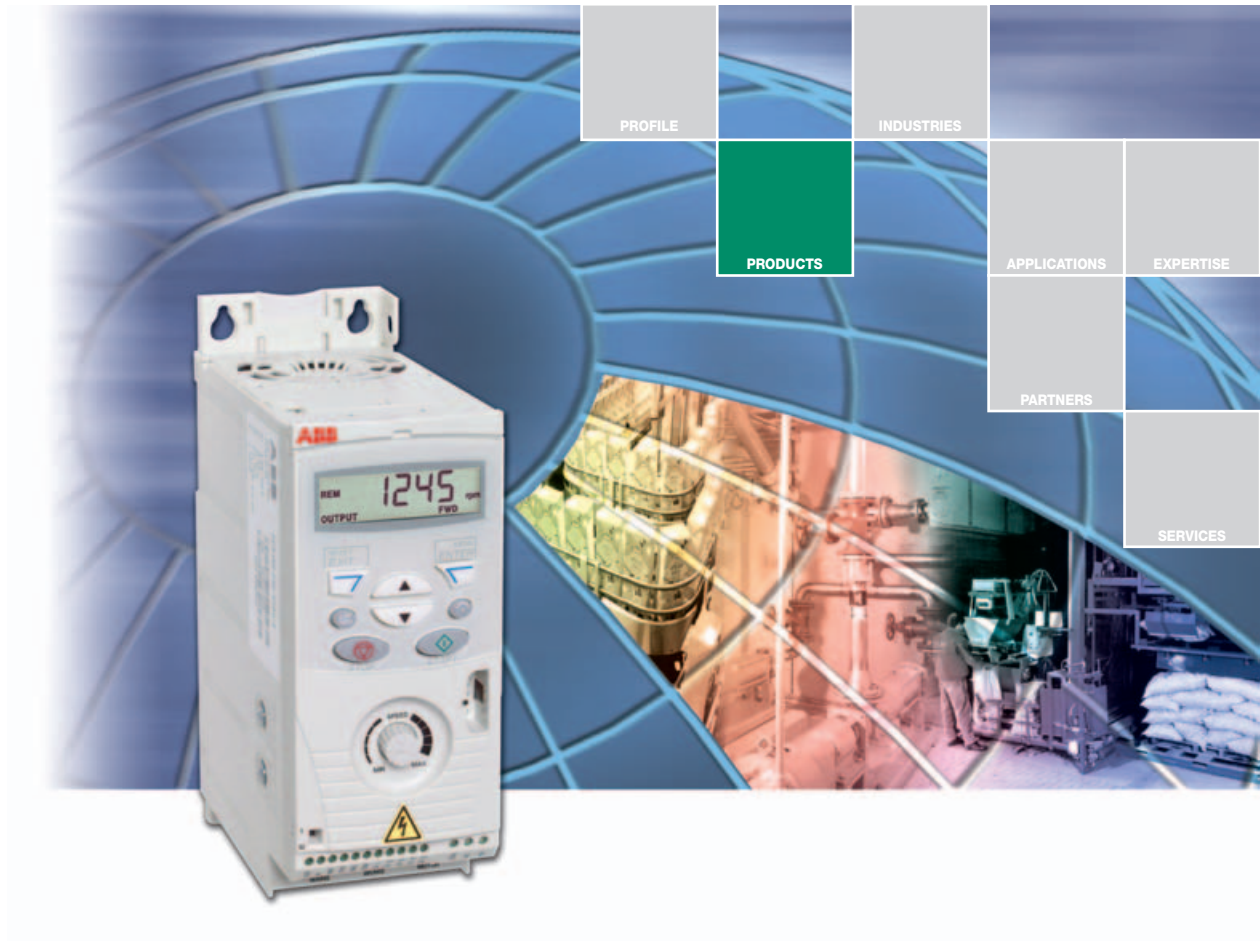


# ABB component drives

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

# Technical specification



## Mains connection

<b>Voltage and power range</b>	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)
<b>Frequency</b>	48 to 63 Hz
<b>Power factor</b>	0.98

## Motor connection

<b>Voltage</b>	3-phase, from 0 to $U_{supply}$
<b>Frequency</b>	0 to 500 Hz
<b>Continuous loading capability</b> <small>(constant torque at a max. ambient temperature 40°C)</small>	Rated output current $I_{2N}$
<b>Overload capability</b> <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
<b>Switching frequency</b>	
Default	4 kHz
Selectable	4 to 16 kHz with 4 kHz steps
<b>Acceleration time</b>	0.1 to 1800 s
<b>Deceleration time</b>	0.1 to 1800 s
<b>Braking</b>	Inbuilt brake chopper as standard

