

CATALOG

# ABB machinery drive

ACS380 - 0.37 to 10 hp / 0.25 to 7.5 kW



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**The ACS380 machinery drive is ideal for both machine builders looking to integrate a VFD without incurring significant cost and end users wanting to increase productivity without sacrificing performance. With pre-configured drive variants, adaptive programming and an icon-based user interface, this drive is simple to integrate into your system.**

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# Table of contents

<b>04</b>	<b>The all-compatible machinery drive</b>
<b>05-06</b>	<b>Features and benefits</b>
<b>08</b>	<b>How to select a drive</b>
	<b>Specifications</b>
<b>09</b>	<b>Ratings, types and voltages</b>
<b>10</b>	<b>Technical data</b>
<b>11</b>	<b>Cooling</b>
<b>12</b>	<b>Fuses and input current</b>
	<b>Features</b>
<b>13</b>	<b>Standard software</b>
<b>14</b>	<b>PC tool features</b>
<b>14</b>	<b>Remote monitoring</b>
<b>15</b>	<b>Commissioning</b>
<b>15</b>	<b>Configuration options</b>
	<b>Options</b>
<b>16-17</b>	<b>Connectivity</b>
<b>18</b>	<b>I/O connections</b>
<b>19</b>	<b>Brake chopper / resistor</b>
<b>19</b>	<b>EMC filters</b>
<b>20</b>	<b>Drivetune</b>
<b>21-22</b>	<b>Drives services</b>

# The all-compatible machinery drive

The ACS380 machinery drive is part of ABB's all-compatible drives portfolio designed to offer not only a technically compatible drive, but an all-compatible solution for people, process, business and environmental goals.



### Human all-compatible

Save time and energy with effortless simplicity from drive selection to installation to commissioning and beyond.



### Process all-compatible

The ACS380 drive provides advanced capabilities for small machines in demanding applications. The all-compatible drives portfolio enables smooth transition to more advanced drives, such as the ACS880 industrial drives



### Business all-compatible

By choosing an all-compatible drive from ABB, you also get a wide range of products and services to support your business and people with decades of experience in various industries, available across the globe.



### Environment all-compatible

Use only the exact amount of energy needed to run a motor. Achieve further energy savings with the drive's built-in energy optimizer functions and ABB's life cycle services for process optimization.

### Simple to select and install

- All-inside concept simplifies drive selection and installation, saving time and money.
- Stock availability ensured globally with readily stocked product by ABB and distributors.

### Simple to commission and use

- No need to know parameters or use any programming language
- Graphical icon-based integrated control panel
- Quick setup ensured by
  - the primary settings menu with embedded assistants
  - ready-made control macros
- Commission and monitor drive wirelessly
- with optional Bluetooth assistant control panel

### Reliable and consistent high quality

- Improved durability and reliability in harsh environmental conditions
  - coated boards as standard in drives and all options
- All drives tested in the production
  - in maximum temperature
  - with nominal loads
  - with full testing of the performance and all protective functions with motors

### Reducing life cycle costs

- The purchase cost of a drive is only a fraction of the cost a drive can save during its life cycle
  - Energy savings achieved with drive control
  - Reduced maintenance and operational costs

## Precise performance with ACS380 machinery drive

The compact ACS380 drive is ideal for machine building that requires motor technologies with powers from 0.25 to 7.5 kW and voltages from 200 to 480 V. With enclosure class IP20 as standard, these modular drives easily integrate into machines and automation systems within industries such as food and beverage, material handling, and plastics. Its universal dimensions simplify wiring in cabinet installations for typical constant torque applications like mixers, extruders, conveyors, and palletizers.

### Easy to specify, install and use

The compact ACS380 is available with EMC and connectivity variants and pre-configured fieldbus protocols (Ethernet/IP™, Modbus TCP, EtherCAT®, PROFIBUS, PROFINET, CANopen®). The standard variant of the drive comes with extensive I/O and built-in Modbus RTU protocol. The drive offers a built-in icon based interface that makes commissioning and adjusting the drive fast and easy. Optional control panels include the basic control panel and the assistant control panel with and without Bluetooth.

Available in frame sizes (R0 to R3), the ACS380 drive optimally controls a broad range of motors. Adaptive programming provides additional flexibility for different machine requirements, meeting the demands of exact machine design. The drive is designed for optimal cooling with thermal management up to 50 °C ambient temperatures, without derating.

Additional features include: integrated safety (STO) is built-in as standard for safety sensitive applications; EMC C2 filter and built-in brake chopper as standard to save space and installation time; and ABB's common drives architecture for a smooth transition to other ABB drives, including the ACS880.



The built-in icon based control panel interface for easy commissioning and configuration



## Reliable ROI for machine builders

The ACS380 machinery drives are members of ABB's all-compatible drives family, designed to simplify access and operation, optimize energy efficiency, and maximize performance output. Its versatility is ideal for machine builders looking to integrate VFD without significantly increasing system costs.



### Adaptability at your fingertips

The control panel's icon-based menu helps you set up the drive quickly and effectively.



### Drive application programming

The ACS380 includes adaptive programming with sequence programming for operating simple state machines without a PLC.



### Startup and maintenance tool

Drive composer PC tool for startup, configuration, monitoring and process tuning. Automation builder for automation engineering and Drive Manager for single point of commissioning.



