

ABB component drives

ACS150, 0.37 to 4 kW / 0.5 to 5 hp

Technical catalogue

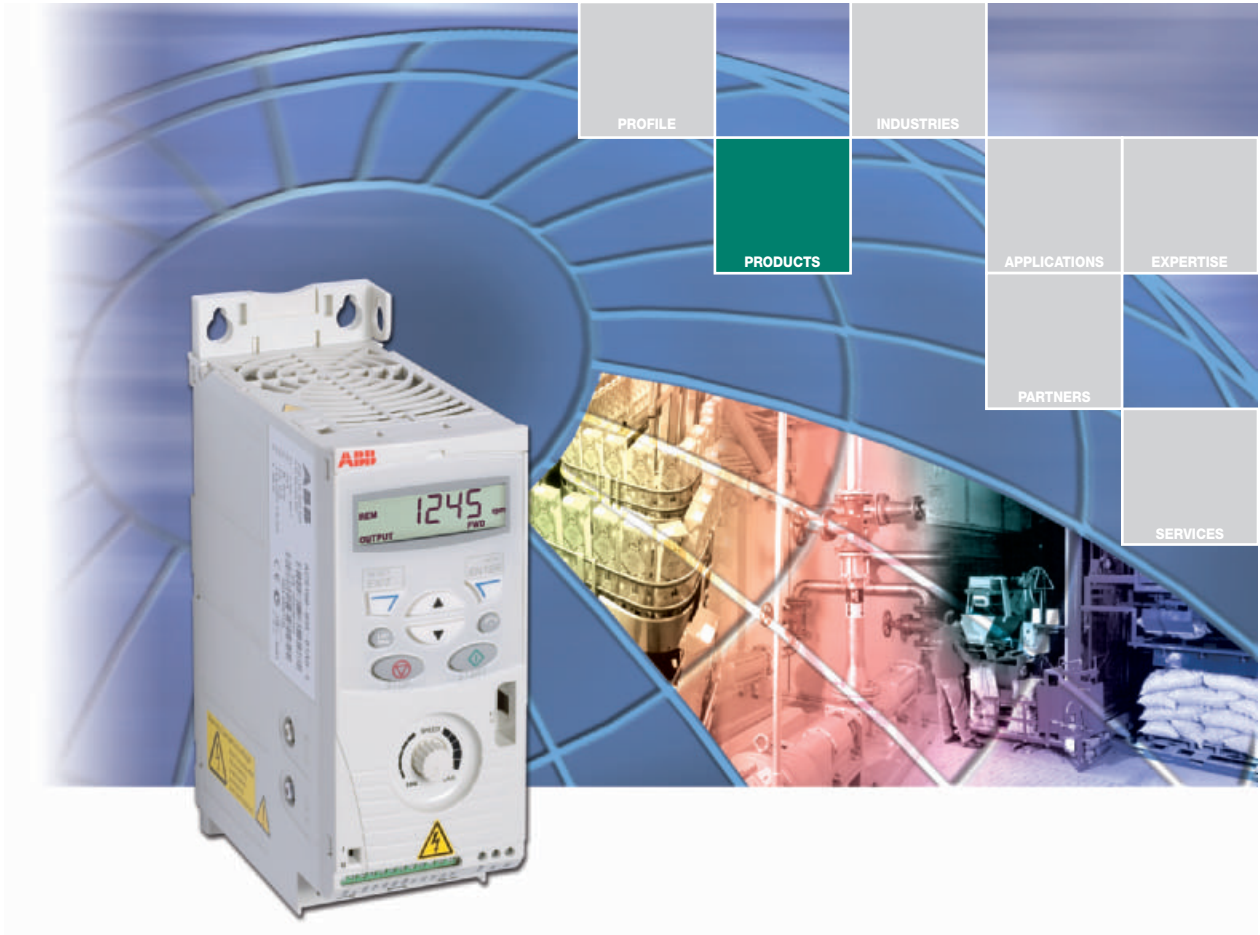




ABB component drives

ABB component drives are designed for machine building. These drives are components that are bought together with other components from a logistical distributor. The drives are stocked, and the number of options and variants is optimized for logistical distribution.

Highlights

- FlashDrop
- Integrated interface
- Integrated potentiometer
- Inbuilt EMC filter
- Inbuilt brake chopper
- Flexible installation
- Coated boards

Applications

- Fans
- Pumps
- Gate control
- Material handling
- Conveyors

Features	Benefits	Notes
FlashDrop	Faster and easier drive set up and commissioning for volume manufacturing.	New fast, safe and trouble free parametrization method without electricity. Patented.
Integrated interface	Simple drive with comfortable and robust interface.	Integrated control panel with clear LCD display, backlight and buttons.
Integrated potentiometer	Intuitive speed setting.	Integrated potentiometer. Settings shown on the control panel.
Inbuilt EMC filter	No extra space, parts, time or cost required.	2 nd environment filter complying with IEC 61800-3 as standard.
Inbuilt brake chopper	Reduced cost, saved space and simple wiring.	100% braking capability.
Flexible installation	Optimum layout and efficient cabinet space usage.	Screw, DIN-rail, sideways and side-by-side mounting. Unified height and depth.
Coated boards	Longer lifetime and reduced service.	Protection against moisture and hostile particles as standard.

