

# ACH550

User's Manual

ACH550-UH HVAC Drives (1...550 HP)

ACH550-BCR/BDR/VCR/VDR E-Clipse Bypass Drives (1...400 HP)

ACH550-PCR/PDR Packaged Drives with Disconnect (1...550 HP)



## List of related manuals

### GENERAL MANUALS

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#### **ACH550-UH HVAC Drives User's Manual (1...550 HP)**

3AUA0000004092 (English)

- Safety
- Installation
- Control panel
- Start-up
- Application macros
- Parameters
- Embedded fieldbus
- Fieldbus adapter
- Diagnostics
- Maintenance
- Technical data

#### **ACH550-BCR/BDR/VCR/VDR E-Clipse Bypass Drives User's Manual (1...400 HP)**

3AUA0000016461 (English)

- Safety
- Installation
- Control panel
- Start-up
- Bypass functions overview
- Application macros
- Parameters
- Embedded fieldbus
- Fieldbus adapter
- Diagnostics
- Technical data

#### **ACH550-PCR/PDR Packaged Drives with Disconnect User's Manual (1...550 HP)**

3AUA0000031590 (English)

- Safety
- Installation
- Maintenance
- Technical data

### OPTION MANUALS

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(delivered with optional equipment)

#### **MFDT-01 FlashDrop User's Manual**

3AFE68591074 (English)

#### **OHD1-01 115/230 V Digital Input Module User's Manual**

3AUA0000003101 (English)

#### **OREL-01 Relay Output Extension Module User's Manual**

3AUA0000001935 (English)

#### **RCNA-01 ControlNet Adapter User's Manual**

3AFE64506005 (English)

#### **RDNA-01 DeviceNet Adapter User's Manual**

3AFE64504223 (English)

#### **RETA-01 Ethernet Adapter Module User's Manual**

3AFE64539736 (English)

#### **RETA-02 Ethernet Adapter Module User's Manual**

3AFE68895383 (English)

#### **RLON-01 LONWORKS® Adapter Module User's Manual**

3AFE64798693 (English)

#### **RPBA-01 PROFIBUS DP Adapter Module User's Manual**

3AFE64504215 (English)

#### **SREA-01 Ethernet Adapter User's Manual**

3AUA0000042896 (English)

Typical contents

- Safety
- Installation
- Programming/Start-up
- Diagnostics
- Technical data

### MAINTENANCE MANUALS

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#### **Guide for Capacitor Reforming in ACS50, ACS55, ACS150, ACS310, ACS320, ACS350, ACS550 and ACH550**

3AFE68735190 (English)

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ACH550-PCR/PDR Packaged Drives  
with Disconnect  
1...550 HP

**User's Manual**



# Safety

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## Use of warnings and notes

There are two types of safety instructions throughout this manual:

- Notes draw attention to a particular condition or fact, or give information on a subject.
- Warnings caution you about conditions which can result in serious injury or death and/or damage to the equipment. They also tell you how to avoid the danger. The warning symbols are used as follows:



**Electricity warning** warns of hazards from electricity which can cause physical injury and/or damage to the equipment.



**General warning** warns about conditions, other than those caused by electricity, which can result in physical injury and/or damage to the equipment.



**WARNING!** The ACH550 adjustable speed AC drive should ONLY be installed by a qualified electrician.

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**WARNING!** Even when the motor is stopped, dangerous voltage is present at the power circuit terminals U1, V1, W1 (L1, L2, L3) and U2, V2, W2 (T1, T2 T3) and, depending on the frame size, UDC+ and UDC-, or BRK+ and BRK-.

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**WARNING!** Dangerous voltage is present when input power is connected. After disconnecting the supply, wait at least 5 minutes (to let the intermediate circuit capacitors discharge) before removing the cover.

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**WARNING!** Even when power is switched off from the input terminals of the ACH550, there may be dangerous voltage (from external sources) on the terminals of the relay outputs.

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**WARNING!** When the control terminals of two or more drives are connected in parallel, the auxiliary voltage for these control connections must be taken from a single source which can either be one of the drives or an external supply.

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**WARNING!** Disconnect the internal EMC filter when installing the drive on an IT system (an ungrounded power system or a high-resistance-grounded [over 30 ohm] power system).

