

Technical Catalogue

CompAC™

Low power AC drives
0.12 kW - 37 kW



ABB Automation



Instant ordering
and advice



Easy to pay,
most credit cards
accepted



Fast delivery
within hours



Simple documentation
easy to read



Support line



2 year worldwide
warranty



With features such as dynamic braking and flying start, Comp-AC drives are a practical choice for many applications in building automation such as air handling. The built-in PID control keeps variables such as temperature, pressure, or humidity under control. Comp-AC drives are quiet in operation and therefore well suited for office and residential environments.

Precise control of a wide range of processes

Fast and precise speed control means that uniform end-product quality can be achieved cost-efficiently. Comp-AC drives are suitable for machinery applications such as conveying, packaging, mixing, ventilation, pumping and similar. The Comp-AC drives offer the benefits of efficient control to virtually every type of industrial process where AC motors are used.

High repeatability for constant product quality

High repeatability ensures constant product quality across a range of applications, and is one of the cornerstones in the design of the Comp-AC drives. The very low variance in response time and accuracy enables control of processes within narrow tolerances whilst ensuring predictable behaviour of machinery. In addition, the serial communication feature along with the digital control interface maintains constantly high repeatability.

Wide choice of mounting options

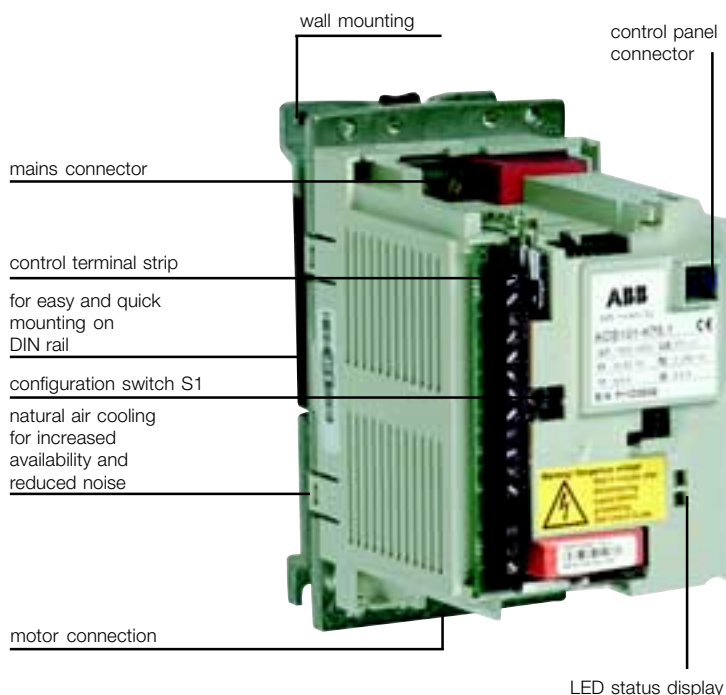
Catering for the different requirements of end users, panel builders and OEMs, Comp-AC drives provide three different ways of mounting: conventional wall mounting, time saving DIN-rail mounting and flange mounting. Mounting using an external heatsink is also now available, see page 8 for heatsinkless units.



The reliability of the drives in the Comp-AC range makes these suitable for all types of continuous processes, such as pumping and mixing. An IP 54 enclosure is available for operation in harsh industrial environments.



In material handling and packaging applications, where precise positioning of goods is essential, the high repeatability of the drives in the Comp-AC range is a clear advantage. In addition, the seven pre-set speeds enable easy speed changes, when switching to a different size, weight or type of material. The drives can be easily integrated with any existing control logic, since the drive is compatible with both negative and positive control logic.



