



Low voltage AC drives

ABB drives for water and wastewater
ACQ810
0.37 to 500 kW

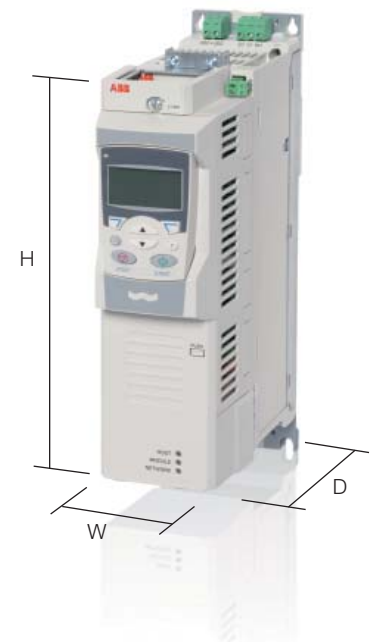
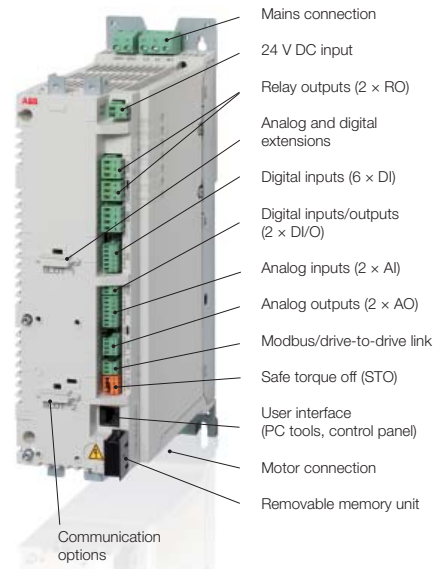
Inputs, outputs and dimensions

Pump priority is intended for systems where the consumption rate varies based on demand. For example, the drive can be programmed to operate higher capacity pumps during daytime and smaller units at night. This allows for better maintenance planning and can boost energy efficiency by operating pumps closer to their best efficiency point.

Sleep & boost is suitable for clean water pumping system, during night when water consumption falls. The drive's sleep & boost function detects pressure drops in the pipes and runs the pump to boost pressure prior to shutdown. Pumping restart when the pressure falls below the minimum level. This function extends the pump's sleep time and helps save energy. Also the lifetime of the pump and motor increase when non-productive running time is avoided.

Level control is used to control the filling or emptying of wastewater storage tanks. Fast-ramp starting creates a flush effect to keep pipes clear. Level control can be used within a station controlling up to eight pumps.

Pump cleaning or anti-jam is used in wastewater pumping stations to prevent pump and pipe clogging. A sequence of forward and/or reverse runs of the pump clean the impeller. If the pump cleaning function runs too often, an alarm is raised. The function can be timed to occur without interrupting the pumping duty cycle helping to maximize process uptime.



Dimensions

Frame size	Dimensions and weights			
	Height ¹⁾ mm	Depth ²⁾ mm	Width mm	Weight kg
A	364 (518)	219	94	3.2
B	380 (542)	297	101	5.4
C	567	298	166	15.6
D	567	298	221	21.3
E0	602	376	276	34
E	700	465	312	67
G1	1462 (1560) ³⁾	505 (515) ³⁾	305 (329) ³⁾	161 (191) ³⁾
G2	1662 (1710) ³⁾	505 (515) ³⁾	305 (329) ³⁾	199 (229) ³⁾

Notes

All dimensions and weights are without additional options.

¹⁾ Height is the maximum measure without clamping plates. In A and B frames the external C3 EMC-filter (height with filter in brackets). EMC-filter is internal in frames C, D, E0, E, G1 and G2.