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**WARNING!** Do not attempt to install or remove EM1, EM3, F1 or F2 screws while power is applied to the drive's input terminals.

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**WARNING!** Do not control the motor with the disconnecting device (disconnecting means); instead, use the control panel keys or commands via the I/O board of the drive. The maximum allowed number of charging cycles of the DC capacitors (i.e. power-ups by applying power) is five in ten minutes.

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**WARNING!** Never attempt to repair a malfunctioning ACH550; contact the factory or your local Authorized Service Center for repair or replacement.

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**WARNING!** The ACH550 will start up automatically after an input voltage interruption if the external run command is on.

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**WARNING!** The heat sink may reach a high temperature.

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**Note:** For more technical information, contact the factory or your local ABB representative.

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# Installation

Study these installation instructions carefully before proceeding. **Failure to observe the warnings and instructions may cause a malfunction or personal hazard.**



**WARNING!** Before you begin read [Safety](#) on page [3-3](#).



**WARNING!** When the ACH550 with Input Disconnect is connected to the line power, the Motor Terminals T1, T2, and T3 are live even if the motor is not running. Do not make any connections when the ACH550 with Input Disconnect is connected to the line. Disconnect and lock out power to the drive before servicing the drive. Failure to disconnect power may cause serious injury or death.

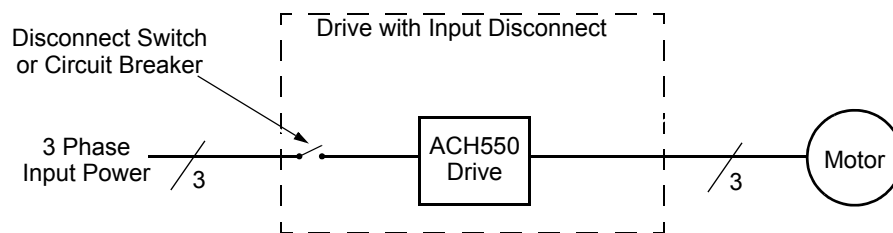
## Application

This manual contains supplemental information that is unique to ACH550 input disconnect configurations (PCR or PDR). Refer to the base manual, ACH550-UH HVAC User's Manual (1...550 HP) on page [1-1](#), for all other information.