### Remote monitoring

With a built-in web server and standalone data logger, NETA-21 enables worldwide and secure remote access to drives.

### Simple to select, install and use

Built-in features such as an EMC filter, a Modbus RTU fieldbus interface and safe torque off functionality simplify drive selection, installation and use. DriveSize helps to select the optimal drive and motor for the application.



### Communication with all major automation networks

Preconfigured fieldbus adapters enable connectivity with all major industrial automation networks.

### Boosting energy efficiency

Energy optimizer and energy efficiency information help you monitor and save the energy used in your process.



# How to select a drive

It is very easy to select the right drive. This is how you build up your own ordering code using the type designation key.

## Start with identifying your supply voltage

This tells you what rating table to use. See page 9.

## Choose your motor's power and current rating from the ratings table on page 9.

**ACS380 ratings, types and voltages**

Table with columns: Motor power (P<sub>n</sub>), Motor current (I<sub>n</sub>), Motor speed (n<sub>n</sub>), Motor torque (T<sub>n</sub>), Motor voltage (U<sub>n</sub>), Motor frequency (f<sub>n</sub>), Motor type, and Motor code.

**Heavy-duty use**

P <sub>n</sub> HP	P <sub>n</sub> kW	I <sub>n</sub> A
0.25	0.25	1.8
0.5	0.37	2.4
0.75	0.55	3.7
1	0.75	4.8
1.5	1.1	6.9
2	1.5	7.8
3	2.2	9.8

## Select your drive's ordering code

Select the ordering code for the ACS380 machinery drive by choosing either the standard or the configured variant. Then choose the desired EMC level on page 9.

If the configured variant is selected, choose your fieldbus protocol (page 9) by selecting the correct option code and add the option codes to drive's ordering code.

**ACS380 ratings, types and voltages**

Table with columns: Motor power (P<sub>n</sub>), Motor current (I<sub>n</sub>), Motor speed (n<sub>n</sub>), Motor torque (T<sub>n</sub>), Motor voltage (U<sub>n</sub>), Motor frequency (f<sub>n</sub>), Motor type, and Motor code.

**Type designation**

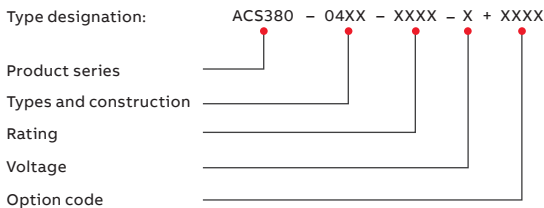
ACS380-04xx-02A4-1
ACS380-04xx-03A7-1
ACS380-04xx-04A8-1
ACS380-04xx-06A9-1
ACS380-04xx-07A8-1
ACS380-04xx-08A8-1
ACS380-04xx-12A2-1

**Connectivity type**

ACS380-04xS	I/O and Modbus-RTU variant
ACS380-04xC	Configured variant
ACS380-04xC-xxxxx+K454	PROFIBUS DP protocol configured
ACS380-04xC-xxxxx+K457	CANopen® protocol configured
ACS380-04xC-xxxxx+K469	EtherCAT® protocol configured
ACS380-04xC-xxxxx+K470	Ethernet POWERLINK
ACS380-04xC-xxxxx+K475	Ethernet/IP™, Profinet I/O, Modbus TCP protocol configured
ACS380-04xC-xxxxx+K476	Ethernet/IP™, Profinet I/O, Modbus TCP protocol configured
ACS380-04xC-xxxxx+K495	CANopen® using embedded protocol
<b>EMC filtering level</b>	
ACS380-040x	EMC category C3 (400 V) or C4 (230 V)
ACS380-042x	EMC category C2

## Choose your options

Add the option codes to the drive's ordering code (page 17). Remember to use a "+" mark before each option code.





# ACS380 ratings, types and voltages

U <sub>N</sub> = 200 V (range 200 to 240 V). The power ratings are valid at nominal voltage 200 V (0.25 to 3.0 kW)											
Heavy-duty use			Maximum output current	Light-overload use			Nominal ratings			Type designation	Frame size
P <sub>Hd</sub> Hp	P <sub>Hd</sub> kW	I <sub>Hd</sub> A	I <sub>max</sub> A	P <sub>Ld</sub> Hp	P <sub>Ld</sub> kW	I <sub>Ld</sub> A	P <sub>N</sub> Hp	P <sub>N</sub> kW	I <sub>N</sub> A		
0.25	0.25	1.8	3.2	0.5	0.37	2.3	0.5	0.37	2.4	ACS380-04xx-02A4-1	R0
0.5	0.37	2.4	4.3	0.75	0.55	3.5	0.75	0.55	3.7	ACS380-04xx-03A7-1	R0
0.75	0.55	3.7	6.7	1	0.75	4.6	1	0.75	4.8	ACS380-04xx-04A8-1	R1
1	0.75	4.8	8.6	1.5	1.1	6.6	1.5	1.1	6.9	ACS380-04xx-06A9-1	R1
1.5	1.1	6.9	12.4	2	1.5	7.4	2	1.5	7.8	ACS380-04xx-07A8-1	R1
2	1.5	7.8	14.0	3	2.2	9.3	3	2.2	9.8	ACS380-04xx-09A8-1	R2
3	2.2	9.8	17.6	3	3.0	11.6	3	3.0	12.2	ACS380-04xx-12A2-1	R2