Technical specification



Mains connection

Voltage and power range	1-phase, 200 to 240 V $\pm 10\%$ 0.37 to 2.2 kW (0.5 to 3 hp) 3-phase, 200 to 240 V $\pm 10\%$ 0.37 to 2.2 kW (0.5 to 3 hp) 3-phase, 380 to 480 V $\pm 10\%$ 0.37 to 4 kW (0.5 to 5 hp)
Frequency	48 to 63 Hz
Power factor	0.98

Motor connection

Voltage	3-phase, from 0 to U_{supply}
Frequency	0 to 500 Hz
Continuous loading capability <small>(constant torque at a max. ambient temperature 40°C)</small>	Rated output current I_{2N}
Overload capability <small>(at a max. ambient temperature of 40°C)</small>	At heavy duty use $1.5 \times I_{2N}$ for 1 minute every 10 minutes At start $1.8 \times I_{2N}$ for 2 s
Switching frequency	
Default	4 kHz
Selectable	4 to 16 kHz with 4 kHz steps
Acceleration time	0.1 to 1800 s
Deceleration time	0.1 to 1800 s
Braking	Inbuilt brake chopper as standard

Environmental limits

Ambient temperature	-10 to 40 °C (14 to 104 °F), no frost allowed, 50 °C (122 °F) 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	IEC 721-3-3 No conductive dust allowed
Transportation	Class 1C2 (chemical gases)
Storage	Class 1S2 (solid particles) Class 2C2 (chemical gases)
Operation	Class 2S2 (solid particles) Class 3C2 (chemical gases) Class 3S2 (solid particles)

Chokes

AC input chokes	External option. For reducing 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, $R_{in} > 312 \text{ k}\Omega$
Current signal	0 (4) to 20 mA, $R_{in} = 100 \Omega$
Potentiometer reference value	10 V $\pm 1\%$ max. 10 mA, $R < 10 \text{ k}\Omega$
Resolution	0.1 %
Accuracy	$\pm 2\%$
Auxiliary voltage	24 V DC $\pm 10\%$, max. 200 mA
Five digital inputs	12 to 24 V DC with internal or external supply, PNP and NPN, pulse train 0 to 10 kHz.
Input impedance	2.4 k Ω
One relay output	
Type	NO + NC
Maximum switching voltage	250 V AC/30 V DC
Maximum switching current	0.5 A/30 V DC; 5 A/230 V AC
Maximum continuous current	2 A rms

Product compliance

Low voltage Directive 73/23/EEC with supplements
Machinery Directive 98/37/EC
EMC Directive 89/336/EEC with supplements
Quality assurance system ISO 9001
Environmental system ISO 14001
UL, cUL, CE, C-Tick and GOST R approvals

EMC according to EN61800-3

2nd environment filter, unrestricted distribution, C3 with 30 m (98 ft) cable, inbuilt as standard.

EMC standards in general

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

Ratings, types, voltages and construction



Type code

In column 4 on the right is the unique reference number that clearly identifies your drive by power rating and frame size. Once you have selected the type code, 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 - 240 V

4 = 380 - 480 V

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

Construction

"01X" and "03X" within the type code 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

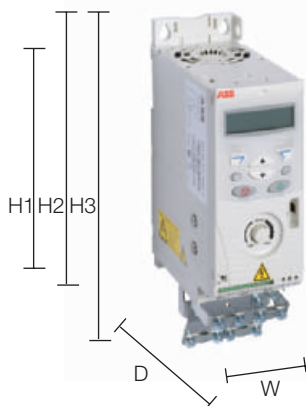
U = EMC filter disconnected, 60 Hz frequency

(In case the filter is required it can easily be connected.)

Dimensions

Cabinet-mounted drives (UL open)

Wall-mounted drives (NEMA 1)



Ratings			Type code	Frame size
P_N kW	P_N hp	I_{2N} A		
1-phase supply voltage 200 - 240 V units				
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 supply voltage 200 - 240 V units				
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 supply voltage 380 - 480 V units				
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.

