BROCHURE

ABB Micro and Machinery Drives

Little big drives without limiting your business

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Introducing ABB micro and machinery drives

ABB micro drives
Precise speed control and simple integration.
ABB micro drives are suitable for many low power applications such as pumps, fans, and conveyors. Designed to be integrated into your machinery, they offer flexible mounting alternatives and straightforward setup with simple user interfaces and tools.

ABB machinery drives
Premium motor control with hardware flexibility.
ABB machinery drives can be configured to meet the precise needs of industry with a wide power and voltage range and both standard and optional features, including integrated safety and ready-made control programs for different applications.Worldwide availability through logistical distributors

Choosing the right drive for your application

Step	Process	Action
1	**Identify the application** Identify the type of application and the likely demands of the drive.	Continue to step 2.
2	**Understand the load.** System inertia, required acceleration and deceleration rates, minimum and maximum speeds, overload requirements, etc. This information can often be determined by the performance of the existing motor.	Continue to step 3.
3	**Gather the motor nameplate data.** Power, Voltage, Current, Frequency(Hz), RPM, Insulation Class, etc.	Continue to step 4.
4	**Choose a drive** Match the data gathered in Steps 1 to 3 against the table of drive features. Select a drive that meets the motor requirements and has all the software features needed for the application.	Continue to step 5.
5	**Is the drive offered in the correct hp/amp rating?** The drive you choose must be able to supply the necessary current to the motor to produce the torque required. This includes normal and overload conditions. See selection table on page 17.	If yes, continue to step 6. If no, go to step 4.
6	**Is the drive offered in the correct enclosure and environmental ratings?** The drive you choose must be available in an enclosure style that will withstand the application's environment. It also must produce the required current at the application's altitude and ambient temperature. See selection table on page 17.	If yes, continue to step 7. If no, go to step 4.
7	**Does this drive have the features needed to meet the application's demands?** The drive you choose must have a feature set that matches the application. It also must have sufficient hardware (inputs and outputs, feedback, communications, etc.) to perform the application.See selection table on page 17.	If yes, continue to step 8. If no, go to step 4.
8	**Does this drive have the features needed to meet the application's demands?** The drive you choose must have a feature set that matches the application. It also must have sufficient hardware (inputs and outputs, feedback, communications, etc.) to perform the application. See selection table on page 17.	If yes, continue to step 9. If no, go to step 4.
9	**Congratulations!** The ABB AC drive you have chosen has the features and performance needed for a successful application.	

ABB Micro Drives
ACS150, 0.37kW to 4kW

ACS150
0.37 kW to 4 kW
- 1-phase, 200 to 240 V : 0.37kW to 2.2 kW
- 3-phase, 200 to 240 V : 0.37kW to 2.2 kW
- 3-phase, 380 to 480 V : 0.37kW to 4 kW

Introduction
ABB micro drives are designed to be incorporated into a wide variety of machines such as mixers, conveyors, fans or pumps or anywhere where a fixed speed motor needs to go variable speed motor.

The ABB micro drives meet the requirements of OEMs, machinery builders and panel builders. These drives are widely available through the ABB distribution network. The drives are easy to select and provide a range of built-in features as standard including PID control, brake chopper, fixed keypad and speed control potentiometer.

Features
- IP20 enclosure (UL open type)
- Optional NEMA 1 kit
- For basic machinery applications
- Scalar control
- Integrated user interface and potentiometer
- Built-in brake chopper
- Built-in C3 EMC filter
- Options
- External C2 EMC filter
- Input and output chokes
- Flash Drop tool for unpowered drive configuration in 2 seconds

Highlights
- User-friendly LCD control panel and integrated potentiometer
- Flexible mounting alternatives
- PID control
- Integrated EMC filter
- Built-in brake chopper
- FlashDrop tool for fast drive commissioning
- Worldwide availability through logistical distributors

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Feature Table

Feature	Advantage	Benefit
Worldwide availability and service	Drives are available worldwide and permanently stocked in four regions. Dedicated global service and support network that is one of the widest in the industry.	Fast and reliable delivery with dedicated support to any country in the world.
User-friendly LCD control panel and integrated potentiometer	Clear alphanumeric display. Easy setup and use.	Time savings due to quick setup and simple configuration.
Flexible mounting alternatives	Screw or DIN rail mounting, sideways or side-by-side.	One drive type can be used in various designs, saving installation costs & time.
Integrated EMC filter	High electromagnetic compatibility.	Low EMC emissions in selected environments.
Built-in brake chopper as standard	No need for an external brake chopper.	Space savings, reduced installation cost.
FlashDrop tool	Faster and easier drive setup and commissioning for volume manufacturing and maintenance. The FlashDrop tool enables both downloading and uploading drive parameters.	Fast, safe and trouble-free parameter setting without the need to power-up the drive. Patented.
PID control	Varies the drive's performance according to the need of the application.	Enhances production output, stability and accuracy.
Coated boards	Board coating protects the electronics from hazards including static discharge and airborne contaminates, including moisture.	Reduces maintenance due to good protection of electronics components.