U <sub>N</sub> = 400 V (range 380 to 480 V). The power ratings are valid at nominal voltage 480 V 1/2 to 15 hp (0.37 to 11 kW)											
Heavy-duty use			Maximum output current	Light-overload use			Nominal ratings			Type designation	Frame size
P <sub>Hd</sub> Hp	P <sub>Hd</sub> kW	I <sub>Hd</sub> A	I <sub>max</sub> A	P <sub>Ld</sub> Hp	P <sub>Ld</sub> kW	I <sub>Ld</sub> A	P <sub>N</sub> Hp	P <sub>N</sub> kW	I <sub>N</sub> A		
0.5	0.37	1.1	2.2	0.75	0.55	1.6	0.75	0.55	1.8	ACS380-04xx-01A8-4	R0
0.75	0.55	1.6	3.2	1	0.75	2.1	1	0.75	2.6	ACS380-04xx-02A6-4	R1
1	0.75	2.1	4.7	1.5	1.1	3	1.5	1.1	3.3	ACS380-04xx-03A3-4	R1
1.5	1.1	3	5.9	2	1.5	3.4	2	1.5	4.0	ACS380-04xx-04A0-4	R1
2	1.5	3	7.2	3	2.2	4.8	3	2.2	5.6	ACS380-04xx-05A6-4	R1
3	2.2	4	10.1	3	3	6	3	3	7.2	ACS380-04xx-07A2-4	R1
3	3	4.8	13	5	4	7.6	5	4	9.4	ACS380-04xx-09A4-4	R1
5	4	7.6	16.9	7.5	5.5	11	7.5	5.5	12.6	ACS380-04xx-12A6-4	R2
7.5	5.5	11	22.7	10	7.5	14	10	7.5	17	ACS380-04xx-17A0-4	R3
10	7.5	14	30.6	15	11	21	15	11	25	ACS380-04xx-25A0-4	R3

## Ordering variants

Connectivity type	
ACS380-04xS	I/O and Modbus-RTU variant
ACS380-04xC	Configured variant
ACS380-04xC-xxxx-x+K454	PROFIBUS DP protocol configured
ACS380-04xC-xxxx-x+K457	CANopen® protocol configured
ACS380-04xC-xxxx-x+K469	EtherCAT® protocol configured
ACS380-04xC-xxxx-x+K470	Ethernet POWERLINK
ACS380-04xC-xxxx-x+K475	Ethernet/IP™, Profinet I/O, Modbus TCP protocol configured Ethernet/IP™, Profinet I/O, Modbus TCP protocol configured
ACS380-04xC-xxxx-x+K495	CANopen® using embedded protocol
EMC filtering level	
ACS380-040x	EMC category C3 (400 V) or C4 (230 V)
ACS380-042x	EMC category C2

## Dimensions

Frames IP20	Height		Width		Depth		Weight	
	in	mm	in	mm	in	mm	lb	kg
R0	8.66	220	2.76	70	6.85	174	3.1	1.4
R1	8.66	220	2.76	70	6.85	174	3.5	1.6
R2	8.66	220	3.74	95	6.85	174	4.2	1.9
R3	8.66	220	6.65	169	6.85	174	tba	tba

## Notes

- I<sub>N</sub> Rated current available continuously without overloadability at 50°C.
- P<sub>N</sub> Typical motor power in no-overload use.
- I<sub>max</sub> Maximum output current. Available for 2 seconds at start, then as long as allowed by drive temperature.
- I<sub>Hd</sub> Continuous current allowing 150% I<sub>Ld</sub> for 1 minute every 10 minutes at 50°C.
- P<sub>Hd</sub> Typical motor power in heavy-duty use.
- I<sub>Ld</sub> Continuous current allowing 110% I<sub>Ld</sub> for 1 minute every 10 minutes at 50°C.
- P<sub>Ld</sub> 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

# Technical data

Mains connection	
Voltage and power range	1-phase, 200 to 240 V, +10%/-15% 0.25 to 3 Hp (0.25 to 2.2 kW) 3-phase, 380 to 480 V, +10%/-15% 0.25 to 10 Hp (0.25 to 7.5 kW)
Frequency	50/60 Hz +- 5%
Common DC connection	
DC voltage level	-2 types 270 to 325 V ±10% -4 types 485 to 620 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 16 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% <sub>s</sub> with 100% torque step
Speed control performance, closed loop	
Static accuracy	0.1% of motor rated speed
Dynamic accuracy	<1% <sub>s</sub> 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

## Free Space Requirements

Frames	Above		Below		On the sides <sup>1</sup>	
	in	mm	in	mm	in	mm
R0	3	75	3	75	0	0
R1	3	75	3	75	0	0
R2	3	75	3	75	0	0
R3	3	75	3	75	0	0

1) Drives can be mounted side-by-side with no clearance. If side-mounted options will be used, leave 0.8in (20mm) of space to the right of the 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), up to +60 °C (140 °F) with derating
Cooling method	Air-cooled, dry clean air
Altitude	0 to 3300 ft. (1000m), derate output amps 1% per 330 ft. (100 m) up to 6600 ft. (2000m) 480V drives can operate to 13000 ft. (4000m) with some restrictions, contact ABB
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 pending ITÜV certification for functional safety pending 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	

# Cooling

## Losses and cooling data

Frame size R0 has natural convection cooling. Frame sizes R1...R3 have a cooling fan located on the top of the drive. The air flow direction is from bottom to top.