Frame size	IP20 UL open						NEMA 1				
	H1 mm	H2 mm	H3 mm	W mm	D mm	Weight kg	H4 mm	H5 mm	W mm	D mm	Weight kg
R0	169	202	239	70	142	1.1	257	280	70	142	1.5
R1	169	202	239	70	142	1.3	257	280	70	142	1.7
R2	169	202	239	105	142	1.5	257	282	105	142	1.9

H1 = Height without fastenings and clamping plate.
 H2 = Height with fastenings but without clamping plate.
 H3 = Height with fastenings and clamping plate.
 H4 = Height with fastenings and NEMA 1 connection box.
 H5 = Height with fastenings, NEMA 1 connection box and hood.
 W = Width
 D = Depth



FlashDrop

FlashDrop is a powerful palm sized tool for fast and easy parameter selecting and setting. It gives the possibility to hide selected parameters to protect the machine. Only the parameters needed in the application are shown. The tool can copy parameters between two drives or between a PC and a drive. All the above can be done without a power connection to the drive – in fact, it is not even necessary to unpack the drive.

DrivePM

DrivePM (Drive parameter manager) is a tool to create, edit and copy parameter sets for FlashDrop.

For each parameter/group the user has a possibility to hide it, which means that the drive user does not see the parameter/group at all.

DrivePM requirements

- Windows 2000/XP
- Free serial port from a PC

FlashDrop tool includes

- FlashDrop
- DrivePM software on a CD-rom
- User's manual in pdf-format on the previous CD-rom
- Cable for connection between the PC and FlashDrop
- Battery charger



Brake resistors

The brake resistor is selected using the respective table. For more information about the selection of brake resistors, see the ACS150 User's Manual.

ACS150 is delivered with an integrated brake chopper as standard. No additional space or installation time is needed.

Selection table

Type code	Frame size	R_{min} ohm	R_{max} ohm	P_{BRmax} kW	hp
1-phase supply voltage 200 - 240 V units					
ACS150-01X-02A4-2	R0	70	390	0.37	0.5
ACS150-01X-04A7-2	R1	40	200	0.75	1
ACS150-01X-06A7-2	R1	40	130	1.1	1.5
ACS150-01X-07A5-2	R2	30	100	1.5	2
ACS150-01X-09A8-2	R2	30	70	2.2	3
3-phase supply voltage 200 - 240 V units					
ACS150-03X-02A4-2	R0	70	390	0.37	0.5
ACS150-03X-03A5-2	R0	70	260	0.55	0.75
ACS150-03X-04A7-2	R1	40	200	0.75	1
ACS150-03X-06A7-2	R1	40	130	1.1	1.5
ACS150-03X-07A5-2	R1	30	100	1.5	2
ACS150-03X-09A8-2	R2	30	70	2.2	3
3-phase supply voltage 380 - 480 V units					
ACS150-03X-01A2-4	R0	200	1180	0.37	0.5
ACS150-03X-01A9-4	R0	175	800	0.55	0.75
ACS150-03X-02A4-4	R1	165	590	0.75	1
ACS150-03X-03A3-4	R1	150	400	1.1	1.5
ACS150-03X-04A1-4	R1	130	300	1.5	2
ACS150-03X-05A6-4	R1	100	200	2.2	3
ACS150-03X-07A3-4	R1	70	150	3	4
ACS150-03X-08A8-4	R1	70	110	4	5

X within the type code stands for E or U.

Input and output chokes

For input and output chokes, please contact your nearest ABB drives channel partner or local ABB office.

Protection class NEMA 1

The NEMA 1 kit includes a connection box for finger protection, conduit tube installation, and a hood for protection against dirt and dust.

Technical data



Cooling

ACS150 is fitted with cooling fans as standard. The cooling air must be free from corrosive substances and must not be above the maximum ambient temperature of 40 °C (50 °C with derating). For more specific limits see the Technical specification - Environmental limits in this catalogue.