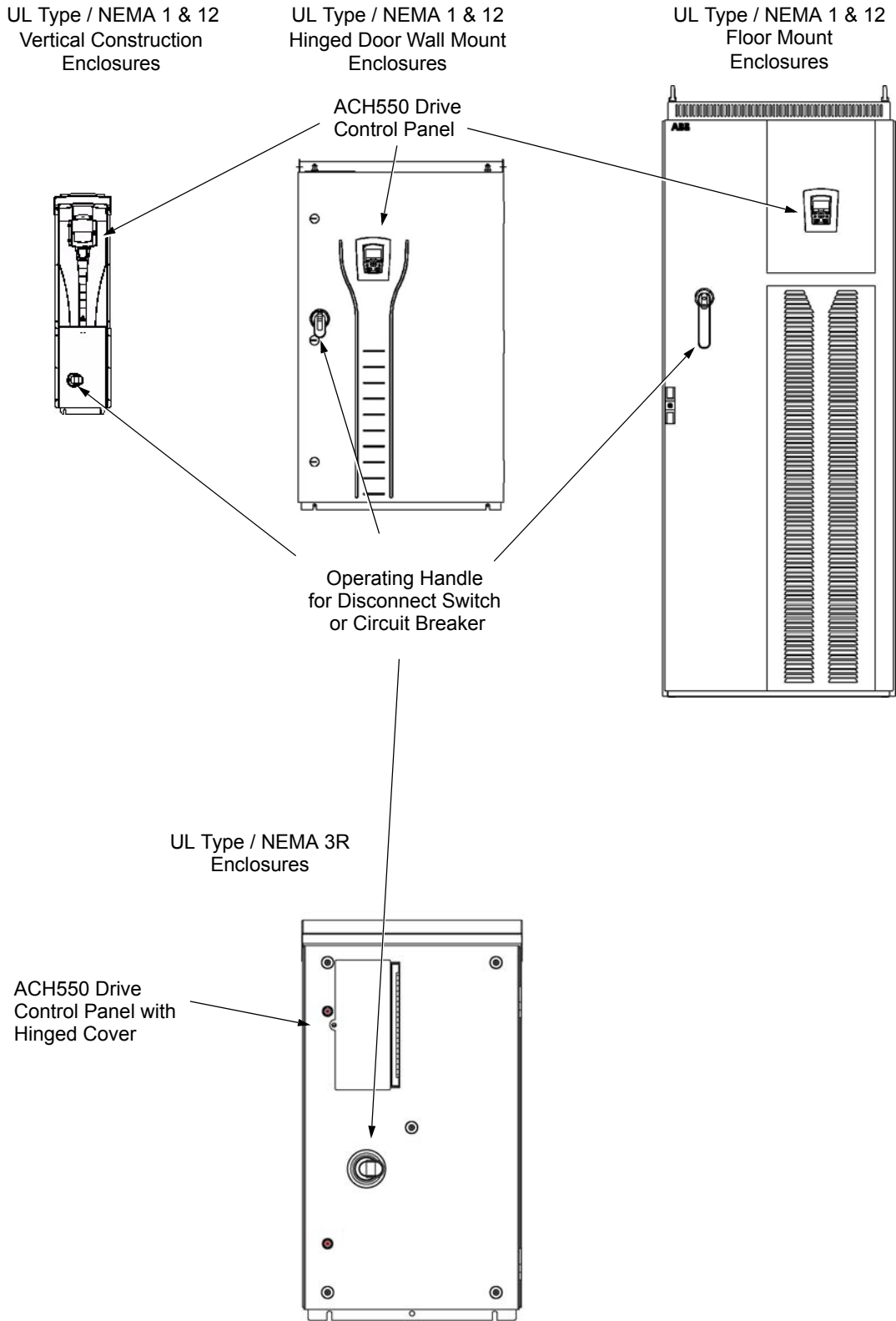
## Input disconnect features and functions

The ACH550 with Input Disconnect is an ACH550 AC adjustable frequency drive packaged with an input disconnect switch or circuit breaker, and with a door mounted, external operating handle. The operating handle can be padlocked in the OFF position (padlock not supplied). Enclosure options are UL Type 1, UL Type 12, and UL Type 3R (NEMA 1, NEMA 12, and NEMA 3R).

The following is a typical power diagram.



The following shows the front view of the ACH550 Drive with Input Disconnect standard configurations, and identifies the major components.



## Installation flow chart

The installation of Input Disconnect configurations for ACH550 drives follows the outline below. The steps must be carried out in the order shown. At the right of each step are references to the detailed information needed for the correct installation of the unit.

**Note:** References in the middle column below are to the ACH550-UH User's Manual. References in the third column below are to this manual.

Task	Refer to the ACH550-UH User's Manual <i>Installation</i> section	Additional Reference in this Manual
<b>PREPARE</b> for installation	<i>Preparing for installation</i>	<ul style="list-style-type: none"> <li>• <i>Drive identification</i> on page 3-10.</li> <li>• <i>Note: Some instructions in this document vary, depending on the drive's frame size. To read the Ratings table, you need the "Output current rating" entry from the Type code (see page 3-10). Also see Suitable mounting location</i> on page 3-11.</li> </ul>
<b>PREPARE</b> the mounting location	<i>Prepare the mounting location</i>	--
<b>REMOVE</b> the front cover	<i>Remove front cover</i>	--
<b>MOUNT</b> the drive	<i>Mount the drive</i>	--
<b>INSTALL</b> wiring	<i>Wiring overview</i> and <i>Install the wiring</i>	<i>Installing the wiring (supplement to ACH550-UH User's Manual)</i> on page 3-11.
<b>CHECK</b> installation	<i>Check installation</i>	--
<b>RE-INSTALL</b> the cover	<i>Re-install cover</i>	--
<b>APPLY</b> power	<i>Apply power</i>	--
<b>START-UP</b>	<i>Start-up</i>	--

