PRODUCT OVERVIEW

ACH580-01/-31

The ACH580 drive sets new standards in both simplicity and reliability, and ensures smooth, energy-efficient operation of your HVAC systems in normal and mission-critical situations.

ACH580-01, wall-mounted base drives
The ACH580-01 wall-mounted drives are available from 1 to 100 HP at 208/240 V, 1 to 350 HP at 480 V, and 2 to 250 HP at 575 V. The ACH580-01 drives are available in UL (NEMA) Type 1 and 12 configurations. In standard installations, the drive is mounted directly onto a wall and uses the provided conduit box. Conduit openings are provided for bottom conduit entry & exit. For mounting in a customer-supplied cabinet, the conduit box may be removed. The ACH580-01 is a six-pulse drive that includes a 5% equivalent impedance for harmonic mitigation. The drive has a 100 kA SCCR rating when paired with appropriately sized upstream fuses.

ACH580-31, ultra low harmonic wall-mounted base drives
The ACH580-31 wall-mounted drives are available from 5 to 150 HP at 480 V. The ACH580-31 are available in UL (NEMA) Type 1 and 12 configurations. In standard installations, the drive is mounted directly onto a wall and uses the provided conduit box. Conduit openings are provided for bottom conduit entry and exit. For mounting in a customer-supplied cabinet, the conduit plate may be removed.

Features for HVAC
The ACH580 comes standard with an intuitive control panel used to configure, control, and monitor the drive. An optional Bluetooth control panel allows the drive to configured via the control panel or the DriveTune app.

A robust HVAC firmware package provides drive, motor, and application protection features. Examples of drive protection features include undervoltage, overvoltage, overcurrent, and ground fault protection. The ACH580 also has a variety of motor protection features including overload and stall protections.

Application specific features, such as accepting four separate start interlocks (safeties), along with broken belt detection, are also included. The drive includes BACnet MS/TP, Modbus RTU, and Johnson N2 as standard. Additional protocols, such as BACnet/IP and LonWorks (coming 2019), are available with optional fieldbus adapters.

Feature overview

Communication

Protocols as standard (EIA-485): BACnet MS/TP, Modbus RTU, Johnson Controls N2
Available as plug-in options: BACnet/IP, Modbus TCP, PROFIBUS-DP, DeviceNet, EtherNet/IP, LonWorks (coming 2019)

Application functions

Start interlock
Delayed start
Run permissive (damper monitoring)
Override operation mode
Real-time clock (scheduling)
PID controllers for motor and process
Motor flying start
Motor preheating
Energy optimizer and calculators
Timer
2 or 3 wire start/stop
Ramp to stop
2 independent adjustable accel/decel ramp

Protection functions

Overvoltage controller
Undervoltage controller
Motor earth-leakage monitoring
Motor short-circuit protection
Motor overtemperature protection
Output and input switch supervision
Motor overload protection (UL508C)
Phase-loss detection (both motor and supply)
Under load supervision (belt loss detection)
Overload supervision
Stall protection
Loss of reference
Panel loss
Ground fault
External events
Overcurrent
Current limit regulator
Transient/Surge protection (MOV and choke)

Panel functions

First start assistant
Primary settings for HVAC applications
Hand-Off-Auto operation mode
HVAC quick set-up
Includes Day, Date and Time
Operator Panel Parameter Backup (read/write)
Full Graphic and Multilingual Display for Operator Control, Parameter Set-Up and Operating Data Display:
- Output Frequency (Hz)
- Speed (RPM)
- Motor Current
- Calculated % Motor Torque
- Calculated Motor Power (kW)
- DC Bus Voltage
- Output Voltage
- Heatsink Temperature
- Elapsed Time Meter (resettable)
- kWh (resettable)
- Input / Output Terminal Monitor
- PID Actual Value (Feedback) & Error Fault Text
- Warning Text
- Three (3) Scalable Process Variable Displays
- User-Definable Engineering Units

Motor control features

Scalar (V/Hz) and vector modes of motor control
V/Hz shapes
- Linear
- Squared

Energy optimization
IR compensation
Slip compensation
Three (3) Critical Frequency Lockout Bands