## Environmental limits

<b>Ambient temperature</b>	-10 to 40°C (14 to 104F), no frost allowed, 50°C (122F) with 10% derating
<b>Altitude</b>	
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)
<b>Relative humidity</b>	Lower than 95% (without condensation)
<b>Protection class</b>	IP 20 / Optional NEMA 1 enclosure
<b>Enclosure colour</b>	NCS 1502-Y, RAL 9002, PMS 420 C
<b>Contamination levels</b>	IEC721-3-3
Transportation	No conductive dust allowed Class 1C2 (chemical gases) Class 1S2 (solid particles)
Storage	Class 2C2 (chemical gases) Class 2S2 (solid particles)
Operation	Class 3C2 (chemical gases) Class 3S2 (solid particles)

## Chokes

<b>AC input chokes</b>	External option. For reducing THD in partial loads and to comply with EN61000-3-2.
<b>AC output chokes</b>	External option. To achieve longer motor cables.

## Programmable control connections

<b>One analog input</b>	
Voltage signal	0 (2) to 10 V, $R_{in} > 312 \text{ k}\Omega$
Current signal	0 (4) to 20 mA, $R_{in} = 100 \Omega$
Resolution	0.1 %
Accuracy	$\pm$ 1%
<b>Auxiliary voltage</b>	24 V DC $\pm$ 10%, max. 200 mA
<b>Five digital inputs</b>	12 to 24 V DC with internal or external supply, PNP and NPN, pulse train 0 to 10 kHz.
Input impedance	2.4 k $\Omega$
<b>One relay output</b>	
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

2<sup>nd</sup> 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 <sup>st</sup> environment, unrestricted distribution	Category C1	Group 1 Class B
1 <sup>st</sup> environment, restricted distribution	Category C2	Group 1 Class A
2 <sup>nd</sup> environment, unrestricted distribution	Category C3	Group 2 Class A
2 <sup>nd</sup> 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

The 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

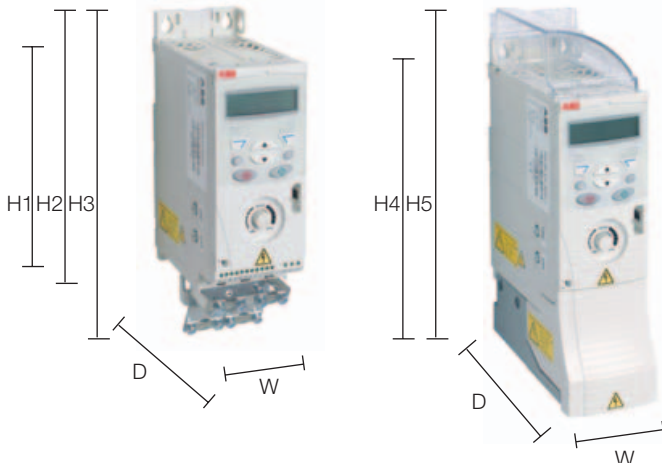
**U** = EMC filter disconnected, 60 Hz frequency

(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 <sub>N</sub> kW	P <sub>N</sub> hp	I <sub>2N</sub> A		
<b>1-phase supply voltage 200 - 240 V units</b>				
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
<b>3-phase supply voltage 200 - 240 V units</b>				
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
<b>3-phase supply voltage 380 - 480 V units</b>				
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	IP 20 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.

The 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 <sub>min</sub> ohm	R <sub>max</sub> ohm	P <sub>BRmax</sub> kW    hp	
<b>1-phase supply voltage 200 - 240 V units</b>					
ACS150-01X-02A4-1	R0	70	390	0.37	0.5
ACS150-01X-04A7-1	R1	40	200	0.75	1
ACS150-01X-06A7-1	R1	40	130	1.1	1.5
ACS150-01X-07A5-1	R2	30	100	1.5	2
ACS150-01X-09A8-1	R2	30	70	2.2	3
<b>3-phase supply voltage 200 - 240 V units</b>					
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
<b>3-phase supply voltage 380 - 480 V units</b>					
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. Ordering with a separate MRP code number.