## Preparing for installation (supplement to ACH550-UH User's Manual)

### Drive identification

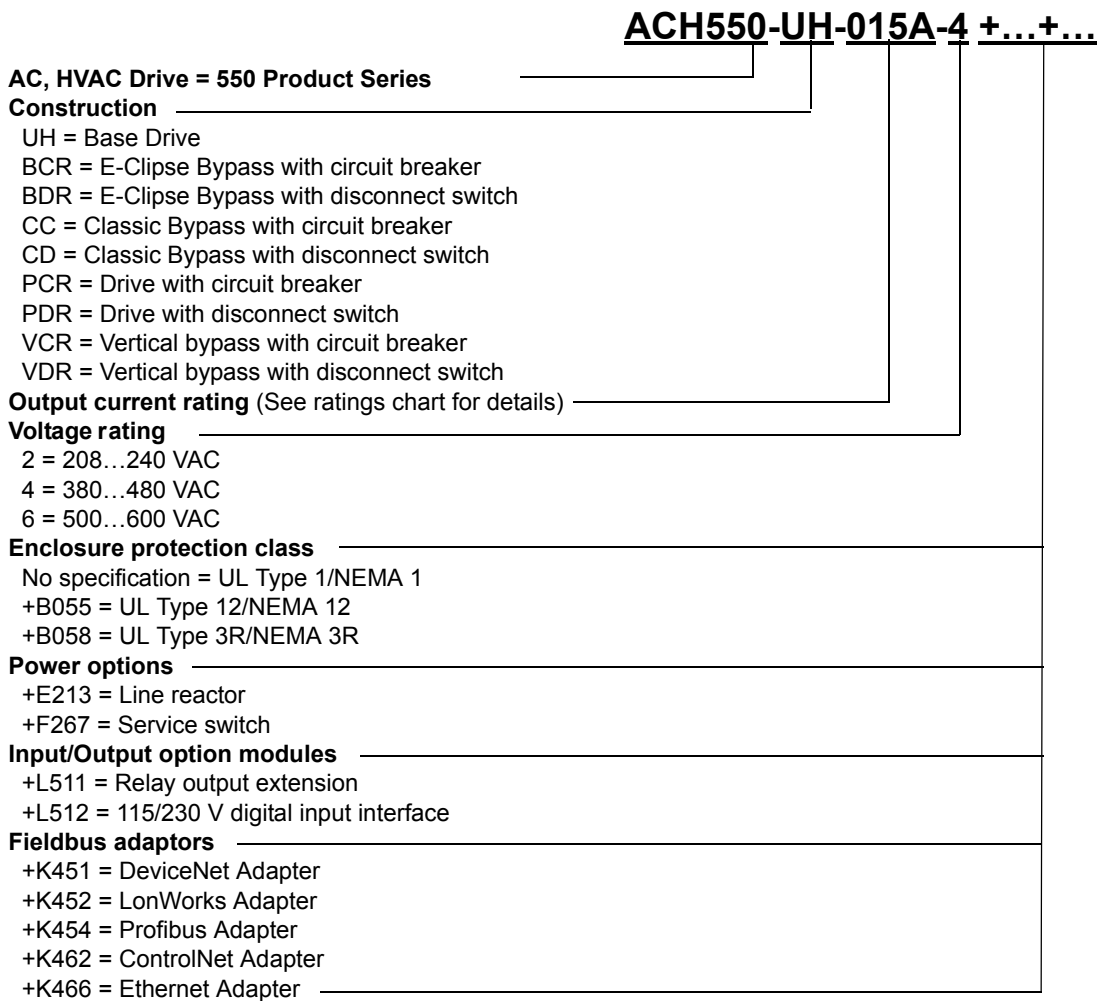
#### Drive label

To identify the type of device you are installing, refer to the type code number on the device identification label.

- Wall mounting base drives – label attached on the side surface of the heat sink.
- Packaged drive with screw cover – label attached to outside surface on the left side of enclosure.
- Enclosure with hinged cover/door – label on inside surface of the cover/door.

#### Type code

Use the following to interpret the type code found on the identification label.



### Ratings and frame size

The charts in the [Ratings](#) section on page [1-297](#) of the ACH550-UH User's Manual manual list technical specifications, and identify the drive's frame size.