■ standard feature	ACS 100	ACS 140	ACS 400
Functions			
Start; normal/flying/torque boost		■	■
Start; premagnetising		■	■
IR compensation	■	■	■
Stop; ramp/coasting	■	■	■
Stop; DC brake	■	■	■
DC hold	■	■	■
U/f -ratio; linear/square	■	■	■
Acceleration/deceleration 1 (s)	0.1 ... 1800	0.1 ... 1800	0.1 ... 1800
Acceleration/deceleration 2 (s)		0.1 ... 1800	0.1 ... 1800
S-ramp; fast/medium/slow	■	■	■
Preset speeds	■ 1	■ 7	■ 7
Critical frequencies		■ 2	■ 2
Slip compensation		■ New	■
Application Macros			
Factory	■	■	■
ABB Standard	■	■	■
3-wire	■	■	■
Alternate	■	■	■
Motor potentiometer		■	■
Hand/Auto Control		■	■
PID Control (process)		■	■
Premagnetise		■	■
Pump and Fan Control (PFC)			■
Protection, fault functions			
Overload protection	■	■	■
Stall protection		■	■
Output overcurrent	■	■	■
Output short circuit	■	■	■
Ground fault, motor cable	■	■	■
Under load			■
Network failure	■	■	■
Low input signal level (AI<min)	■	■	■
Panel fault	■	■	■
Over voltage	■	■	■
Under voltage	■	■	■
External fault		■	■
Automatic fault reset, under voltage	■	■	■
Automatic fault reset, over voltage, over current, AI<min		■	■
Fault history	■ 1	■ 3	■ 3
Supervision functions (programmable) ¹⁾			
Speed		■	■
Current		■	■
Torque		■	■
Output power		■	■
Reference setpoint		■	■

¹⁾ Many other signals can also be monitored, see the user's manual.

Technical Data

3-phase Supply Voltage 380 - 480 V ± 10 %

Order code	Nominal ratings									Over-current limit (peak)	Max. motor cable length ⁹⁾ fsw = 4 kHz fsw = 8 kHz m	Max. wire sizes Power terminals ⁴⁾ mm ²	Line fuse ²⁾ A	Power losses	
	Nominal motor P _{NSQ} ⁶⁾ Squared torque kW	Frame size/ weight kg	Input current I _{1NSQ} A	Cont. output current I _{2NSQ} ³⁾ A	110% I _{2NSQ} ¹⁰⁾ A	Nominal motor P _N ⁶⁾ Constant torque kW	Input current I _{1N} A	Cont. output current I _{2N} A	150% I _{2N} ¹¹⁾ A					Power circuit W	Control circuit W
ACS 143-															
K75-3 ^{New 1)}	0.37	A/0.8 ⁵⁾	2.0	1.2	1.8	0.37	2.0	1.2	1.8	4.2	30/30		6	14	14
1K1-3 ^{New 1)}	0.55	A/0.8 ⁵⁾	2.8	1.7	2.6	0.55	2.8	1.7	2.6	5.6	50/50		6	20	16
1K6-3 ^{New 1)}	0.75	B/1.1 ⁵⁾	3.6	2.0	3.0	0.75	3.6	2.0	3.0	6.6	75/75	4, single core/ torque 0.8 Nm	6	27	17
2K1-3 ^{New 1)}	1.1	B/1.1 ⁵⁾	4.8	2.8	4.2	1.1	4.8	2.8	4.2	9.2	75/75		6	39	18
2K7-3 ^{New 1)}	1.5	C/1.5 ⁵⁾	5.8	3.6	5.4	1.5	5.8	3.6	5.4	11.9	75/75		10	48	19
4K1-3 ^{New 1)}	2.2	D/1.8 ⁵⁾	7.9	4.9	7.4	2.2	7.9	4.9	7.4	16.3	75/75		10	70	20
ACS 401-															
0004-3-X	3.0	R1/5.8 ⁷⁾	6.2	6.6	7.3	2.2	4.7	4.9	7.4	20.3	100/50		10	90	6
0005-3-X	4.0	"	8.3	8.8	9.7	3.0	6.2	6.6	9.9	27.5	100/50	10, AWG6 (stranded)/	10	120	6
0006-3-x	5.5	"	11.1	11.6	12.8	4.0	8.8	8.8	13.2	37	100/50	Torque 1.3-1.5 Nm	16	170	6
0009-3-X	7.5	R2/9.0 ⁷⁾	14.8	15.3	16.8	5.5	11.1	11.6	17.4	48	200/100		16	230	6
0011-3-X	11	"	21.5	23	25.3	7.5	14.8	15.3	23	64	200/100		25	330	6
0016-3-X	15	R3/18.5 ⁷⁾	29	30	33	11	21.5	23	34	76	200/100		35	450	6
0020-3-X	18.5	"	35	38	42	15	29	30	45	99	200/100	16, AWG4 (stranded)/	50	560	6
0025-3-X	22	R4/27 ⁷⁾	41	44	48	18.5	35	38	57	125	200/100	Torque 1.5-1.8 Nm	50	660	6
0030-3-X	30	"	56	59	65	22	41	44	66	145	200/100	35, AWG2 (stranded)/	60	900	6
0041-3-X	37	"	68	72	79	30	56	59	88	195	200/100	Torque 3.2-3.7 Nm	80	1100	6

¹⁾ Heatsinkless versions also available, see page 8.
Order code type: ACS 143-xHx-3.