The table below specifies the heat dissipation in the main circuit at nominal load and in the control circuit with minimum load (I/O and panel not in use) and maximum load (all digital inputs in the on state and the panel, fieldbus and fan in use). The total heat dissipation is the sum of the heat dissipation in the main and control circuits.

Type ACS380-04xx	Heat dissipation								Air flow		Frame size
	Main circuit at rated $I_{1N}$ and $I_{2N}$		Control circuit minimum		Control circuit maximum		Main and control boards maximum		m <sup>3</sup> /h	ft <sup>3</sup> /min	
	W	BTU/hr <sup>1)</sup>	W	BTU/hr <sup>1)</sup>	W	BTU/hr <sup>1)</sup>	W	BTU/hr <sup>1)</sup>			
<b>Single phase drive - 200-240V applications</b>											
02A4-1	32	109	17	58	20	68	52	177	--- <sup>2)</sup>	--- <sup>2)</sup>	R0
03A7-1	46	157	17	58	20	68	66	225	TBC		R0
04A8-1	59	201	24	82	25	85	84	287	TBC		R1
06A9-1	85	290	24	82	25	85	109	372	TBC		R1
07A8-1	95	324	24	82	25	85	120	410	TBC		R1
09A8-1	115	392	24	82	25	85	140	478	TBC		R2
12A2-1	145	495	24	82	25	85	170	580	TBC		R2
<b>Three phase drive - 380-480V applications</b>											
01A8-4	26	89	17	58	20	68	46	157	--- <sup>2)</sup>	--- <sup>2)</sup>	R0
02A6-4	35	119	24	82	25	85	60	205	TBC		R1
03A3-4	42	143	24	82	25	85	67	229	TBC		R1
04A0-4	50	171	24	82	25	85	75	256	TBC		R1
05A6-4	68	232	24	82	25	85	93	317	TBC		R1
07A2-4	88	300	24	82	25	85	112	382	TBC		R1
09A4-4	115	392	24	82	25	85	139	474	TBC		R1
12A6-4	158	539	24	82	25	85	183	625	TBC		R2
17A0-4	208	710	24	82	25	85	232	792	TBC		R3

1) BTU/hr - British Thermal Units per hour. BTU/hr is approximately 0.293 Watts.

2) Frame size R0 has no fan and relies on convection cooling

# Fuses and input current

## Circuit protection

Standard fuses can be used with ACS380 drives for short circuit protection. This table gives consolidated input fuse selections. Complete tables of data for gG, UL, and gR fast-acting semiconductor fuses can be found in the ACS380 Hardware Manual 3AXD50000029274.

Type ACS380- 04xx	Frame size	IEC Fuses		UL Fuses	
		Fuse type Gg (500V) Nominal current	UL class T	Voltage rating	Bussmann/ Edison type
		A	A	V	
<b>Single phase drive - 200-240V applications</b>					
02A4-1	R0	10	10	300	JJN/TJN10
03A7-1	R0	10	10	300	JJN/TJN10
04A8-1	R1	16	20	300	JJN/TJN20
06A9-1	R1	20	20	300	JJN/TJN20
07A8-1	R1	25	25	300	JJN/TJN25
09A8-1	R2	32	25	300	JJN/TJN25
12A2-1	R2	35	35	300	JJN/TJN35
<b>Three phase drive - 380-480V applications</b>					
01A8-4	R0	4	6	600	JJS/TJS6
02A6-4	R1	6	6	600	JJS/TJS6
03A3-4	R1	6	6	600	JJS/TJS6
04A0-4	R1	10	10	600	JJS/TJS10
05A6-4	R1	10	10	600	JJS/TJS10
07A2-4	R1	16	20	600	JJS/TJS20
09A4-4	R1	16	20	600	JJS/TJS20
12A6-4	R2	25	25	600	JJS/TJS25
17A0-4	R3	32	35	600	JJS/TJS35
25A0-4	R3	40	40	600	JJS/TJS40

## Drive input current with and without input reactor

Type ACS380- 04xx	Input Rating		Input with choke	
	I <sub>1N</sub> A	I <sub>1N(480V)</sub> A	I <sub>1N</sub> A	I <sub>1N(480V)</sub> A
<b>Single phase drive - 200-240V applications</b>				
02A4-1	5.0	---	4.2	---
03A7-1	7.8	---	6.4	---
04A8-1	10.1	---	8.3	---
06A9-1	14.5	---	11.9	---
07A8-1	16.4	---	13.5	---
09A8-1	20.6	---	17.0	---
12A2-1	25.6	---	21.1	---
<b>Three phase drive - 380-480V applications</b>				
01A8-4	2.9	2.6	1.8	1.6
02A6-4	4.2	3.4	2.6	2.1
03A3-4	5.3	4.8	3.3	3
04A0-4	6.4	5.4	4.0	3.4
05A6-4	9.0	7.7	5.6	4.8
07A2-4	11.5	9.6	7.2	6
09A4-4	15.0	12.2	9.4	7.6
12A6-4	20.2	17.6	12.6	11
17A0-4	27.2	22.4	17.0	14
25A0-4	40.0	33.6	25.0	21

## Standard software with versatile features

### Commissioning easier than ever before

The icon based control panel of the ACS380 is intuitive and easy to use for basic operation, settings and fault tracking. The all-compatible assistant control panels have a clear and intuitive user interface as well as different assistants to make the drive easy to set up and use. This saves on commissioning and learning time.