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**Note:** Some instructions in this document vary, depending on the drive's frame size. To read the Ratings table, you need the "Output current rating" entry from the [Type code](#) (see page [3-10](#)).

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### Suitable mounting location

For selecting a suitable mounting location for PCR/PDR configurations, refer to:

- The ACH550-UH User's Manual on page [1-13](#), and
- The [Technical data](#) section on page [3-19](#) in this manual for the appropriate information on dimensions and weights
- UL Type 3R, PX3R-1...PX3R-4 enclosures are designed to be mounted on a wall. Mounting these 3R enclosures on an open rack system requires the use of the supplied 3R enclosure back plates to maintain 3R integrity.

## Installing the wiring (supplement to ACH550-UH User's Manual)

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### WARNING!

- Metal shavings or debris in the enclosure can damage electrical equipment and create a hazardous condition. Where parts, such as conduit plates require cutting or drilling, first remove the part. If that is not practical, cover nearby electrical components to protect them from all shavings or debris.
  - Do not connect or disconnect input or output power wiring, or control wires, when power is applied.
  - Never connect line voltage to drive output Terminals T1, T2, and T3.
  - Do not make any voltage tolerance tests (Hi Pot or Megger) on any part of the unit. Disconnect motor wires before taking any measurements in the motor or motor wires.
  - Make sure that power factor correction capacitors are not connected between the drive and the motor.
- 

### Wiring requirements

Refer to the [Wiring requirements](#) section on page [1-18](#) in the ACH550-UH User's Manual. The requirements apply to all ACH550 drives. In particular:

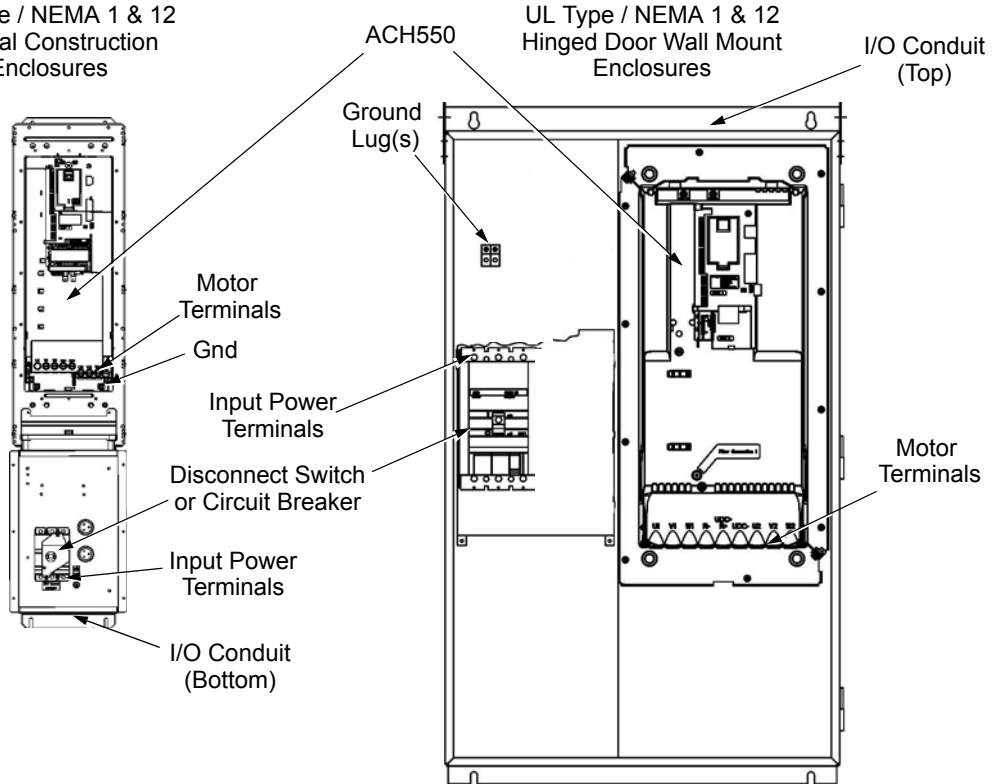
- Use separate, metal conduit runs for the following different classes of wiring:
    - Input power wiring.
    - Motor wiring.
    - Control/communications wiring.
  - Properly and individually ground the drive, the motor and cable shields.
-

**Wiring overview**

*Connection diagrams – standard drive with input disconnect (wall mounted)*

The following figure shows the Standard Drive with Input Disconnect (wall mounted) wiring connection points. Refer to the ACH550-UH User's Manual page 1-315 for control connections to the drive.