²⁾ Fuse type: UL class CC or T. For non-UL installations IEC269 gG.
Use 60 °C rated power cable (75 °C if T_{amb} above 45 °C).

³⁾ Power stages are designed for the continuous I_{2N}/I_{2NSQ} current. These values apply at altitudes less than 1000 m ASL.

⁴⁾ Follow local regulations for cable cross-sections. Shielded motor cable is recommended.

⁵⁾ For dimension see ACS 140 page 9.

⁶⁾ P_{NSQ}/P_N rated motor power. The power ratings in kW apply to most 2- and 4-pole IEC 34 motors. The current ratings are the same regardless of the supply voltages. The rated current of the Comp-AC must be higher than or equal to the rated motor current to achieve the rated motor power given in the table. P_{NSQ}: Pump and fan applicable values (squared torque). P_N: Other applications (constant torque values).

⁷⁾ For dimensions see page 11.

⁹⁾ If longer motor cable is required, use output choke, see page 22.

¹⁰⁾ 110 % I_{NSQ} short term overload current allowed for one minute every 10 minutes.

¹¹⁾ 150 % I_{2NS} short term overload current allowed for one minute every 10 minutes.

Switching frequency kHz: ACS 143- 4 (Standard), 8 (Low-noise), 16 (silent)
ACS 401- 4 (Standard), 8 (Low-noise)

Protection limits/Overvoltage

Trip limits

- Running V DC: 842 (corr. to 595 V input)
- Start inhibit V DC: 661 (corr. to 380 - 415 V input)
765 (corr. to 440 - 480 V input)

Protection limits/Undervoltage:

- Running V DC: 333 (corr. to 247 V input)
- Start inhibit V DC: 436 (corr. to 380 - 415 V input)
505 (corr. to 440 - 480 V input)

Control terminals mm²: 0.5 – 1.5 (AWG22...AWG16)/torque 0.4 Nm

Order Code Key	AC S 4 0 1 - 0 004 - 3 - 2
AC Drive	
Product Type	S = Standard product
ACS 400 Product Family	
Input Bridge	0 = 6-pulse rectifier
Enclosure Type	1 = Wall mounted
Accessories	0 = Standard Unit
Rated Output Power in kVA	See ACS 400 rating tables, section S, table 11
Voltage Rating	(1 = 200 ...240 V AC available soon) 3 = 380 ...480 V AC
Enclosure Class	2 = IP 21 5 = IP 54



Technical Data

3-phase Supply Voltage 380 - 480 V ± 10 %

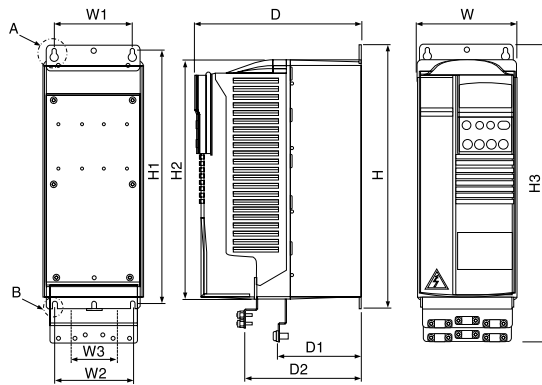
Dimensions IP 21 enclosures

Frame size, IP 21 ACS 401-	W	W1	W2	W3	H	H1	H2	H3	D	D1	D2	a	b	c	d	Weight
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
0004	125	98	98	-	330	318	300	373	209	105	147	5.5	10	5.5	5.5	5.8
0005	125	98	98	-	330	318	300	373	209	105	147	5.5	10	5.5	5.5	5.8
0006	125	98	98	-	330	318	300	373	209	105	147	5.5	10	5.5	5.5	5.8
0009	125	98	98	-	430	417	400	473	221	117	159	5.5	10	5.5	5.5	9.0
0011	125	98	98	-	430	417	400	473	221	117	159	5.5	10	5.5	5.5	9.0
0016	203	98	160	98	545	528	500	586	248	144	200	6.5	13	8	6.5	18.5
0020	203	98	160	98	545	528	500	586	248	144	200	6.5	13	8	6.5	18.5
0025	203	98	160	98	636	619	600	686	280	177	233	6.5	13	8	6.5	27
0030	203	98	160	98	636	619	600	686	280	177	233	6.5	13	8	6.5	27
0041	203	98	160	98	636	619	600	686	280	177	233	6.5	13	8	6.5	27