# Technical data



## Cooling

The 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

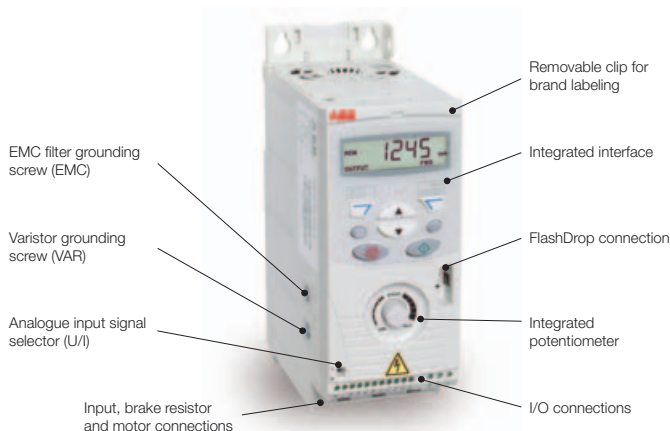
Type code	Frame size	Heat dissipation		Air flow	
		w	BTU/Hr	m <sup>3</sup> /h	ft <sup>3</sup> /min
<b>1-phase supply voltage 200 - 240 V units</b>					
ACS150-01X-02A4-2	R0	25	85	- <sup>*)</sup>	- <sup>*)</sup>
ACS150-01X-04A7-2	R1	46	157	24	14
ACS150-01X-06A7-2	R1	71	242	24	14
ACS150-01X-07A5-2	R2	73	249	21	12
ACS150-01X-09A8-2	R2	96	328	21	12
<b>3-phase supply voltage 200 - 240 V units</b>					
ACS150-03X-02A4-2	R0	19	65	- <sup>*)</sup>	- <sup>*)</sup>
ACS150-03X-03A5-2	R0	31	106	- <sup>*)</sup>	- <sup>*)</sup>
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
<b>3-phase supply voltage 380 - 480 V units</b>					
ACS150-03X-01A2-4	R0	11	38	- <sup>*)</sup>	- <sup>*)</sup>
ACS150-03X-01A9-4	R0	16	55	- <sup>*)</sup>	- <sup>*)</sup>
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



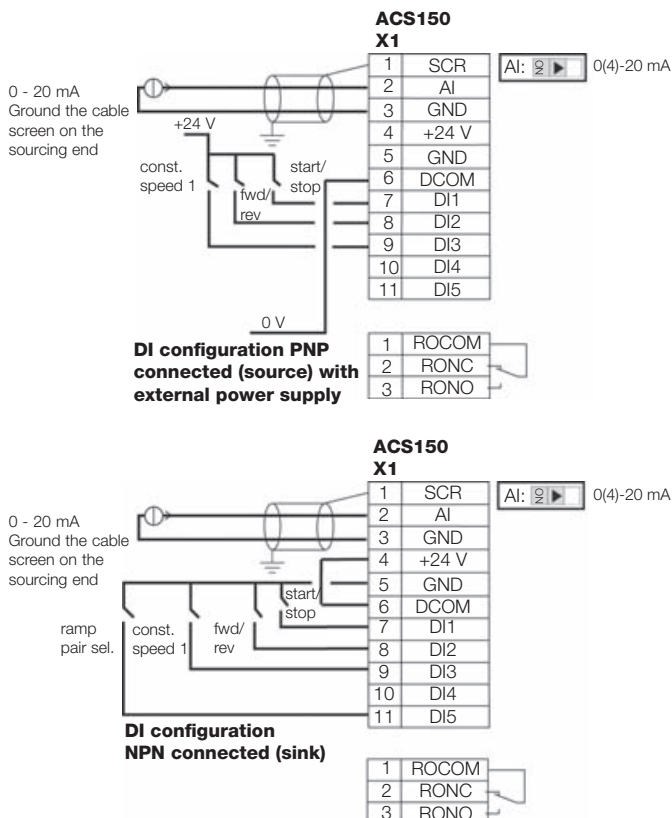
## Fuses

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 <sup>*)</sup>	A	Fuse type <sup>*)</sup>
<b>1-phase supply voltage 200 - 240 V units</b>					
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
<b>3-phase supply voltage 200 - 240 V units</b>					
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
<b>3-phase supply voltage 380 - 480 V units</b>					
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.