Cooling air flow

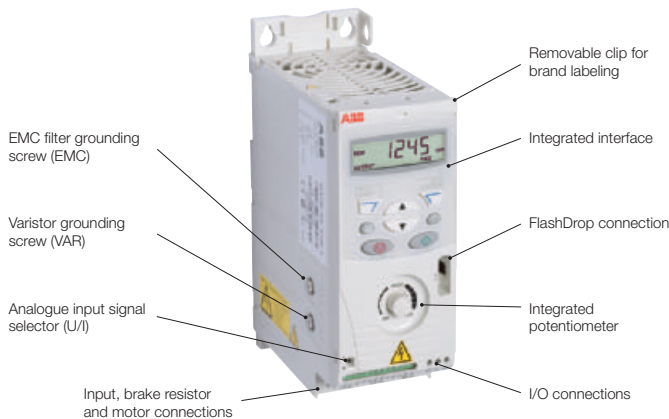
Type code	Frame size	Heat dissipation		Air flow	
		w	BTU/Hr	m ³ /h	ft ³ /min
1-phase supply voltage 200 - 240 V units					
ACS150-01X-02A4-2	R0	25	85	-*)	-*)
ACS150-01X-04A7-2	R1	46	157	24	14
ACS150-01X-06A7-2	R1	71	242	24	14
ACS150-01X-07A5-2	R2	73	249	21	12
ACS150-01X-09A8-2	R2	96	328	21	12
3-phase supply voltage 200 - 240 V units					
ACS150-03X-02A4-2	R0	19	65	-*)	-*)
ACS150-03X-03A5-2	R0	31	106	-*)	-*)
ACS150-03X-04A7-2	R1	38	130	24	14
ACS150-03X-06A7-2	R1	60	205	24	14
ACS150-03X-07A5-2	R1	62	212	21	12
ACS150-03X-09A8-2	R2	83	283	21	12
3-phase supply voltage 380 - 480 V units					
ACS150-03X-01A2-4	R0	11	38	-*)	-*)
ACS150-03X-01A9-4	R0	16	55	-*)	-*)
ACS150-03X-02A4-4	R1	21	72	13	8
ACS150-03X-03A3-4	R1	31	106	13	8
ACS150-03X-04A1-4	R1	40	137	13	8
ACS150-03X-05A6-4	R1	61	208	19	11
ACS150-03X-07A3-4	R1	74	253	24	14
ACS150-03X-08A8-4	R1	94	321	24	14

X within the type code stands for E or U.
*) Frame size R0 with free convection cooling.

Free space requirements

Enclosure type	Space above mm	Space below mm	Space on left/right mm
All frame sizes	75	75	0

Interface and control connections



Fuses

Standard fuses can be used with ABB component drives. For input fuse connections see table below.

Selection table

Type code	Frame size	IEC Fuses		UL Fuses	
		A	Fuse type*)	A	Fuse type*)
1-phase supply voltage 200 - 240 V units					
ACS150-01X-02A4-2	R0	10	gG	10	UL class T
ACS150-01X-04A7-2	R1	16	gG	20	UL class T
ACS150-01X-06A7-2	R1	20	gG	25	UL class T
ACS150-01X-07A5-2	R2	25	gG	30	UL class T
ACS150-01X-09A8-2	R2	35	gG	35	UL class T
3-phase supply voltage 200 - 240 V units					
ACS150-03X-02A4-2	R0	10	gG	10	UL class T
ACS150-03X-03A5-2	R0	10	gG	10	UL class T
ACS150-03X-04A7-2	R1	10	gG	15	UL class T
ACS150-03X-06A7-2	R1	16	gG	15	UL class T
ACS150-03X-07A5-2	R1	16	gG	15	UL class T
ACS150-03X-09A8-2	R2	16	gG	20	UL class T
3-phase supply voltage 380 - 480 V units					
ACS150-03X-01A2-4	R0	10	gG	10	UL class T
ACS150-03X-01A9-4	R0	10	gG	10	UL class T
ACS150-03X-02A4-4	R1	10	gG	10	UL class T
ACS150-03X-03A3-4	R1	10	gG	10	UL class T
ACS150-03X-04A1-4	R1	16	gG	15	UL class T
ACS150-03X-05A6-4	R1	16	gG	15	UL class T
ACS150-03X-07A3-4	R1	16	gG	20	UL class T
ACS150-03X-08A8-4	R1	20	gG	25	UL class T

X within the type code stands for E or U.
*) According to IEC-60269 standard.

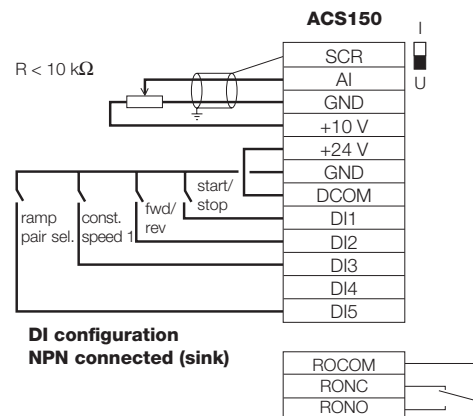
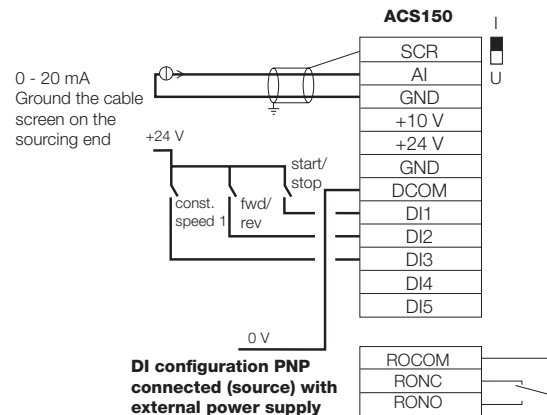




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