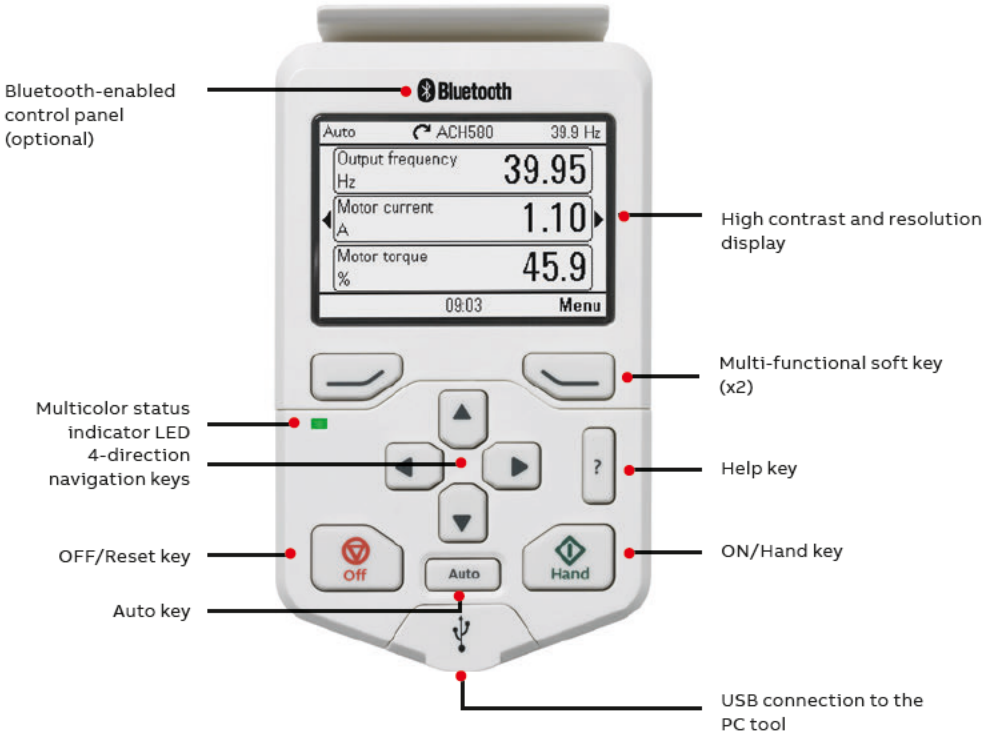
PID control

One (1) Process PID
Four (4) Integral Independent Programmable PID
Setpoint Controllers (Process and External)
External Selection between Two (2) Sets of Process PID Controller Parameters
PID Sleep/Wake-Up

Control panel features

The ACH580 Assistant Control Panel features:

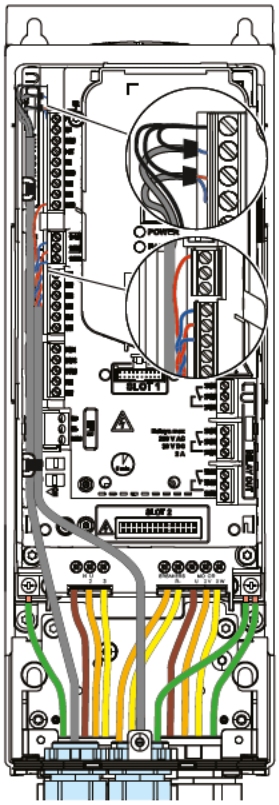
- Intuitive to operate
- Primary Setting menu to ease drive commissioning
- Real-time clock
- Diagnostic and maintenance functions
- Full-graphic display, including chart, graph, and meter options
- 21 editable home views
- USB interface for PC and tool connection as standard
- Parameters are alpha-numeric
- North American version supports 14 languages as standard
- Dedicated “Help” key
- 4 user sets
- Parameter are stored in control panel memory for later transfer to other drives or for backup of a particular system
- Back-up and restore parameters and/or motor data
- Automatic back-up 2 hours after parameter change
- Modified parameter display
- Creates unique short menu
- Shows parameters that differ from the default
- Bluetooth connectivity for use with mobile device (requires +J429 option)



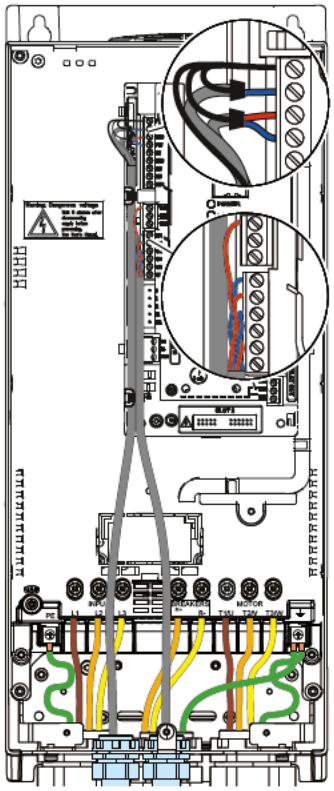
Cable connections

The following illustrations show the ACH580-01 and ACH580-31 cable connection points for the base drive. The illustrations indicate the location of input and output power connections as well as equipment and motor grounding connection points.