²⁾ Total depth with control panel

³⁾ With +H381 optional cabling panel



Technical data and types

Technical specification

Mains connection	
Voltage and power range	3-phase, 380 to 480 V, +10/-15% (1.1 to 500 kW) 3-phase, 200 to 240 V, +10/-10% (0.37 to 22 kW)
Frequency	50 to 60 Hz ± 5%
Motor connection	
Motor types	Asynchronous AC induction motors, Synchronous reluctance AC motors
Voltage	3-phase, from 0 to U_N
Output frequency	0 to 500 Hz
Motor control	ABB's DTC (direct torque control)
Environmental limits	
Degree of protection	IP20 according to EN 60529, G1 and G2 frames IP00 (optionally IP20) Open type according to UL 508
Ambient temperature	-10 to +55 °C, derating above 40 °C, no frost allowed
Installation altitude	0 to 4000 m (IT network: 2000 m), derating above 1000 m: 1%/100 m
Relative humidity	Max. 95%, no condensation allowed
Contamination levels	According to IEC 60721-3-3: Chemical gases: Class 3C2, Solid particles: Class 3S2, No conductive dust allowed
Inputs and outputs	
2 analog inputs	Selectable for current and voltage
Voltage signal	0 to 10 V
Current signal	0 to 20 mA
2 analog outputs	0 to 20 mA
2 bidirectional digital I/Os	24 V logic levels, maximum 200 mA total output current
6 digital inputs	24 V logic levels
2 relay outputs	Maximum switching voltage 250 V AC/30 V DC, maximum continuous current 2 A rms
Modbus/Drive to drive link	Selectable, RS-485 serial link
I/O extensions	Analog I/O extension, FIO-11 Analog and digital I/O extension, FIO-21 Relay extension, FIO-31
Communication options	DeviceNet™ adapter, FDNA-01 PROFIBUS DP adapter, FPBA-01 Ethernet (EtherNet/IP™, Modbus/TCP), FENA-11 Modbus adapter, FSQA-01 LonWorks® adapter, FLON-01
Remote monitoring	Ethernet adapter, SREA-01
Protection functions	
	Over/undervoltage controller Motor short-circuit protection Input phase-loss detection (both motor and line) Overcurrent protection Drive temperature/overload controller Power limits Motor thermal protection
Product compliance	
Conformity to standards	CE, cUL, UL, CSA, GOST-R, C-Tick
Harmonics	IEC/EN 61000-3-12
EMC (according to EN 61800-3)	Category C3 (C2 with optional filter)
Functional safety	Safe torque off (STO according to EN 61800-5-2) IEC 61508: SIL 3 EN 62061: SILCL 3 EN ISO 13849-1: PL e
PC tools	
DriveStudio	Startup and maintenance tool
DriveSPC	Programming tool

Types and ratings

P_N (kW)		I_{2N} (A)	I_{cont} (A)	I_{max} (A)	Type designation (order code)	Frame size
$U_N=400$ V	$U_N=230$ V					
1.1	0.37	2.7	3	4.4	ACQ810-04-02A7-4/2*	A
1.1	–	3	3.6	5.3	ACQ810-04-03A0-4	A
1.5	0.55	3.5	4.8	7.0	ACQ810-04-03A5-4/2*	A
2.2	0.75	4.9	6	8.8	ACQ810-04-04A9-4/2*	A
3	1.1	6.3	8	10.5	ACQ810-04-06A3-4/2*	A
4	1.5	8.3	10.5	13.5	ACQ810-04-08A3-4/2*	B
5.5	2.2	11	14	16.5	ACQ810-04-11A0-4/2*	B
7.5	3	14.4	18	21	ACQ810-04-14A4-4/2*	B
11	5.5	21	25	33	ACQ810-04-021A-4/2*	C
15	7.5	28	30	36	ACQ810-04-028A-4/2*	C
18.5	–	35	44	53	ACQ810-04-035A-4	C
22	11	40	50	66	ACQ810-04-040A-4/2*	C
30	15	53	61	78	ACQ810-04-053A-4/2*	D
37	18.5	67	78	100	ACQ810-04-067A-4/2*	D
45	22	80	94	124	ACQ810-04-080A-4/2*	D
55	–	98	103	138	ACQ810-04-098A-4	E0
75	–	138	144	170	ACQ810-04-138A-4	E0
90	–	162	202	282	ACQ810-04-162A-4	E
110	–	203	225	326	ACQ810-04-203A-4	E
132	–	240	260	326	ACQ810-04-240A-4	E
160	–	286	290	348	ACQ810-04-286A-4	E
200	–	377	387	470	ACQ810-04-377A-4	G1
250	–	480	500	560	ACQ810-04-480A-4	G1
315	–	570	580	680	ACQ810-04-570A-4	G1
355	–	634	650	730	ACQ810-04-634A-4	G1
400	–	700	710	850	ACQ810-04-700A-4	G2
450	–	785	807	1020	ACQ810-04-785A-4	G2
500	–	857	875	1100	ACQ810-04-857A-4	G2

P_N = Typical motor power

I_{2N} = 110% overload allowed for 1 minute every 5 minutes through the entire speed range

I_{cont} = Continuous output current with no overload capacity

I_{max} = Maximum output current. Available for 10 s at start, otherwise as long as allowed by drive temperature.

* The last number in type code (4 or 2) refers nominal supply voltage U_N . Select number 4 when U_N is 400 V and number 2 when U_N is 230 V.

Note: The ratings apply at 40 °C ambient temperature