### Optimized motor control

These compact machinery drives offer sophisticated process control in scalar, and vector control modes. The drive supports a wide range of motors including induction and permanent magnet motors. Many embedded protection and other features improve performance of the motor and process.

### Flying start

Flying start is available for scalar, and vector control modes. Catching a running motor, enabled by the flying start feature, is often required in applications with long freewheeling times.

### Reduced motor noise

The drive reduces motor noise by spreading the switching frequencies over a user-specified range. The user can define an allowed range of used switching frequency. As a result, the drive maximizes the actual used switching frequency based on thermal measurement. The higher used switching frequency reduces motor noise at low load without limiting full current at maximum load.

### Optimized energy use

The machinery drives come with features that help you save and manage energy. The energy optimizer feature operates scalar, and vector control modes, ensuring maximum torque per ampere and reducing energy drawn from the supply. You can monitor the hourly, daily and cumulative energy consumption via kWh counters. When the drive replaces other control methods (eg, direct-online control), you can follow the saved energy, CO2 emissions or money, and see how fast the drive brings you a return on investment.

### Easy diagnostics for trouble-free operation

The external remote control panel's diagnostics menu enables you to effectively analyze and resolve issues regarding why the drive is performing as it is - running, stopped or running at the present speed. Active faults, warnings and event logs are shown in the menu. The menu shows if there are any active limitations to the drive operation and gives instructions on how to resolve them. The Drive composer PC tool offers more detailed diagnosis and signal monitoring. The entry level PC tool is available for free via the ABB website ([www.abb.com](http://www.abb.com)).

### Adapt the drive and machine to run optimally

Adaptive programming, with sequence programming, offers an easy alternative for simple programming needs. It is embedded inside the software of the drive and is especially handy when there is a need to distribute some of the machine's control logic to the drive. Adaptive programming brings savings when the drive is adjusted to control the application optimally. The Drive composer pro PC tool is used for setting up adaptive programming.



## PC tool for drive monitoring and process tuning capabilities

The Drive composer PC tool offers fast and harmonized setup, commissioning and monitoring for the whole all-compatible drives portfolio. The free version of the tool provides startup and maintenance capabilities and gathers all drive information such as parameter loggers, faults, backups and event lists into a support diagnostics file with a single mouse click. This provides faster fault tracking, shortens downtime and reduces operational and maintenance costs.

The Drive composer tool is connected to the drive using the mini USB connection on the assistant control panel. Using the BCBL-01 cable the PC can be connected directly to the RJ-45 panel port on the top of the ACS380.

### Safe configuration for unpowered drives

Cold configuration adapter CCA-01 provides a serial communication interface for unpowered ACS380 drives, among other selected drives. With the adapter, safety isolation of both serial communication and control board power supply is possible. The power supply is taken from a PC USB port.

Type designation	Description
CCA-01	Cold configurator adapter, packed kit

### Remote monitoring access worldwide

The remote monitoring tool, NETA-21, gives easy access to the drive via the Internet or local Ethernet network. NETA-21 comes with a built-in web server. Compatible with standard web browsers, it ensures easy access to a web based user interface. Through the web interface, the user can configure drive parameters, monitor drive log data, load levels, run time, energy consumption, I/O data and bearing temperatures of the motor connected to the drive.

Type designation	Description
NETA-21	2 x panel bus interface, 2 x 32 = max. 64 drives 2 x Ethernet interface SD memory card USB port for WLAN/3G

### Drive composer pro offers extended functionality

Drive composer pro provides additional features such as custom parameter windows, graphical control diagrams of the drive's configuration and improved monitoring and diagnostics. The control diagrams save users from browsing long lists of parameters and help set the drive's logic quickly and easily. The tool has fast monitoring capabilities of multiple signals from several drives in the panel bus. Full backup and restore functions are also included.



# Drive commissioning and adaptable use with your control panel

Almost anyone can set up and commission the ACS380 machinery drive using the integrated control panel or one of the available assistant control panels - AP-I, AP-S, AP-W, or BP-S. The ACS380 includes the integrated icon based control panel as standard. You do not need to know any drive parameters as the control panel helps you to set up the essential settings quickly and get the drive into action.

## Effortless drive setup

- The primary settings menu with embedded assistants provides a smart and quick way to set up the drive.
- Each setting is clearly named by its function, such as motor, ramp or limit settings.

## Effortless process monitoring

- One glance at the control panel's editable home view will show you the status of the drive and process. It offers many data visualizations including bar charts, histograms and trend graphs.
- See how the electrical terminals are configured, what the actual status is, and get a quick access to the related settings from the I/O menu.
- Add information eg, to I/O signals, customize fault and warning messages or give the drive a unique name with the panel's text editor.
- Connect the PC tool to the drive through the USB connector on the control panel.