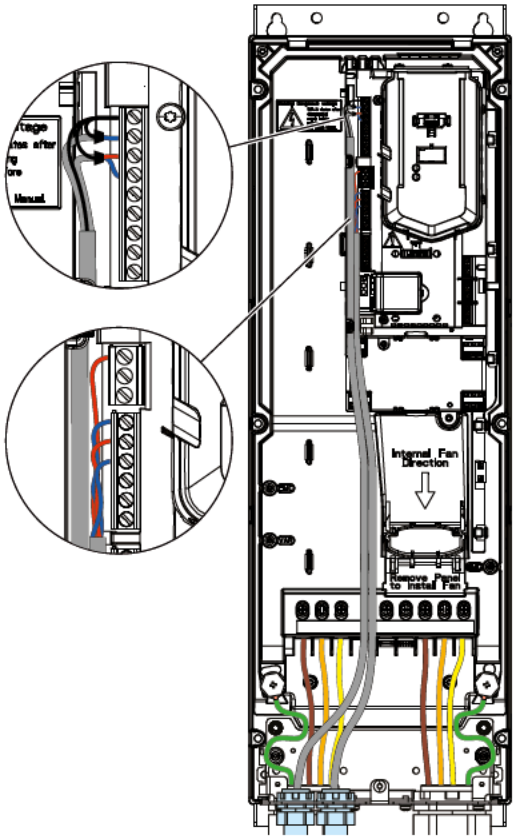
ACH580 drives are configured for wiring access from the bottom only. At least three separate metallic conduits are required, one for input power, one for output power to the motor and one for control signals.



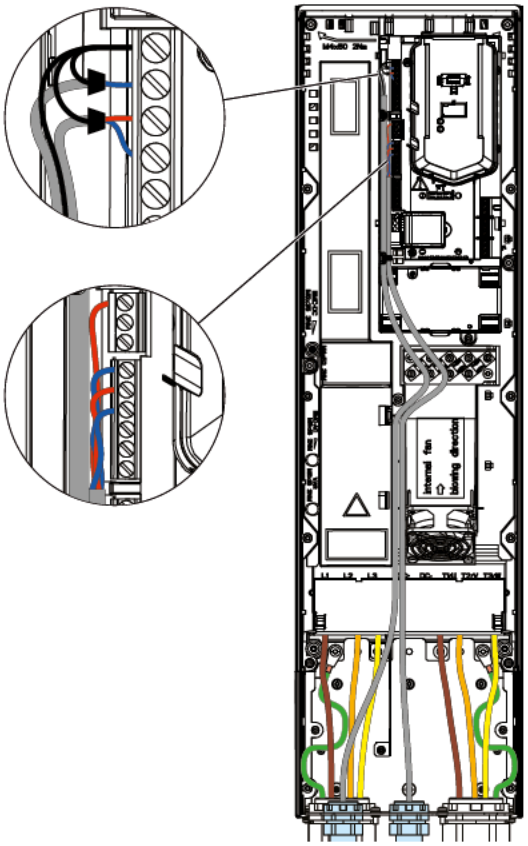
ACH580-01, R1-R2, UL (NEMA) Type 1 and 12