Type designation
In column 4 on the right is the unique reference number that clearly indentifies your drive by power rating and frame size. Once you have selected the type designation, the frame size (column 5) can be used to determine the drives dimensions, shown below.

Voltages
ACS150 is available in two voltage ranges:
2 = 200 to 240 V
4 = 380 to 480 V

Insert either "2" or "4", depending on your chosen voltage, into the type designation shown on the right.

Construction
"01X" and "03X" within the type designation varies depending on the drive phase and EMC filtering. Choose below the one you need.

01 = 1-phase
03 = 3-phase
E = EMC filter connected, 50 Hz frequency
U = EMC filter disconnected, 60 Hz frequency
(In case the filter is required it can easily be connected.)

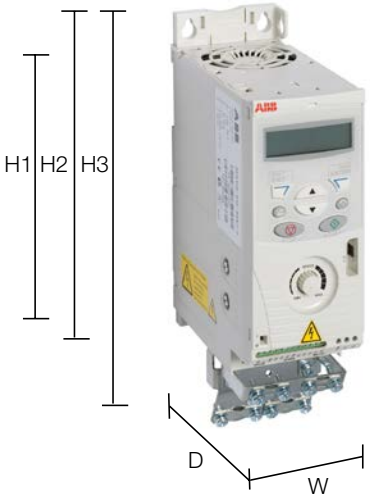
Ratings			Type designation	Frame size
P_N kW	P_N hp	I_{2N} A		
1-phase AC supply, 200 to 240 V				
0.37	0.5	2.4	ACS150-01X-02A4-2	R0
0.75	1	4.7	ACS150-01X-04A7-2	R1
1.1	1.5	6.7	ACS150-01X-06A7-2	R1
1.5	2	7.5	ACS150-01X-07A5-2	R2
2.2	3	9.8	ACS150-01X-09A8-2	R2
3-phase AC supply, 200 to 240 V				
0.37	0.5	2.4	ACS150-03X-02A4-2	R0
0.55	0.75	3.5	ACS150-03X-03A5-2	R0
0.75	1	4.7	ACS150-03X-04A7-2	R1
1.1	1.5	6.7	ACS150-03X-06A7-2	R1
1.5	2	7.5	ACS150-03X-07A5-2	R1
2.2	3	9.8	ACS150-03X-09A8-2	R2
3-phase AC supply, 380 to 480 V				
0.37	0.5	1.2	ACS150-03X-01A2-4	R0
0.55	0.75	1.9	ACS150-03X-01A9-4	R0
0.75	1	2.4	ACS150-03X-02A4-4	R1
1.1	1.5	3.3	ACS150-03X-03A3-4	R1
1.5	2	4.1	ACS150-03X-04A1-4	R1
2.2	3	5.6	ACS150-03X-05A6-4	R1
3	4	7.3	ACS150-03X-07A3-4	R1
4	5	8.8	ACS150-03X-08A8-4	R1

X within the type code stands for E or U.

Cabinet-mounted drives (UL open)

Frame size	IP20 UL open					
	H1	H2	H3	W	D	Weight
	mm	mm	mm	mm	mm	kg
R0	169	202	239	70	142	1.1
R1	169	202	239	70	142	1.3
R2	169	202	239	105	142	1.5

H1 = Height without fastenings and clamping plate.
H2 = Height with fastenings but without clamping plate.
H3 = Height with fastenings and clamping plate.
W = Width
D = Depth



Wall-mounted drives (NEMA 1)

Frame size	NEMA 1				
	H4	H5	W	D	Weight
	mm	mm	mm	mm	kg
R0	257	280	70	142	1.5
R1	257	280	70	142	1.7
R2	257	282	105	142	1.9

H4 = Height with fastenings and NEMA 1 connection box.
H5 = Height with fastenings, NEMA 1 connection box and hood.
W = Width
D = Depth