# Contact and web information

[www.abb.com/motors&drives](http://www.abb.com/motors&drives)



ABB's worldwide presence is built on strong local companies working together with the channel partner network. By combining the experience and know-how gained in local and global markets, we ensure that our customers in all industries can gain the full benefit from our products.

For further details about all our low voltage AC drives and services please contact your nearest ABB office or ABB drives channel partner or visit the websites [www.abb.com/motors&drives](http://www.abb.com/motors&drives) and [www.abb.com/drivespartners](http://www.abb.com/drivespartners).

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## Algeria

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Fax: +212 2224 6171

## Argentina (Valentin Alsina)

Tel: +54 (0)114 229 5707  
Fax: +54 (0)114 229 5593

## Australia (Victoria)

Tel: +1800 222 435  
Tel: +61 3 8544 0000  
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## Austria (Vienna)

Tel: +0800 201 009  
Tel: +43 1 60109 0  
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Fax: +88 02 8850906

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Tel: +591 2 278 8181  
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Tel: +387 35 246 020  
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Tel: 0800 014 9111  
Tel: +55 11 3688 9282  
Fax: +55 11 3688 9421

## Bulgaria (Sofia)

Tel: +359 2 981 4533  
Fax: +359 2 980 0846

## Cameroon

Tel: +237 42 23 66  
Fax: +237 42 23 90

## Canada (Montreal)

Tel: +1 514 215 3006  
Fax: +1 514 332 0609

## Chile (Santiago)

Tel: +56 2 471 4391  
Fax: +56 2 471 4399

## China (Beijing)

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Fax: +86 10 5821 7518, 5821 7618

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Fax: +57 1 413 4086

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Fax: +506 288 5482

## Croatia (Zagreb)

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Fax: +385 1 619 5111

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Fax: +420 234 322 310

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Fax: +45 44 504 365

## Dominican Republic

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Tel: +809 562 9011

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Fax: +593 2 2500 650

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Fax: +202 6251638

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Fax: +372 6801 810

## Ethiopia

Tel: +251 1 669506, 669507  
Fax: +251 1 669511

## Finland (Helsinki)

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Tel: +358 10 222 1999  
Fax: +358 10 222 2913

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Tel: +33 (0)4 37 40 40 00  
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Fax: +49 (0)6203 717 600

## Greece (Athens)

Tel: +30 210 289 1900  
Fax: +30 210 289 1999

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Tel: +502 363 3814  
Fax: +502 363 3624

## Hungary (Budapest)

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Fax: +36 1 443 2144

## India (Bangalore)

Tel: +91 80 837 0416  
Fax: +91 80 839 9173

## Indonesia (Jakarta)

Tel: +62 21 590 9955  
Fax: +62 21 590 0115, 590 0116

## Iran (Tehran)

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Fax: +98 21 2222 5157

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Fax: +353 1 405 7312

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Tel: +972 4 850 2111  
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Fax: +39 02 2414 3979

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Fax: +225 21 35 04 14

## Japan (Tokyo)

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Fax: +81(0)3 5784 6275

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Tel: +962 6 562 0181  
Fax: +962 6 5621369

## Kazakhstan

Tel: +7 3272 583838  
Fax: +7 3272 583839

## Kenya (Nairobi)

Tel: +254 20 828811/13 to 20  
Fax: +254 20 828812/21

## Kuwait

Tel: +965 2428626 ext. 124  
Fax: +965 2403139

## Latvia (Riga)

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Fax: +370 5 273 8333

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Fax: +352 492 859

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Fax: +51 1 561 3040

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Fax: +48 42 299 3340

## Portugal (Oeiras)

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Fax: +351 21 425 6390,  
425 6354

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Fax: +974 444 6189

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Fax: +40 21 310 4383

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Fax: +7 095 913 96 96/95

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ext. 240, 254, 247  
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Fax: +221 832 2057, 832 1239

## Serbia and Montenegro (Belgrade)

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3094 300  
Fax: +381 11 3094 343

## Singapore

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Fax: +65 6778 0222

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Fax: +421 48 410 2325

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## Sri Lanka (Colombo)

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## Sweden (Västerås)

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## Switzerland (Zürich)

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## Taiwan (Taipei)

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## Thailand (Bangkok)

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## Tunisia

Tel: +216 1 860 366  
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## Turkey (Istanbul)

Tel: +90 216 528 2200  
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## Uganda

Tel: +256 41 348 800  
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## The United Arab Emirates (Dubai)

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## United Kingdom (Manchester, Didsbury)

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