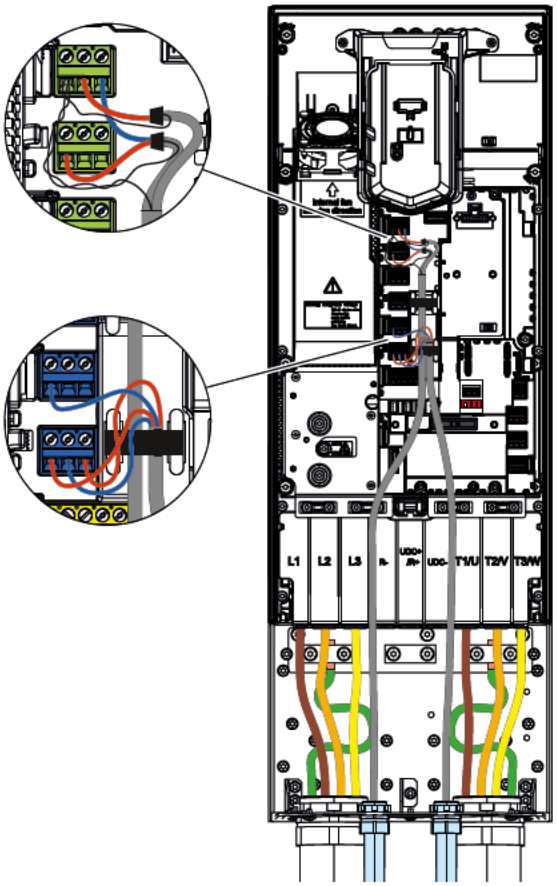
ACH580-01, R3, UL (NEMA) Type 1 and 12



ACH580-01, R4, UL (NEMA) Type 1 and 12

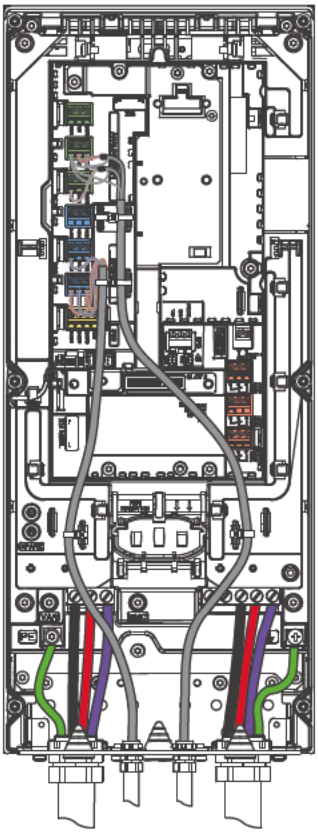


ACH580-01, R5, UL (NEMA) Type 1 and 12



ACH580-01, R6-9, UL (NEMA) Type 1 and 12

Cable connections



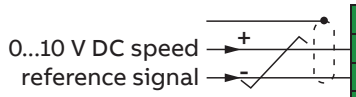
ACH580-31, R3, UL (NEMA) Type 1 and 12

Control connections

Default I/O connections

This is the default configuration of control connections for HVAC applications.

Default control connections for the HVAC default



X1		Reference voltage and analog inputs and outputs
1	SCR	Signal cable shield (screen)
2	AI1	**Output frequency/speed reference**: 0 to 10 V
3	AGND	Analog input circuit common
4	+10 V	Reference voltage 10 V DC
5	AI2	**Actual feedback:** 0 to 20 mA
6	AGND	Analog input circuit common
7	AO1	**Output frequency:** 0 to 10 V
8	AO2	**Output current:** 0 to 20 mA
9	AGND	Analog output circuit common
X2 & X3		Aux. voltage output and programmable digital inputs
10	+24 V	Aux. voltage output +24 V DC, max. 250 mA
11	DGND	Aux. voltage output common
12	DCOM	Digital input common for all
13	DI1	**Stop (0)/Start (1)**
14	DI2	Not configured
15	DI3	**Constant frequency/speed selection**
16	DI4	**Start interlock 1 (1 = allow start)**
17	DI5	Not configured
18	DI6	Not configured

Start/Stop signal

Safety

X6, X7, X8		Relay outputs		
19	RO1C		**Damper control** 250 V AC / 30 V DC 2 A	**Energize damper** 19 connected to 21
20	RO1A			
21	RO1B			
22	RO2C		**Running** 250 V AC / 30 V DC 2 A	**Running** 22 connected to 24
23	RO2A			
24	RO2B			
25	RO3C		**Fault (-1)** 250 V AC / 30 V DC 2 A	**Fault condition** 25 connected to 26
26	RO3A			
27	RO3B			

Run status

Fault status

X5		Embedded fieldbus
29	B+	Embedded fieldbus, EFB (EIA-485)
30	A-	
31	DGND	
S4	TERM	Termination switch
S5	BIAS	Bias resistors switch
X4		Safe torque off
34	OUT1	Safe torque off
35	OUT2	
36	SGND	
37	IN1	
38	IN2	
X10		24 V AC/DC
40	24V AC/DC+ in	Ext. 24V AC/DC input to power up the control unit when the main supply is disconnected.
41	24V AC/DC- in	

X10 (24 V AC/DC) applicable to ACH580-01 R6-R9 and ACH580-31/34 only.

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