Type designation	Description
ACS-AP-I	Assistant control panel
ACS-BP-S	Assistant control panel
ACS-AP-W	Assistant control panel with Bluetooth interface
ACS-BP-S	Basic control panel
DPMP-01	Control panel mounting platform (flush mounted, requires also panel bus adapter on the drive)
DPMP-02	Control panel mounting platform (surface mounted, requires also panel bus adapter on the drive)

\* Also compatible with ACS580 & ACS880 drives

## Effortless drive maintenance

- Faults or warnings are quickly resolved as the help key provides context sensitive guidance and troubleshooting instructions.
- Powerful manual and automatic backup and restore functions (with name, date and content).

## Effortless drive diagnostics

- Active inhibits view under the Diagnostics menu informs the user of the root-cause if there is an active inhibit preventing the drive from starting. There is also a patent pending for this feature.
- Limit view enables the user to detect the reason if the drive doesn't currently follow the reference or if the drive has not followed the reference for the past 60 seconds.

## Control panel options

The integrated icon based control panel comes as standard in the ACS380. Other panels are available as options.



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## Connectivity and flexibility to meet your needs

When designing a machine, all necessary devices have to be compatible with each other to form a high-performing system level solution. Devices such as drives, programmable logic controllers (PLCs), motors, Human machine interfaces (HMIs), fieldbuses, safety functions and fieldbus connectivity need to be integrated seamlessly into one common system and to provide reliability, cost efficiency and flexibility for the entire design process.

### **All-compatible machinery drives**

ABB's machinery drives have hundreds of hours of testing behind them. They are proven, meeting the high standards required for industrial automation. They connect smoothly to PLC's through a wide range of available fieldbus protocols, enabling fast and secure communication between them. In order to control virtually any type of motor ABB's machinery drives do this optimally and safely, saving energy and the environment at the same time. In order to access several drives and motors via the PLC there are various types of human machine interfaces such as drive control panels and touchscreen displays for fast and easy configuration. Safety functionality can be designed around or plugged into the drives and connected smoothly to a safety PLC.

### **Preconfigured fieldbus modules**

Fieldbus modules for the ACS380 drive preconfigure drive parameters to allow programming directly from the PLC.

### **Reliable solutions**

ABB machinery drives form with other automation devices a reliable and rapid connection that saves time and costs for the machine builder. Still, as everything is compatible, there must be flexibility to optimize the functionality of the machine. ABB also offers support and maintenance services for throughout the life cycle of the drives in the machine.





## Flexible connectivity to automation networks

A fieldbus enables communication between drives and PLC systems, I/O devices and the process. Fieldbus communication reduces wiring costs when compared with traditional hard wired input/output connections. Fieldbus systems also offer the ability to gather large amounts of data which can then be utilized for improving the performance or safety of the machine.

The ACS380 configured variant is compatible with a wide range of fieldbus protocols. Fieldbus modules preconfigure drive parameter settings at power-up to allow programming directly from the PLC. The optional fieldbus adapter can be easily be mounted on the drive. The ACS380 standard variant comes with built-in Modbus RTU protocol.

### 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-M
+K457	CANopen®	FCAN-01-M
+K469	EtherCAT®	FECA-01-M
+K475	Two port EtherNet/IP™, Modbus TCP, PROFINET IO	FENA-21-M
+K473	EtherNet/IP™, Modbus TCP, PROFINET IO	FENA-11
+K476	PowerLink	FEPL-02
+K495	CANopen®	BCAN-01

### Drive monitoring

A set of drive parameters and/or actual signals, such as torque, speed, current, etc., can be selected for cyclic data transfer, providing fast data access.

### Drive diagnostics

Accurate and reliable diagnostic information can be obtained through the alarm, limit and fault words, giving easy interfacing with plantwide HMIs.

### Cabling

Substituting the large amount of conventional drive control cabling and wiring with a single cable reduces costs and increases system reliability and flexibility.

### Design

The use of fieldbus control reduces engineering time at installation due to the modular structure of the hardware and software and the simplicity of the connections to the drives.

### Commissioning and assembly

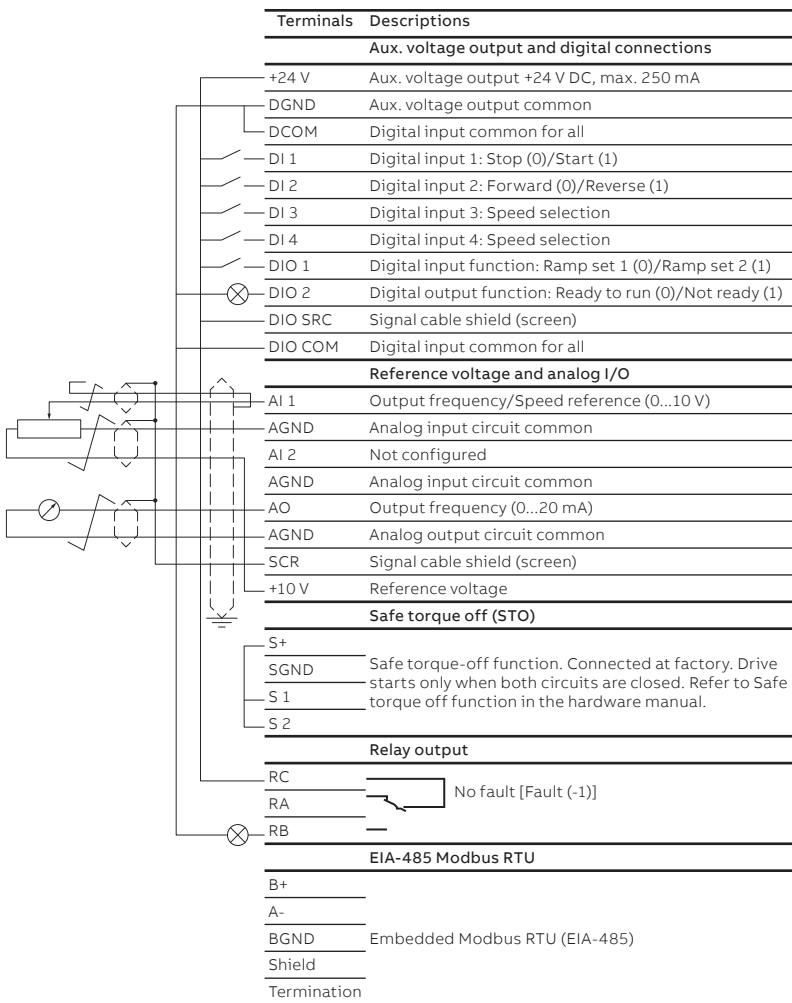
The modular machine configuration allows precommissioning of single machine sections and provides easy and fast assembly of the complete installation.