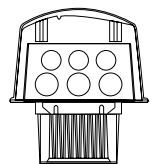
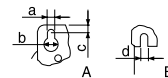
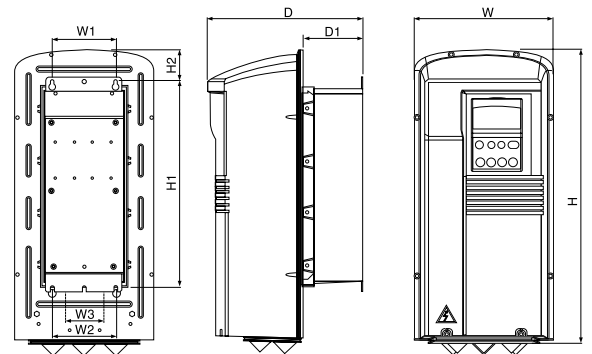
Dimensions IP 54 enclosures

Frame size, IP 54 ACS 401-	W	W1	W2	W3	H	H1	H2	D	D1	a	b	c	d	Weight
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
0004	215	98	98	-	453	318	330	240	94	5.5	10	5.5	5.5	7.2
0005	215	98	98	-	453	318	330	240	94	5.5	10	5.5	5.5	7.2
0006	215	98	98	-	453	318	330	240	94	5.5	10	5.5	5.5	7.2
0009	215	98	98	-	551	417	430	253	107	5.5	10	5.5	5.5	11.2
0011	215	98	98	-	551	417	430	253	107	5.5	10	5.5	5.5	11.2
0016	257	98	160	98	642	528	545	280	132	6.5	13	8	6.5	22.3
0020	257	98	160	98	642	528	545	280	132	6.5	13	8	6.5	22.3
0025	257	98	160	98	742	619	636	312	145	6.5	13	8	6.5	32.3
0030	257	98	160	98	742	619	636	312	145	6.5	13	8	6.5	32.3
0041	257	98	160	98	742	619	636	312	145	6.5	13	8	6.5	32.3

