enabling efficient parameter read/write access and real-time monitoring and visualization.

ABB MOTION SERVICES

ABB Motion Services helps customers around the globe by maximizing uptime, extending product life cycle, and enhancing the performance and energy efficiency of electrical motion solutions. We enable innovation and success through digitalization by securely connecting and monitoring our customers' motors and drives, increasing operational uptime, and improving efficiency. We make the difference for our customers and partners every day by keeping their operations running profitably, safely and reliably.



OUR EXPERTISE
YOUR ADVANTAGE

A LIFETIME OF PEAK PERFORMANCE

You're in control of every life-cycle phase of your drives. At the heart of drive services is a four-phase product life-cycle management model. This model defines the services recommended and available throughout drives lifespan.

Now it's easy for you to see the exact service and maintenance available for your drives.

ABB drives life-cycle phases explained:

	Active	Classic	Limited	Obsolete
	Full range of life-cycle services and support		Limited range of life-cycle services and support	Replacement and end-of-life services
Product	Product is in active sales and manufacturing phase	Serial production has ceased. Product may be available for plant extensions, as a spare or for installed base renewal	Product is no longer available	Product is no longer available
Services	Full range of life-cycle services is available	Full range of life-cycle services is available. Product enhancements may be available through modernizations	Limited range of life-cycle services is available. Spare parts availability is limited to available stock	Replacement and end-of-life services are available

Keeping you informed
We notify you every step of the way using life-cycle status statements and announcements.

The benefit for you is clear information about the status of your drives and the exact services available. It helps you plan the preferred service actions ahead of time and make sure that continuous support is always available.

Step 1
Life-cycle Status Announcement
Provides early information about the upcoming life-cycle phase change and how it affects the availability of services.

Step 2
Life-cycle Status Statement
Provides information about the drive's current life-cycle status, the availability of product and services, the life-cycle plan, and recommended actions.

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