Technical Data

Mains connection	
Voltage and power range	1-phase, 200 to 240 V ± 10% 0.37 to 2.2 kW (0.5 to 3 hp) 3-phase, 200 to 240 V ± 10% 0.37 to 2.2 kW (0.5 to 3 hp) 3-phase, 380 to 480 V ± 10% 0.37 to 4 kW (0.5 to 5 hp)
Frequency	48 to 63 Hz
Motor connection	
Voltage	3-phase, from 0 to Usupply
Frequency	0 to 500 Hz
Continuous loading capability (constant torque at a max. ambient temperature of 40 ºC)	Rated output current I2N
Overload capability (at a max. ambient temperature of 40 ºC)	At heavy duty use 1.5 x I2N for 1 minute every 10 minutes At start 1.8 x I2N for 2 s
Switching frequency Default Selectable	 4 kHz 4 to 16 kHz with 4 kHz steps
Acceleration time	0.1 to 1800 s
Deceleration time	0.1 to 1800 s
Braking	Built-in brake chopper as standard
Motor control method	Scalar U/f
Environmental limits	
Ambient temperature	-10 to 40 ºC (14 to 104 ºF), no frost allowed, 50 ºC (122 ºF) with 10% derating
Altitude Output current	Rated current available at 0 to 1000 m (0 to 3281 ft) reduced by 1% per 100 m (328 ft) over 1000 to 2000 m (3281 to 6562 ft)
Relative humidity	Lower than 95% (without condensation)
Degree of protection	IP20/Optional NEMA 1 enclosure
Enclosure colour	NCS 1502-Y, RAL 9002, PMS 420 C
Contamination levels Transportation Storage Operation	IEC 721-3-3 No conductive dust allowed Class 1C2 (chemical gases) Class 1S2 (solid particles) Class 2C2 (chemical gases) Class 2S2 (solid particles) Class 3C2 (chemical gases) Class 3S2 (solid particles)
Chokes	
AC input chokes	External option. For re duc ing THD in partial loads and to comply with EN 61000-3-2.
AC output chokes	External option. To achieve longer motor cables.

Programmable control connections	
One analog input	
Voltage signal	0 (2) to 10 V, Rin > 312 kΩ
Current signal	0 (4) to 20 mA, Rin = 100 Ω
Potentiometer reference value	10 V ± 1% max. 10 mA, R < 10 kΩ
Resolution	0.1%
Accuracy	± 2%
Auxiliary voltage	24 V DC ± 10%, max. 200 mA
Five digital inputs	12 to 24 V DC with internal or external supply, PNP and NPN, pulse train 0 to 16 kHz
Input impedance	2.4 kΩ
One relay output	
Type Maximum switching voltage Maximum switching current Maximum continuous current	NO + NC 250 V AC/30 V DC 0.5 A/30 V DC; 5 A/230 V AC 2 A rms
Product compliance	
Low voltage Directive 2006/95/EC with supplements Machinery Directive 2006/42/EC EMC Directive 2004/108/EC with supplements Quality assurance system ISO 9001 Environmental system ISO 14001 UL, cUL, CE, C-Tick and GOST R approvals RoHS compliant	

ABB Machinery Drives
ACS355, 0.37kW to 22kW

ACS355
0.37 kW to 22 kW
- 1-phase, 200 to 240 V : 0.37kW to 2.2 kW
- 3-phase, 200 to 240 V : 0.37kW to 11 kW
- 3-phase, 380 to 480 V : 0.37kW to 22 kW

Introduction
The ABB machinery drives are designed to be fast drives to install,parameter-set and commission. Thus saving hours of engineering work.They are highly compact and cost effective and equipped with cutting edge intelligence and an innovative safety capability. The drives are designed specifically to meet the production and performance needs of system integrators, original equipment manufacturers (OEMs) and panel builders, as well as the requirements of end users in a broadrange of applications.

Features
- Power range 0.37 to 22 kW (3-phase 380 to 480 V)
- IP20 enclosure (UL open type), optional NEMA 1 kit
- IP66, IP67 or IP69K (Nema 4X) as optional variant up to 7.5 kW
- Advanced functionality with sequence programming
- Scalar control, open and closed loop vector control
- Induction and permanent magnet motor control
- Built-in brake chopper and C3 EMC filter
- Integrated safe torque off (STO) as standard
- Product variants include solar pump drive, high speed application,and enhanced sequence programming
- Basic and assistant control panels
- Potentiometer, plug-in fieldbus adapters, encoder interface, relayoutput extension module, input and output chokes
- External EMC filter for 1st environment
- FlashDrop tool for unpowered drive configuration in 2 seconds

Highlights
- Exceptionally compact drives and uniform design
- Quick commissioning with application macros and panel assistants
- Safe torque off function (SIL3) as standard
- Sensorless vector control for induction motors and permanent magnet motors up to 599 Hz
- Built-in braking chopper
- IP66 product variant for harsh environments and solar pump drive variant available

Order Data
ACS355-03E-02A4 - 2

Type designation
This is the unique reference number (shown above and in column 4, right) that clearly identifies your drive by current rating and frame size. Once the drive's type designation has been selected, the frame size (column 5) can be used to determine the drive dimensions, shown on page 10.