Units with IP 21 enclosures



Units with IP 54 enclosures

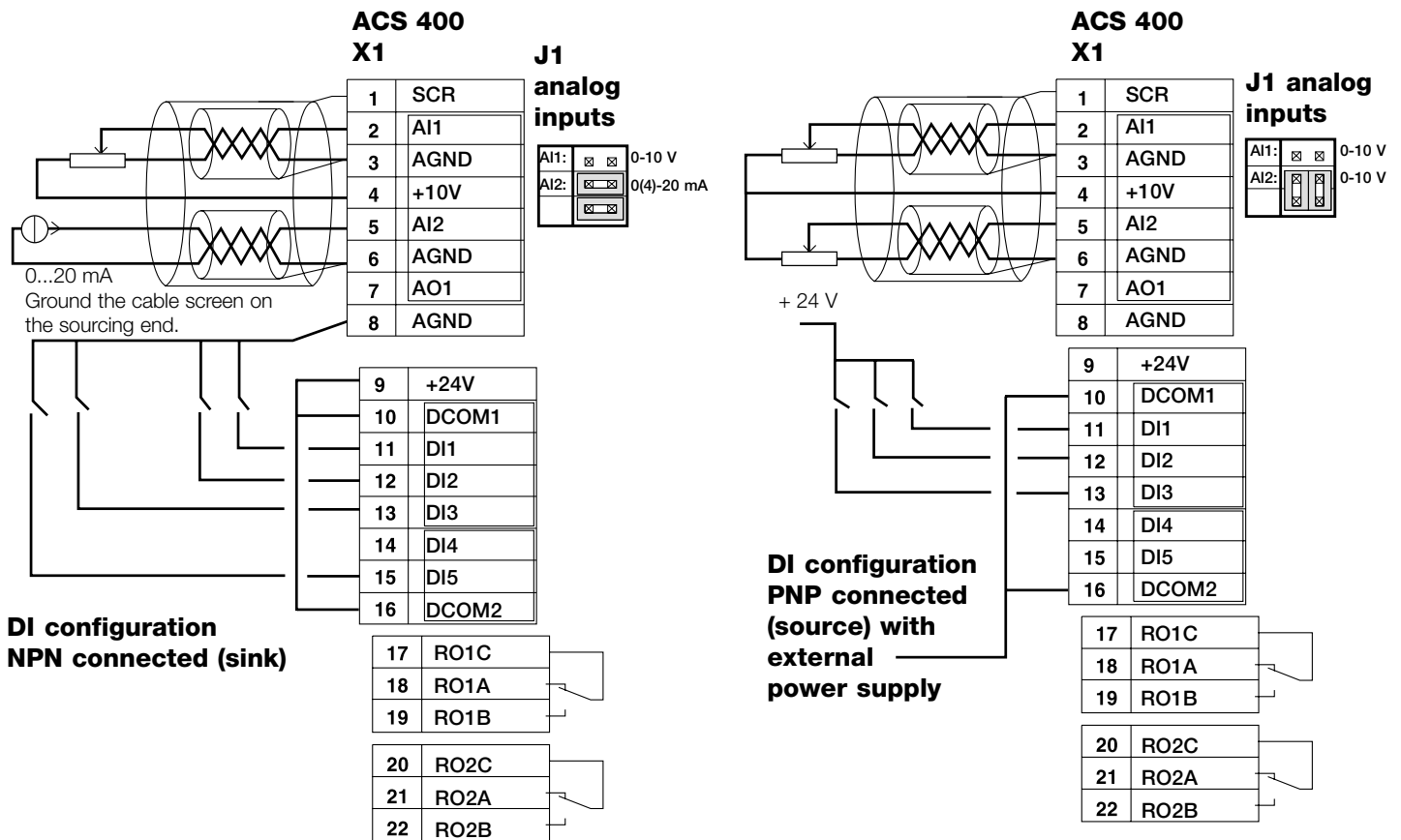


Same load capability for IP 54 units and IP 21 units

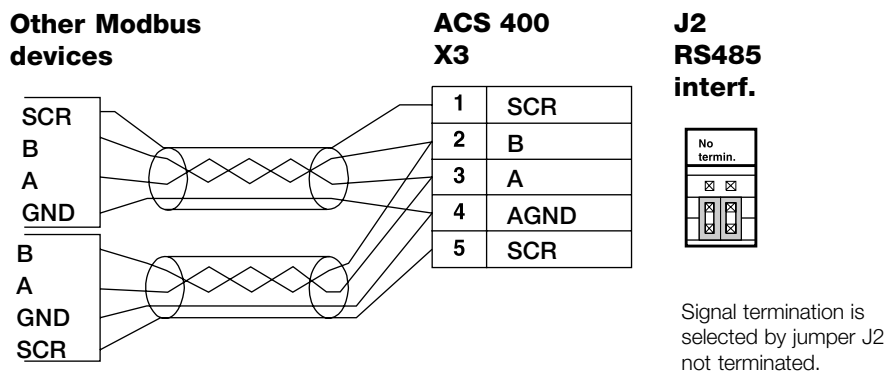
Units conforming to the IP 54 and IP 21 environmental protection classes have the same internal frame but different external plastic enclosures. An additional internal fan improves the cooling in IP 54 units. The two types have the same load capability.

Technical Data

Connection Diagrams 380 - 480 V¹⁾



RS485 Multidrop application



¹⁾ For more examples, see user's manual.
For power 0.37 to 2.2 kW, see ACS 140 connection diagrams on page 12.

