

ABB drives for HVAC

ACH580-01 technical data sheet

Comprehensive climate control, effortless operation

The next evolution of climate control sets new standards both in simplicity and reliability. It can be integrated with any motor. It communicates in the languages you and your system already know. It exceeds specifications in mission critical environments. It provides productivity through comfort in commercial buildings. And the best part? All you need to do is to set it up and focus on what counts.

Introducing the ACH580 drives for HVAC.

Technical data

Supply connection

Voltage and power range	3-phase, 380 to 480 V, +10/-15% (0.75 to 250 kW), auto-identification of supply voltage
Frequency	48 to 63 Hz
Fundamental power factor	0.98
Efficiency at rated power	98%

Motor connection

Supported motor control	Scalar and vector
Supported motor types	Asynchronous motor, permanent magnet motor (vector), SynRM (vector)
Voltage	3-phase, from 0 to supply voltage
Frequency	0 to 500 Hz

Environmental limits

Ambient temperature

Transportation and storage	-40 to 70 °C
Air temperature/relative humidity (operation)	-15 to +50 °C; 5 to 95% no condensation allowed
Output current	Rated current available at 0 to 1000 m reduced by 1% per 100 m over 1000 to 2000 m 2000 to 4000 m, please consult ABB
Degree of protection	IP21 (UL type 1) or IP55 (UL type 12)

Inputs and outputs

2 analog inputs

Current/voltage input mode selected from control panel	Current/voltage input mode selected from control panel
Voltage signal	0 (2) to 10 V, $R_{in} > 200 \text{ k}\Omega$
Current signal	0 (4) to 20 mA, $R_{in} = 100 \Omega$
Potentiometer reference value	10 V $\pm 1\%$ max. 20 mA

2 analog outputs

AO1 software configurable for current or voltage. AO2 current	AO1 software configurable for current or voltage. AO2 current
Voltage signal	0 to 10 V, $R_{load} > 100 \text{ k}\Omega$
Current signal	0 to 20 mA, $R_{load} < 500 \Omega$

Internal auxiliary voltage

24 V DC $\pm 10\%$, max. 250 mA	24 V DC $\pm 10\%$, max. 250 mA
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6 digital inputs

12 to 24 V DC, 24 V AC, Connectivity of PTC sensors supported by a single digital input. PNP or NPN connection (5 DIs with NPN connection).	12 to 24 V DC, 24 V AC, Connectivity of PTC sensors supported by a single digital input. PNP or NPN connection (5 DIs with NPN connection).
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3 relay and outputs

Maximum switching voltage 250 V AC/30 V DC. Maximum continuous current 2 A rms.	Maximum switching voltage 250 V AC/30 V DC. Maximum continuous current 2 A rms.
PTC and PT 100	Any of the analog inputs, or digital input 6, are configurable for PTC with up to 6 sensors. Both analog outputs can be used to feed the PT100 sensor

External power supply

Optional in frames R0... R5	1.04 A at 24 V AC/DC $\pm 10\%$
Standard in frames R6... R9	1.50 A at 24 V AC/DC $\pm 10\%$

Communication

Protocols as standard (EIA-485): BACnet MS/TP, Modbus RTU and N2	Protocols as standard (EIA-485): BACnet MS/TP, Modbus RTU and N2
Available as plug-in options: BACnet/IP LonWorks, Modbus TCP, etc.	Available as plug-in options: BACnet/IP LonWorks, Modbus TCP, etc.
Available as an external option: Ethernet adapter for remote monitoring	Available as an external option: Ethernet adapter for remote monitoring

Application functions

First start assistant	First start assistant
Primary settings for HVAC applications	Primary settings for HVAC applications
Hand-Off-Auto operation mode	Hand-Off-Auto operation mode
Start interlock (de-frost)	Start interlock (de-frost)
Delayed start	Delayed start
Run permissive (damper monitoring)	Run permissive (damper monitoring)
Override operation mode	Override operation mode
Real time clock (scheduling)	Real time clock (scheduling)
Loop controllers for motor and process	Loop controllers for motor and process
Motor flying start	Motor flying start
Motor preheating	Motor preheating
Energy optimizer and calculators	Energy optimizer and calculators

Protection functions

Overvoltage controller	Overvoltage controller
Undervoltage controller	Undervoltage controller
Motor Earth-leakage monitoring	Motor Earth-leakage monitoring
Motor short-circuit protection	Motor short-circuit protection
Motor overtemperature protection	Motor overtemperature protection
Output and input switch supervision	Output and input switch supervision
Motor overload protection	Motor overload protection
Phase-loss detection (both motor and supply)	Phase-loss detection (both motor and supply)
Under load supervision (belt loss detection)	Under load supervision (belt loss detection)
Overload supervision	Overload supervision
Stall protection	Stall protection
Loss of AI signal monitoring	Loss of AI signal monitoring