Voltages
ACS355 is available in two voltage ranges:
2 = 200 to 240 V
4 = 380 to 480 V

Insert either "2" or "4", depending on your chosen construction, current rating, voltage, and option and variant codes into the type designation shown above.

Variant code
This code states the factory installed SW variants to the drive.

Construction
"01E" within the type designation (shown above) varies depending on the drive phase and EMC filtering. Choose below the one you need.

01 = 1-phase
03 = 3-phase
E = EMC filter connected, 50 Hz frequency
U = EMC filter disconnected, 60 Hz frequency (In case the fi lter is required it can easily be connected)

Ratings IP20/UL Open type/ NEMA 1 option			Type designation	Frame size IP20	Frame size IP66
P_N [kW]	P_N [hp]	I_{2N} [A]			
1-phase AC supply, 200 to 240 V +B063					
0.37	0.5	2.4	ACS355-01X-02A4-2	R0	-
0.75	1.0	4.7	ACS355-01X-04A7-2	R1	-
1.1	1.5	6.7	ACS355-01X-06A7-2	R1	-
1.5	2.0	7.5	ACS355-01X-07A5-2	R2	-
2.2	3.0	9.8	ACS355-01X-09A8-2	R2	-
3-phase AC supply, 200 to 240 V +B063					
0.37	0.5	2.4	ACS355-03X-02A4-2	R0	R1
0.55	0.75	3.5	ACS355-03X-03A5-2	R0	R1
0.75	1.0	4.7	ACS355-03X-04A7-2	R1	R1
1.1	1.5	6.7	ACS355-03X-06A7-2	R1	R1
1.5	2.0	7.5	ACS355-03X-07A5-2	R1	R1
2.2	3.0	9.8	ACS355-03X-09A8-2	R2	R3
3.0	3.0	13.3	ACS355-03X-13A3-2	R2	R3
4.0	5.0	17.6	ACS355-03X-17A6-2	R2	R3
5.5	7.5	24.4	ACS355-03X-24A4-2	R3	-
7.5	10.0	31.0	ACS355-03X-31A0-2	R4	-
11.0	15.0	46.2	ACS355-03X-46A2-2	R4	-
3-phase AC supply, 380 to 480 V +B063					
0.37	0.5	1.2	ACS355-03X-01A2-4	R0	R1
0.55	0.75	1.9	ACS355-03X-01A9-4	R0	R1
0.75	1.0	2.4	ACS355-03X-02A4-4	R1	R1
1.1	1.5	3.3	ACS355-03X-03A3-4	R1	R1
1.5	2.0	4.1	ACS355-03X-04A1-4	R1	R1
2.2	3.0	5.6	ACS355-03X-05A6-4	R1	R1
3.0	3.0	7.3	ACS355-03X-07A3-4	R1	R1
4.0	5.0	8.8	ACS355-03X-08A8-4	R1	R1
5.5	7.5	12.5	ACS355-03X-12A5-4	R3	R3
7.5	10.0	15.6	ACS355-03X-15A6-4	R3	R3
11.0	15.0	23.1	ACS355-03X-23A1-4	R3	-
15.0	20.0	31.0	ACS355-03X-31A0-4	R4	-
18.5	25.0	38.0	ACS355-03X-38A0-4	R4	-
22.0	30.0	44.0	ACS355-03X-44A0-4	R4	-

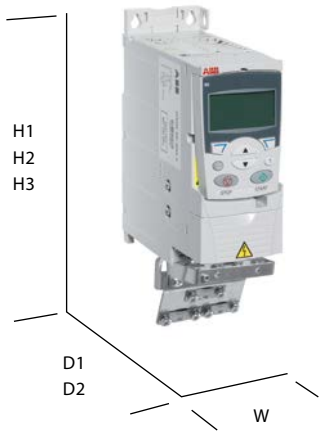
X within the type designation stands for E or U.
PN for kW = Typical motor power in 400 V at normal use
PN for hp = Typical motor power in 460 V at normal use
I2N for A = Continuous rms current. 50% overload is allowed for one minute in ten minutes.

Dimension

Cabinet-mounted drives (IP20/UL Open)

Frame size	IP20/UL Open						
	H1 mm	H2 mm	H3 mm	W mm	D1 mm	D2 mm	Weight kg
R0	169	202	239	70	161	187	1.2
R1	169	202	239	70	161	187	1.2
R2	169	202	239	105	165	191	1.5
R3	169	202	236	169	169	195	2.5
R4	181	202	244	260	169	195	4.4