Options

Control Panels

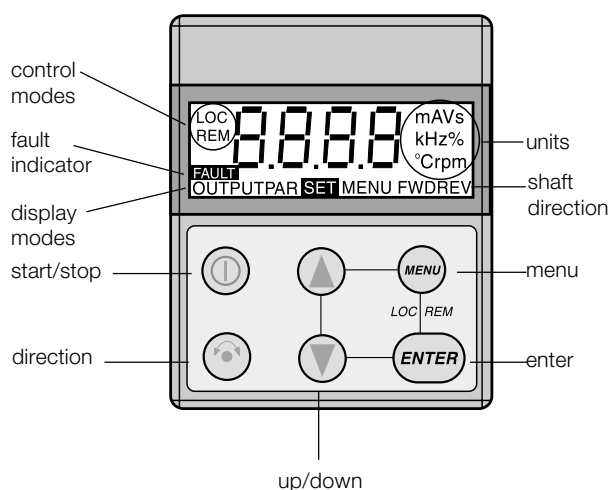


ACS100-PAN control panel for ACS 100/140/400

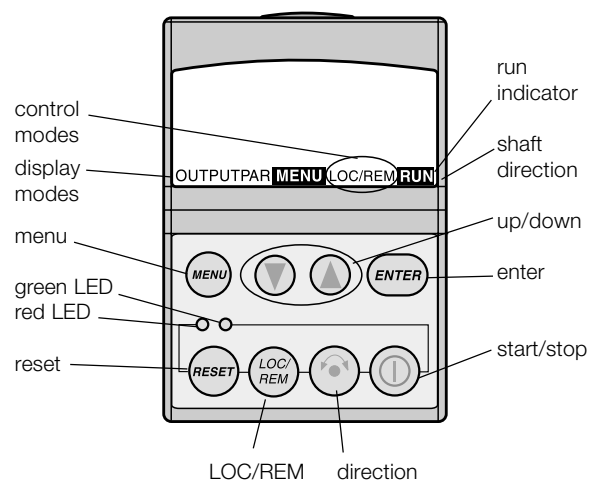
ACS 100/140 drives are fitted with a detachable control panel as standard. Using the control panel, parameters can be exchanged between two drives of the same type. The ACS-100-PAN can also be used for copying parameters from ACS 400 drives.

ACS-PAN-A control panel for ACS 400

ACS-PAN-A is a detachable multi-lingual alphanumeric control panel with LCD display. The control panel can be used for copying parameters between ACS 400 drives.



Order code: ACS 100 - PAN



Order code: ACS - PAN - A

DriveWindow Light

Comp-AC set-up and control tool

Win95, Win98, WinNT compatible



DriveWindow Light operates both off- and on-line. No additional PC hardware required. DriveWindow Light uses the PC's RS-232/485 port and Modbus serial communication protocol.

DriveWindow Light features

- All software included for drive to screen operation in one package.
- Off- and on-line viewing and changing of drive parameters.
- Backup and restore parameters. In a fault situation the parameters can be reloaded resulting in time savings.
- Monitoring of actual signal values.
- Datalogger for fast and accurate measurements.
- Fault logger. Drive Window Light indicates the reason for the fault, and also collects fault history data from the drive.

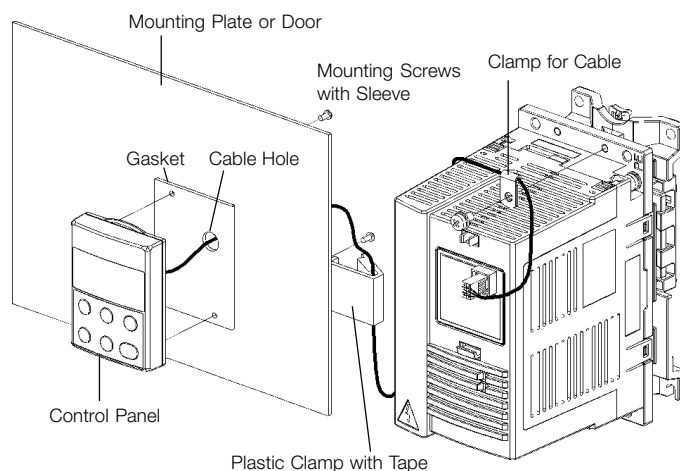
Order code:
DriveWindow
Light
61478876

Windows-based, user-friendly

ABB's Drive Window Light is an easy-to-use tool for commissioning and control of drives. It provides even more flexibility and operating possibilities for Comp-AC drives. It has features for programming, monitoring, trouble shooting and maintenance. It is also an excellent training tool. Drive Window Light operates with Comp-AC types ACS 140 / 400.

Panel Extension Cable Kit for ACS 100/140/400

Protection
class IP 65
Order code:
PEC-98-0008



This option includes:
Gasket, 3 m connection cable
ACS...panel, drilling jig and
fixing material for the cables.