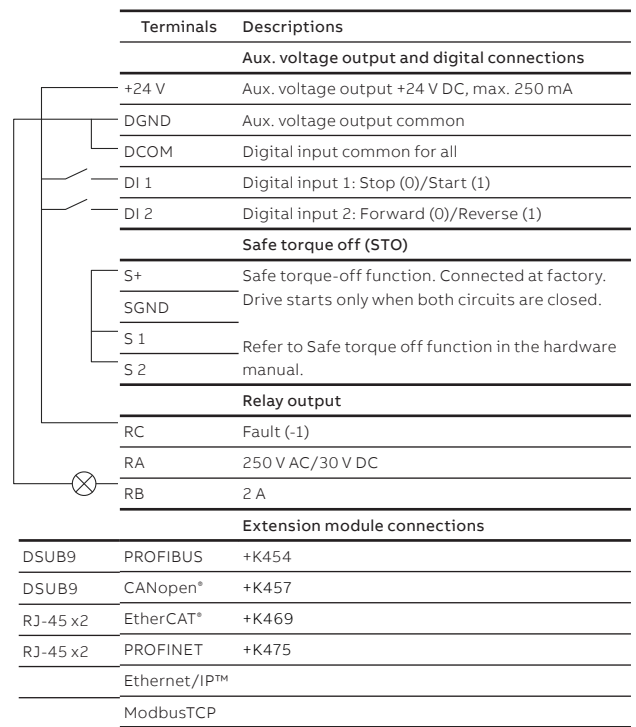
# Standard interface and extensions

The ACS380 machinery drives offer two different standard interfaces: the standard variant (I/O and Modbus) and the configured variant with different interfaces. In addition the drive has one option slot available that can be used for speed feedback, relay extension or option which allow external +24 V supply. For further information please see the ACS380 hardware and firmware manuals.

## Default I/O connections of standard variant



## Default connections of configured variant



## Brake options

### Brake chopper

The brake chopper is built-in as standard for the ACS380. Mechanical brake control is integrated into the ACS380 machinery drives. It uses state machine logic to control brake opening, closing, holding, wait and delay to integrate complex brake operation into the application.

### Brake resistor

The brake resistors are separately available for the ACS380 machinery drives. Resistors other than the standard option resistors may be used, provided that the specified resistance value is within specified limits and that the 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 eg, the mains cable is protected with fuses and no mains cable/fuse overrating takes place.

## EMC - electromagnetic compatibility

The ACS380 machinery drives are equipped with a built-in filter to reduce high frequency emissions. Low EMC filters (C3 for 200V and C4 for 400V) are standard on ACS380-040X drives. High EMC filters (C2 for all voltages are denoted by type codes ACS380-042X.