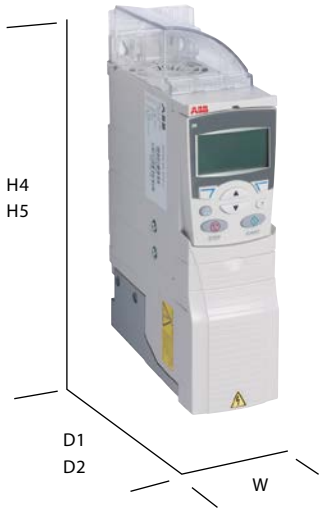
H1 = Height without fastenings and clamping plate
H2 = Height with fastenings but without clamping plate
H3 = Height with fastenings and clamping plate
W = Width
D1 = Standard depth
D2 = Depth with MREL, MPOW or MTAC option



Wall-mounted drives (NEMA 1/UL Type 1)

Frame size	IP20/UL Open					
	H4 mm	H5 mm	W mm	D1 mm	D2 mm	Weight kg
R0	257	280	70	169	187	1.6
R1	257	280	70	169	187	1.6
R2	257	282	105	169	191	1.9
R3	260	299	169	177	195	3.1
R4	270	320	260	177	195	5.0

H4 = Height with fastenings and NEMA 1 connection box
H5 = Height with fastenings, NEMA 1 connection box and hood
W = Width
D1 = Standard depth
D2 = Depth with MREL, MPOW or MTAC option



Wall-mounted drives (IP66/IP67/UL Type 4X)

Frame size	IP20/UL Open			
	H mm	W mm	D mm	Weight kg
R1	305	195	281	7.7
R3	436	246	277	13

H = Height
W = Width
D1 = Standard depth

Technical Data

Mains connection	
Voltage and power range	1-phase, 200 to 240 V ± 10% 0.37 to 2.2 kW (0.5 to 3 hp) 3-phase, 200 to 240 V ± 10% 0.37 to 11 kW (0.5 to 15 hp) 3-phase, 380 to 480 V ± 10% 0.37 to 22 kW (0.5 to 30 hp)
Frequency	48 to 63 Hz
Common DC connection	
Voltage and power range	230 V drives, 325 V ±15% 400/480 V drives, 540 ± 15% (common DC manual) Pmax = Pn of the drive
Motor connection	
Voltage	3-phase, from 0 to Usupply
Frequency	0 to 599 Hz
Continuous loading capability (constant torque at a max. ambient temperature of 40 ºC)	Rated output current I2N
Overload capability (at a max. ambient temperature of 40 ºC)	1.5 x I2N for 1 minute every 10 minutes At start 1.8 x I2N for 2 s
Switching frequency Selectable	Default 4 kHz 4 to 16 kHz with 4 kHz steps
Acceleration time	0.1 to 1800 s
Deceleration time	0.1 to 1800 s
Braking	Built-in brake chopper as standard
Speed control Static accuracy Dynamic accuracy	 20% of motor nominal slip <1% s with 100% torque step
Torque control Torque step rise time Non-linearity	 < 10 ms with nominal torque ± 5% with nominal torque
Environmental limits	
Ambient temperature	-10 to 40 °C (14 to 104 °F), no frost allowed 50 °C (122 °F) with 10% derating
Altitude	Rated current available at 0 to 1000 m. In altitudes from 1000 to 2000 m (3300 to 13,200 ft) above sea level, the derating is 1% for every 100 m (330 ft). If the installation site is higher than 2000 m (6600 ft) above sea level, please contact your local ABB distributor or offi ce for further information.
Relative humidity	Lower than 95% (without condensation)
Degree of protection	IP20/optional NEMA 1/UL type 1 enclosure IP66/IP67/UL Type 4X as an option up to 7.5 kW, IP69K available for IP66/IP67 variant with compatible cable glands
Enclosure colour	NCS 1502-Y, RAL 9002, PMS 420 C
Contamination levels Transportation Storage Operation	IEC 721-3-3 No conductive dust allowed Class 1C2 (chemical gases) Class 1S2 (solid particles) Class 2C2 (chemical gases) Class 2S2 (solid particles) Class 3C2 (chemical gases) Class 3S2 (solid particles)
Product compliance	
Low Voltage Directive 2006/95/EC Machinery Directive 2006/42/EC EMC Directive 2004/108/EC Quality assurance system ISO 9001 En vi ron men tal sys tem ISO 14001 UL, cUL, CE, C-Tick and GOST R approvals RoHS compliant	