Product compliance

Low Voltage Directive 2006/95/EC	Low Voltage Directive 2006/95/EC
EMC Directive 2004/108/EC	EMC Directive 2004/108/EC
Quality assurance system ISO 9001 and Environmental system ISO 14001	Quality assurance system ISO 9001 and Environmental system ISO 14001
CE, UL, cUL, and EAC approvals	CE, UL, cUL, and EAC approvals
Galvanic isolation according to PELV	Galvanic isolation according to PELV
RoHS2 (Restriction of Hazardous Substances)	RoHS2 (Restriction of Hazardous Substances)
EN 61800-5-1:2007; IEC/EN 61000-3-12; EN61800-3: 2004 + A1: 2012 Category C2 (1st environment restricted distribution); Safe torque off (EN 61800-5-2)	EN 61800-5-1:2007; IEC/EN 61000-3-12; EN61800-3: 2004 + A1: 2012 Category C2 (1 st environment restricted distribution); Safe torque off (EN 61800-5-2)

Standards and directives

Class C2 (1st environment restricted distribution)	Class C2 (1 st environment restricted distribution)
IEC/EN 61000-3-12	IEC/EN 61000-3-12

$U_N = 380 \text{ to } 480 \text{ V (380, 400, 415, 440, 460, 480 V)}$			
Frame size	Types and nominal ratings		Type designation ¹⁾ IP21/UL type 1
	P_N kW	I_N A	
R0	0.75	2.6	ACH580-01-02A6-4
R0	1.1	3.3	ACH580-01-03A3-4
R0	1.5	4.0	ACH580-01-04A0-4
R0	2.2	5.6	ACH580-01-05A6-4
R1	3.0	7.2	ACH580-01-07A2-4
R1	4.0	9.4	ACH580-01-09A4-4
R1	5.5	12.6	ACH580-01-12A6-4
R2	7.5	17.0	ACH580-01-017A-4
R2	11.0	25.0	ACH580-01-025A-4
R3	15.0	32.0	ACH580-01-032A-4
R3	18.5	38.0	ACH580-01-038A-4
R3	22.0	45.0	ACH580-01-045A-4
R4	30	62	ACH580-01-062A-4
R4	37	73	ACH580-01-073A-4
R5	45	88	ACH580-01-088A-4
R5	55	106	ACH580-01-106A-4
R6	75	145	ACH580-01-145A-4
R7	90	169	ACH580-01-169A-4
R7	110	206	ACH580-01-206A-4
R8	132	246	ACH580-01-246A-4
R8	160	293	ACH580-01-293A-4
R9	200	363	ACH580-01-363A-4
R9	250	430	ACH580-01-430A-4

Dimensions, weights and free space requirements							
Frame size	IP21/UL type 1						
	H1 mm	H2 mm	H3 mm	H4 mm	W mm	D mm	Weight kg
R0	-	-	303	330	125	210	4.5
R1	-	-	303	330	125	223	4.6
R2	-	-	394	430	125	227	7.5
R3	-	-	454	490	203	228	14.9
R4	-	-	600	636	203	257	19
R5	596	596	732	633	203	295	34
R6	548	549	726	589	252	369	45
R7	600	601	880	641	284	370	55
R8	680	677	965	721	300	393	70
R9	680	680	955	741	380	418	98

Frame size	IP55/UL type 12				
	H3 (mm)	H4 (mm)	W (mm)	D (mm)	Weight (kg)
R0	303	330	125	222	5.1
R1	303	330	125	233	5.5
R2	394	430	125	239	7.8
R3	454	490	203	237	15.1
R4	600	636	203	265	20
R5	732	632.5	203	320	34
R6	726	589.4	252	380	46
R7	880	641.4	284	381	56
R8	965	721.1	300	452	74
R9	955	741.4	380	477	102

NOTE: HVAC control panel and EMC filter are included as standard.

Nominal ratings

I_N	Nominal output current
P_N	Typical motor continuous power at an ambient temperature 50 °C

1) For the IP55 (UL Type 12) unit, add +B056 at the end of the type code.

H1 = Height with cable connection box
W = Width
D = Depth



For more information please contact:
<http://new.abb.com/drives/segments/hvac>

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