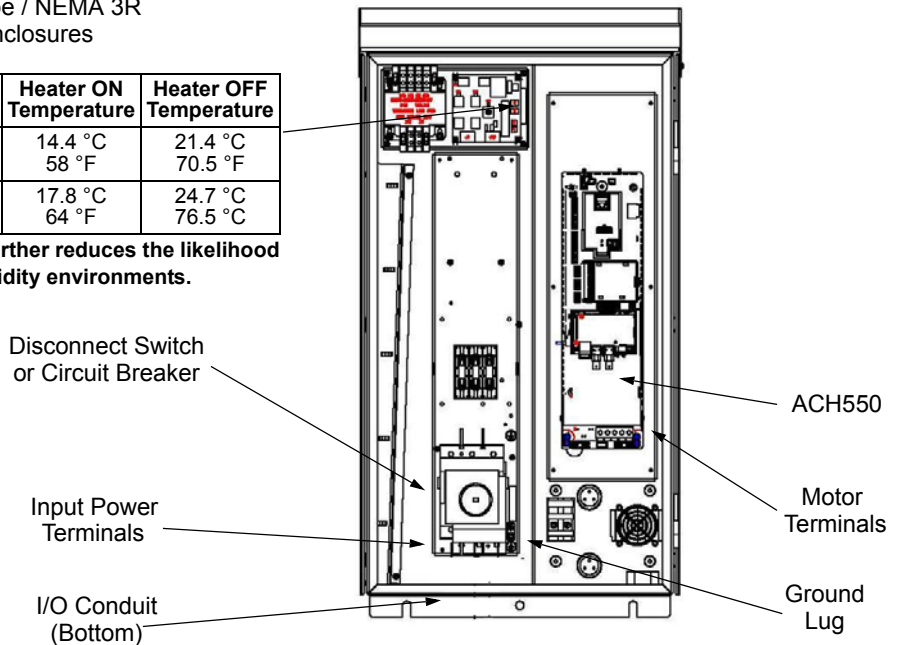
UL Type / NEMA 1 & 12  
Vertical Construction  
Enclosures



UL Type / NEMA 3R  
Enclosures

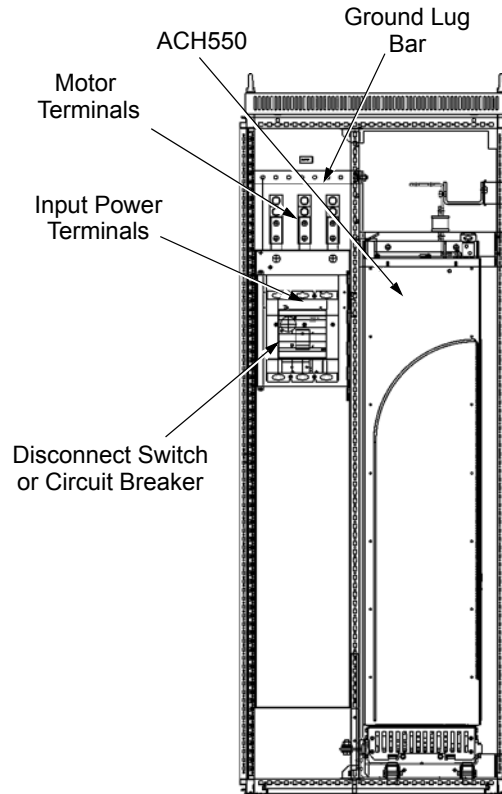
RHTR Temperature HI / LO Jumper (X1)	Heater ON Temperature	Heater OFF Temperature
Default Setting (X1 jumper in LO position)	14.4 °C 58 °F	21.4 °C 70.5 °F
Alternate Setting (X1 jumper in HI position)	17.8 °C 64 °F	24.7 °C 76.5 °C

The alternate (HI) setting further reduces the likelihood of condensate in high humidity environments.