Programmable control connections	
Two analog input Voltage signal Unipolar Bipolar Current signal Unipolar Bipolar Potentiometer reference value Resolution Accuracy	 0 (2) to 10 V, Rin > 312 kΩ -10 to 10 V, Rin > 312 kΩ 0 (4) to 20 mA, Rin = 100 Ω -20 to 20 mA, Rin = 100 Ω 10 V ± 1% max. 10 mA, R < 10 kΩ 0.1% ± 2%
One analog output	0 (4) to 20 mA, load < 500 Ω
Auxiliary voltage	24 V DC ± 10%, max. 200 mA
Five digital inputs Input impedance	12 to 24 V, PNP and NPN, programmable DI5 0 to 16 kHz pulse train 2.4 kΩ
One relay output Type Maximum switching voltage Maximum switching current Maximum continuous current	 NO + NC 250 V AC/30 V DC 0.5 A/30 V DC; 5 A/230 V AC 2 A rms
Serial and Ethernet communication	
Fieldbuses Refresh rate	Plug-in type < 10 ms (between drive and fieldbus module)
DeviceNet™	5-pin screw type connector, up to 500 kbit/s baud rate
PROFIBUS DP	9-pin D-connector, up to 12 Mbit/s baud rate
PowerLink	2 pcs RJ-45 connector, 100 Mbit/s baud rate
ControlNet™	2 pcs 8P8C modular jacks
CANopen®	9-pin D-connector, up to 1 Mbit/s
Modbus RTU	4-pin screw type connector, up to 115 kbit/s baud rate
EtherNet/IP™, Modbus TCP, PROFINET IO	1 RJ45 connector (FENA-01 and -11) or 2 RJ45 connectors (FENA-21). 10/100Mbit/s baud rate
LonWorks®	3-pin screw type connector, up to 78 kbit/s baud rate
EtherCAT®	2 pcs RJ-45 connectors, 100 Mbit/s baud rate
Chokes	
AC input chokes	External option. For reducing THD in partial loads and to comply with EN/IEC 61000-3-12.
AC output chokes	External option. To achieve 2x longer motor cables

ABB Machinery Drives
ACS380, 0.37kW to 22kW

ACS380
0.37 kW to 22 kW
- 1-phase, 200 to 240 V : 0.37kW to 2.2 kW
- 3-phase, 380 to 480 V : 0.37kW to 22 kW

Introduction
The all-compatible machinery drives provide high performance, adaptability and dependability for machine building needs. The drives help machine builders improve machine performance and provide more added value for their customers, while simultaneously cutting integration and maintenance costs.

The machinery drives are part of ABB's all-compatible drives portfolio, offering technically compatible drives with long-term solutions and support for users, processes, business and the environment.

Features
- Power and voltage range: 1-phase, 0.25 to 2.2 kW, 200 to 240 V
- Power and voltage range: 3-phase, 0.25 to 22 kW, 380 to 480 V
- Enclosure class: IP20
- Built-in EMC filter, category C2
- Functional safety: Safe torque off (STO) as standard
- Extended connectivity to I/O
- Integrated control panel
- Wide range of motor control (IM,PMSM,SynRM)
- Pre-configured communication adapter options for faster comissioning
- Extended control panel options including wireless control panel
- Integrated Brake Chopper
- Adaptive programing

Highlights
- Preconfigured drive variant for fast installation to machines
- Integrated icon based user interface for faster usability
- Adaptive programming for extended application programming
- Optimal application performance with vector control

Ratings, types and voltages

ACS380

$U_{N=}$200V(range 200to 240V).Thepower ratingsarevalid at nominal voltage 200V (0.25 to 3.0kW)								
Heavy duty use		**Maximum output current**	**Light overload use**		**Nominal ratings**		**Type designation**	**Frame size**
P_{Hd} **kW**	I_{Hd} **A**	I_{max} **A**	P_{Ld} **kW**	I_{Ld} **A**	P_N **kW**	I_N **A**		
0.25	1.8	3.2	0.37	2.3	0.37	2.4	ACS380-04xx-02A4-1	R0
0.37	2.4	4.3	0.55	3.5	0.55	3.7	ACS380-04xx-03A7-1	R0
0.55	3.7	6.7	0.75	4.6	0.75	4.8	ACS380-04xx-04A8-1	R1
0.75	4.8	8.6	1.1	6.6	1.1	6.9	ACS380-04xx-06A9-1	R1
1.1	6.9	12.6	1.5	7.4	1.5	7.8	ACS380-04xx-07A8-1	R1
1.5	7.8	14.0	2.2	9.3	2.2	9.8	ACS380-04xx-09A8-1	R2
2.2	9.8	17.6	3.0	11.0	3.0	12.2	ACS380-04xx-12A2-1	R2