### 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

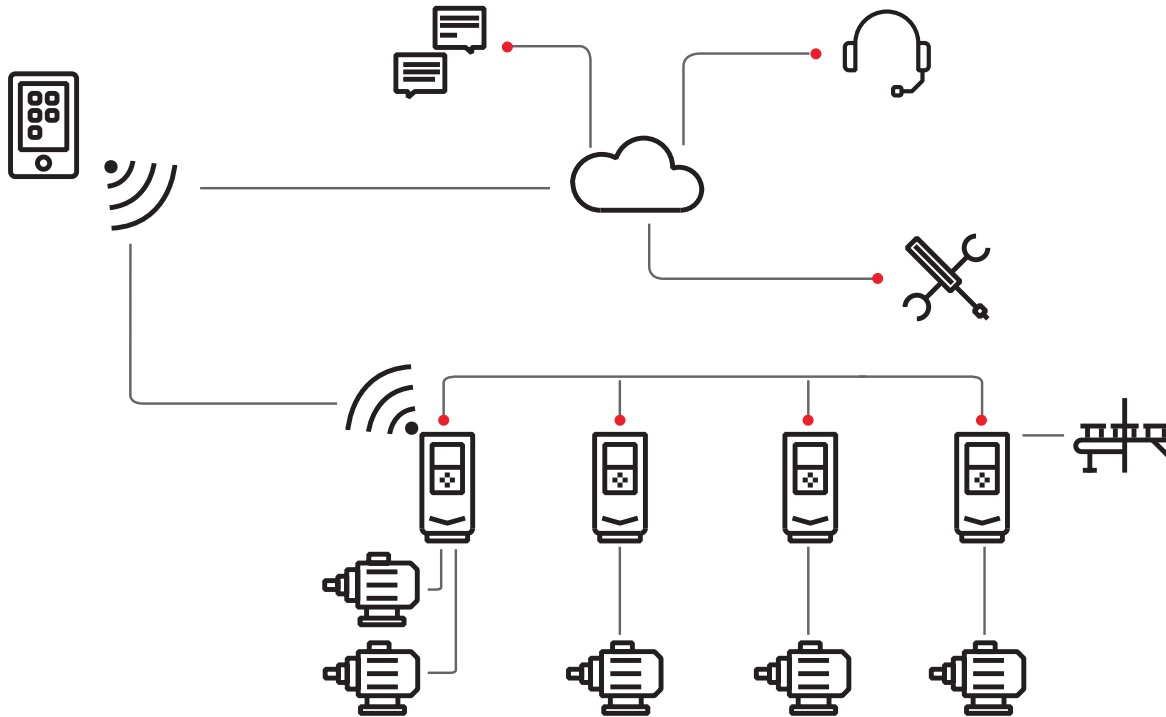
1st environment includes domestic premises. It also includes establishments directly connected without an intermediate transformer to a low voltage power supply network that supplies buildings used for domestic purposes. 2nd environment includes all establishments directly connected to public low voltage 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 environment
1 <sup>st</sup> environment, unrestricted distribution	Category C1	Group 1, Class B	Not applicable	Applicable
1 <sup>st</sup> environment, restricted distribution	Category C2	Group 1, Class A	Applicable	Not applicable
2 <sup>nd</sup> environment, unrestricted distribution	Category C3	Group 2, Class A	Not applicable	Not applicable
2 <sup>nd</sup> environment, restricted distribution	Category C4	Not applicable	Not applicable	Not applicable

# Save time and improve drive performance with ABB's Drivetune app

## Easy and fast access to product information and support



## Manage your drives and the process lines and machines they control



Easy access to cloud-based drive and process information from anywhere via online connection



Start-up, commission and tune your drive and application



Simplified user interface with instant access to drive status and configuration



Performance optimization via drive troubleshooting features and fast support.

## Access information anywhere

Download the Drivetune app via QR codes or directly from the app stores.



# Drive Services

## Your choice, your future

### The future of your drives depends on the service you choose.

Whatever you choose, it should be a well-informed decision. No guesswork. We have the expertise and experience to help you find and implement the right service for your drive equipment. You can start by asking yourself these two critical questions:

- Why should my drive be serviced?
- What would my optimal service options be?

From here, you have our guidance and full support along the course you take, throughout the entire lifetime of your drives.

### Your choice, your business efficiency

ABB Drive Care agreement lets you focus on your core business. A selection of predefined service options matching your needs provides optimal, more reliable performance, extended drive lifetime and improved cost control. So you can reduce the risk of unplanned downtime and find it easier to budget for maintenance.

We can help you more by knowing where you are! Register your drive at [www.abb.com/drivereg](http://www.abb.com/drivereg) for extended warranty options and other benefits.

## Service to match your needs

Your service needs depend on your operation, life cycle of your equipment and business priorities. We have identified our customers' four most common needs and defined service options to satisfy them. What is your choice to keep your drives at peak performance?



### Operational efficiency

#### Example services include:

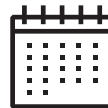
- Drive Care Agreement
- Commissioning
- Spare Parts
- Preventive Maintenance
- Drive Exchange



### Rapid response

#### Example services include:

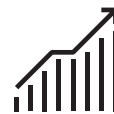
- Technical Support
- Drive Exchange
- On-Site Repair
- Spare Parts
- Training



### Life cycle management

#### Example services include:

- Preventive Maintenance
- Hardware Upgrades
- Control Upgrades
- Retrofits



### Performance improvement

#### Example services include:

- Drive Care Agreement
- Training
- Preventive Maintenance
- Hardware Upgrades
- Control Upgrades
- Retrofits
- Workshop Repair

# Drive Services

## A lifetime of peak performance

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

You are 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 the drive's lifespan.

### ABB drives life cycle phases explained:

Active  Classic  Limited  Obsolete

Active		Classic		Limited		Obsolete	
Full range of life cycle services and support		Full range of life cycle services and support		Limited range of life cycle services and support		Replacement and end-of-life services	
<b>Product</b>							
Product is in active sales and manufacturing phase.		Serial production has ceased. Product may be available for plant extensions, as a spare part or for installed base renewal.		Product is no longer available.		Product is no longer available.	
<b>Services</b>							
Full range of life cycle services is available.		Full range of life cycle services is available. Product enhancements may be available through upgrade and retrofit solutions.		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.

Your benefit is clear information about your drives' status and precise 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, availability of product and services, life cycle plan and recommended actions.

**Additional information**

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB AG does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

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**ABB, Inc**

16250 W. Glendale Drive  
New Berlin, WI 53151

**[abb.com/drives](http://abb.com/drives)**