EMC Filters

Series ACS 400-IFx1-3

Selection table and dimensions for IP 20 EMC filters 3-phase supply voltage 380 - 480 V, 3.0 - 37 kW

Converter type ACS 401-	Filter order code ACS 400- ²⁾	A	B	C	D	E	F	G	H	H	I	Max. ¹⁾ Motor Cable length m Switching Frequency	
		mm	mm	mm	mm	mm	mm	mm	IP 21 mm	IP 54 mm	mm	4 kHz	8 kHz
0004	IF11-3	90	362	35	98	318	120	378	269	300	60	100	-
0005	IF11-3	90	362	35	98	318	120	378	269	300	60	100	-
0006	IF11-3	90	362	35	98	318	120	378	269	300	60	100	-
0009	IF21-3	90	461	35	98	417	120	477	281	313	60	100	100
0011	IF21-3	90	461	35	98	417	120	477	281	313	60	100	100
0016	IF31-3	140	330	50	98	528	170	350	-	-	80	100	100
0020	IF31-3	140	330	50	98	528	170	350	-	-	80	100	100
0025	IF41-3	160	380	50	98	619	200	400	-	-	80	100	100
0030	IF41-3	160	380	50	98	619	200	400	-	-	80	100	100
0041	IF41-3	160	380	50	98	619	200	400	-	-	80	100	100

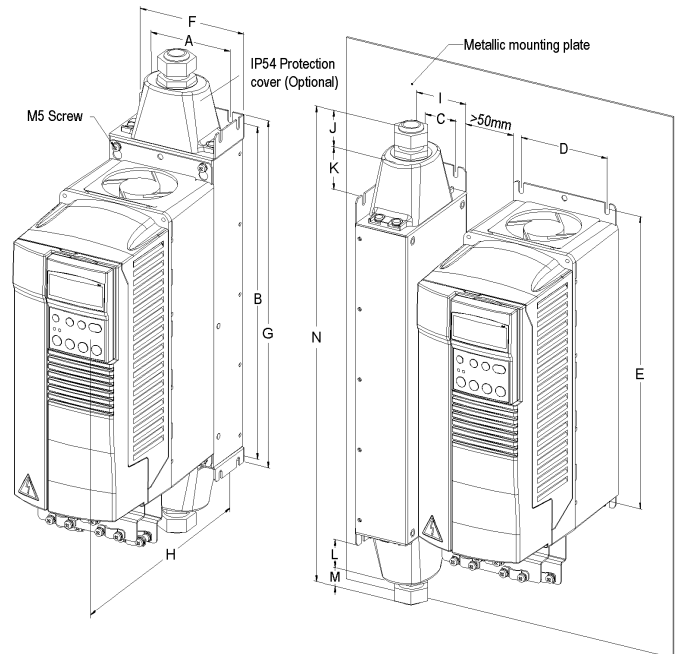
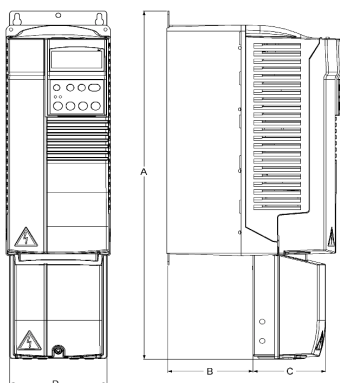
Selection table and dimensions for IP 21/IP 54 EMC filter covers

EMC filter type ACS 400-	IP 54 protection cover order code	Cable diameter	J mm	K mm	L mm	M mm	N mm
-IF11-3	IFC-99-001	9-16	35	45	max. 38	max. 38	max. 533.5
	IFC-99-002	13-20					
-IF21-3	IFC-99-002	13-20	35	45	max. 38	max. 38	max. 633
	IFC-99-003	18-25					
-IF31-3	IFC-99-004	13-20	65	85	max. 47	max. 47	max. 594
	IFC-99-005	18-25					
	IFC-99-006	25-31					
-IF41-3	IFC-99-005	18-25	65	85	max. 47	max. 47	max. 644
	IFC-99-006	25-31					
	IFC-99-007	32-38					

Always use RFI Ferrite ACS-CHK-A or ACS-CHK-C with series ACS400-IFx1-3 EMC filters. The motor cable including the shield must be fed through the hole in the ferrite. Ferrites ACS-CHK-A or ACS-CHK-C are supplied in the same package as the input filter.