$U_{N=}$400V(range 3800to 480V).Thepower ratingsarevalid at nominal voltage 400V (0.37to 22kW)								
Heavy duty use		**Maximum output current**	**Light overload use**		**Nominal ratings**		**Type designation**	**Frame size**
P_{Hd} **kW**	I_{Hd} **A**	I_{max} **A**	P_{Ld} **kW**	I_{Ld} **A**	P_N **kW**	I_N **A**		
0.37	1.2	2.2	0.55	1.7	0.55	1.8	ACS380-04xx-01A8-4	R0
0.55	1.8	3.2	0.75	2.5	0.75	2.6	ACS380-04xx-02A6-4	R1
0.75	2.6	4.7	1.1	3.1	1.1	3.3	ACS380-04xx-03A3-4	R1
1.1	3.3	5.9	1.5	3.8	1.5	4	ACS380-04xx-04A0-4	R1
1.5	4	7.2	2.2	5.3	2.2	5.6	ACS380-04xx-05A6-4	R1
2.2	5.6	10.1	3	6.8	3	7.2	ACS380-04xx-07A2-4	R1
3	7.2	13	4	8.9	4	9.4	ACS380-04xx-09A4-4	R1
4	9.4	16.9	5.5	12	5.5	12.6	ACS380-04xx-12A6-4	R2
5.5	12.6	22.7	7.5	16.2	7.5	17	ACS380-04xx-17A0-4	R3
7.5	17	30.6	11	23.8	11	25	ACS380-04xx-25A0-4	R3
11	25	44	15	31	15	32	ACS380-04xx-032A-4	R4
15	32	57	18.5	36	18.5	38	ACS380-04xx-038A-4	R4
18.5	38	68	22	43	22	45	ACS380-04xx-045A-4	R4
22	45	81	22	48	22	50	ACS380-04xx-050A-4	R4

Nominal ratings	
P_N I_N	Rated current available continuously without overloadability at 50 °C. Typical motor power in no-overload use.
Maximum output current	
I_{max}	Maximum output current. Available for 2 seconds at start, then as long as allowed by drive temperature.
Heavy-duty use	
I_{Hd} P_{Hd}	Continuous current allowing 150% I_{Hd} for 1 minute every 10 minutes at 50 °C. Typical motor power in heavy-duty use.
Light-overload 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-overload use.
The ratings apply at 50 °C ambient temperatures.	
For derating at higher altitudes, temperatures or switching frequencies, see the user's HW manual, document code: 3AXD50000029274	

Universal communication with ABB fieldbus adapters
The machinery drives support the following fieldbus protocols:

Option code	Fieldbus protocol	Adapter
+K454	PROFIBUS DP, DPV0/DPV1	FPBA-01
+K457	CANopen®	FCAN-01
+K469	EtherCAT®	FECA-01
+K475	Two port EtherNet/IP™, Modbus TCP, PROFINET IO	FENA-21
+K470	Ethernet POWERLINK	FEPL-02

Segment		A	B	C		D		E		F
ACS380	-	04	2	C	-	02A6	-	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	0 = C3 (400 V variant) or C4 (200 V Variant), 2 = High filtering level for First environment (EN 61800-3, Class C2)
C	Connectivity	S = Standard variant (I/O and Modbus), C = Configured variant
D	Current rating	For example, 02A6 refers to a nominal output current of 2.6 A
E	Voltage rating 1	1 = 1-phase 230 V, 4 = 3-phase 380...480 V

Dimensions

ACS380 IP20				
	Height	Width	Depth	Weight
Frames	mm	mm	mm	kg
R0	223	70	174	1.4
R1	223	70	174	1.6
R2	223	95	174	1.9
R3	223	169	174	3.0
R4	223	260	174	5.8

Technical Data

Mains connection	
Voltage and power range	1-phase, 200 to 240 V, +10%/-15% 0.25 to 2.2 kW 3-phase, 380 to 480 V, +10%/-15% 0.25 to 22 kW
Frequency	50/60 Hz ± 5%
Common DC connection	
DC voltage level	-1 types 270 to 325 V ±10% -4 types 485 to 620 V ±10%
Charging circuit	Internal charging circuit
Motor connection	
Voltage	0 to UN, 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% with 100% torque step
Speed control performance, closed loop	
Static accuracy	0.1% of motor rated speed
Dynamic accuracy	<1% 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) acc. to EN/IEC61800-5-2: IEC61508 ed2: SIL 3, IEC 61511: SIL 3, IEC 62061: SIL CL 3, EN ISO 13849-1: PL e
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 2006/95/EC, EN 61800-5-1: 2007 Machinery Directive 2006/42/EC, EN 61800-5-2: 2007 EMC Directive 2004/108/EC, EN 61800-3: 2004 + A1: 2012 UL, cUL certification TUV Certification for functional safety Quality assurance system ISO 9001 Environmental system ISO 14001 Waste electrical and electronic equipment directive (WEEE) 2002/96/EC RoHS directive 2011/65/EU EAC

ACS380 for Cranes

ACS380 For Crane
0.37 kW to 22 kW
- 1-phase, 200 to 240 V : 0.37kW to 2.2 kW
- 3-phase, 380 to 480 V : 0.37kW to 22 kW

Features
Works with following crane interfaces
- Joystick
- Pendant controller
- Motor potentiometer
- Fieldbus control

Built-in crane application includes
- Slowdown logic
- End limit logic
- Fast stop function
- Mechanical brake control

Robust design
- Advanced cooling system
- Earth fault protection based on three-phasecur-rent measurement

Highlights
All built-in for efficient overhead and tower crane movements
The drive includes built-in control for hoist, trolley and long travel/slew movements and the essential functions for typical crane applications. It works precisely both in open and closed loop configurations.

Reliable operation
With their coated circuit boards, 50 °C ambientrating and advanced cooling system, ACS380 drivesare made to last even in demanding atmospheres.

A lot packed into a compact unit
The drive includes an integrated brake chopper for dynamic braking and safe torque off (SIL 3) as standard. The drive can be installed in a crane cabinet either to a DIN rail or with a screw installation.

Drive Selection Table

Specification	ACS150	ACS355	ACS380
Voltage and power ranges	– 1-phase, 200 to 240 V : 0.37kW to 2.2 kW – 3-phase, 200 to 240 V : 0.37kW to 2.2 kW – 3-phase, 380 to 480 V : 0.37kW to 4 kW	– 1-phase, 200 to 240 V : 0.37kW to 2.2 kW – 3-phase, 200 to 240 V : 0.37kW to 11 kW – 3-phase, 380 to 480 V : 0.37kW to 22 kW	– 1-phase, 200 to 240 V : 0.37kW to 2.2 kW – 3-phase, 380 to 480 V : 0.37kW to 22 kW
Protection classes			
UL type 0/IP20	•	•	•
UL type 1/IP21	–	°	–
UL Type 12/IP54/IP55	–	–	–
UL Type 4X/IP66/IP67	–	•[1)]	–
UL type 3R	–	–	–
Mounting arrangements			
Optimal for cabinet mounting	•	•	•
Optimal for wall mounting	°	°	–
Programming			
Parameter programming	•	•	•
Sequence programming	–	•	•[10)]
Human- Machine interface			
Basic control panel	–	°	°
Assistant control panel	–	°/•	°
Bluetooth-enabled panel	–	–	°
Integrated control panel	•	–	•
Motor Control	Scalar (V/Hz) selectable for linear (CT) or square function (VT)	Open loop vector, Scalar (V/Hz) and Closed loop control	Open loop vector, Scalar (V/Hz) and Closed loop control - AC induction and PMAC motors
Ambient Temperature	14 to 104˚F (-10 to +40˚C), 122˚F (+50˚C) with derating No frost allowed.	14 to 104˚F (-10 to 40˚C), 122˚F (50˚C) with derating No frost allowed.	14 to 122˚F (-10 to 50˚C), Up to 140˚F (60˚C) with derating No frost allowed.
Inputs and outputs			
Digital inputs/outputs	5/0	5/1	4/2[5)]
Relay outputs	1	1 (+3 Optional)	1 (+4 optional)
Analog inputs/outputs	2/0	2/1	2/1
Encoder feedback	–	°	•
Supported fieldbus protocols			
MODBUS RTU	–	°	•
Profibus DP	–	°	°
DeviceNet TM	–	°	–
Controlnet	–	°	–
CANopen	–	°	°
Ethernet IP	–	°	°
MODBUS TCP	–	°	°
EtherCAT	–	°	°
Ethernet POWERLINK	–	°	°
Profinet IO	–	°	°

Drive Selection Table

Specification	ACS150	ACS355	ACS380
EMC compliance (EN 61800-3)			
C3, industrial use	•	•	°
C2, commercial use			
(installation by EMC experts)	°	°	°
C1,Commercial Use	° (Conductive emission)	° (Conductive emission)	°
Input reactors	°	°	°
Output reactors	°	°	°
Brake chopper	•	•	•
Suggested maximum motor cable length	30-60m	30-60m	30-60m
Switching frequency	upto 16kHz	upto 16kHz	upto 12kHz
Output frequency	0-500Hz	0-599Hz	0-599Hz
Overload capacity	150% for 60s 180% for 2s	150% for 60s 180% for 2s	150% for 60s 180% for 2s
Number of preset speeds	3	7	7
PC tools			
Drive commissioning tool	–	°	•
Drive offline			
programming tool	°	°	•
Drive dimensioning tool	–	–	•
Approvals			
UL, cUL, CE, RMS, C-Tick, EAC	•	•	•
RoHS compliance	•	•	•
• Standard –Not Available	°Optional 1) IP66 Product varaint	5) DO are DIO and can be used as DI	10) Greater range when programmed using Drive Config software

Notes

Notes

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

www.abb.com/ACS380
www.abb.com/drives
www.abb.com/drivespartners
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