Series ACS 400-IF22-3^{New}

Dimensions for regular IP 21 EMC filter for ACS 400 frequency converter

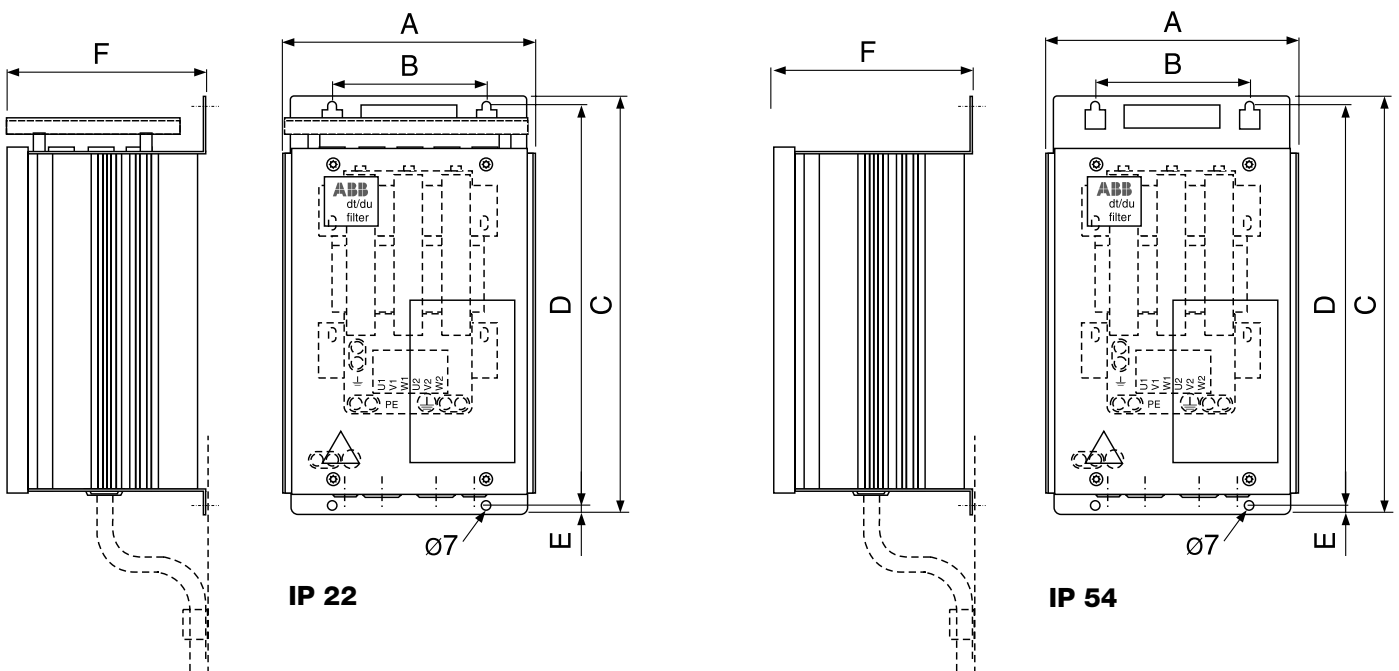


Converter type ACS 401-	A	B	C	D	Max motor cable length fsw = 4 kHz, fsw = 8 kHz
	mm	mm	mm	mm	m
0004	453	102	87	116	10
0005	453	102	87	116	10
0006	453	102	87	116	10
0009	553	114	87	116	10
0011	553	114	87	116	10

Output Chokes

Selection table ACS 400

Frequency converter code	Output choke code	Max. cable mm ²	I/A	Max. cable length with choke	Max. cable length without choke
ACS 401-0004-3	NOCH-0016-6X	10	15	150	100
ACS 401-0005-3	NOCH-0016-6X	10	15	150	100
ACS 401-0006-3	NOCH-0016-6X	10	15	150	100
ACS 401-0009-3	NOCH-0030-6X	10	28	250	200
ACS 401-0011-3	NOCH-0030-6X	10	28	250	200
ACS 401-0016-3	NOCH-0030-6X	16	28	250	200
ACS 401-0020-3	NOCH-0030-6X	16	28	250	200
ACS 401-0025-3	NOCH-0070-6X	35	65	300	200
ACS 401-0030-3	NOCH-0070-6X	35	65	300	200
ACS 401-0041-3	NOCH-0070-6X	35	65	300	200



Dimensions

Choke order code	A	B	C	D	E	F	kg/1
NOCH-0016-62 (IP 22)	199	120	323	309	7	154	6
NOCH-0030-62 (IP 22)	249	160	348	334	7	172	9
NOCH-0070-62 (IP 22)	279	180	433	419	7	202	15.5
NOCH-0016-65 (IP 54)	199	120	323	309	7	154	6
NOCH-0030-65 (IP 54)	249	160	348	334	7	172	9
NOCH-0070-65 (IP 54)	279	180	433	419	7	202	15.5