*Connection diagrams – standard drive with input disconnect (floor mounted)*

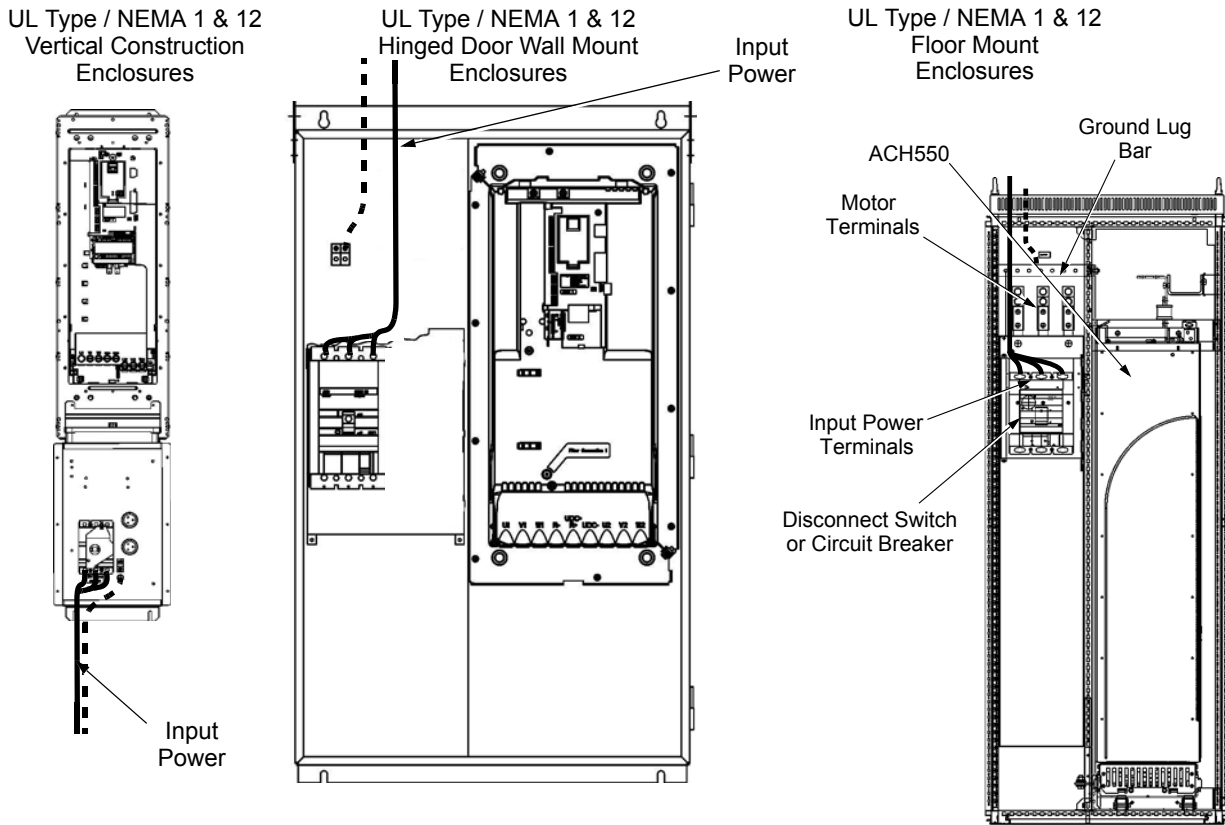
Floor mounted UL Type / NEMA 1 & 12 Drive with Input Disconnect units are configured for wiring access from the top and include a removable conduit mounting plate. The following figure shows the wiring connection points. Refer to the ACH550-UH User's Manual page [1-315](#) for control connections to the drive.



### Install the line input wiring

#### Line input connections – standard drive with input disconnect configurations

Connect input power to the terminals of the disconnect switch or circuit breaker. Connect the equipment grounding conductor to the ground lug at the top of the enclosure. The figure below shows the connection points for Standard Drive with Input Disconnect configurations.



Dashed line is ground run.

**Note:** The terminals on disconnect switches for the following rated ACH550-PDR products is 7 in-lbs. Do not use a power driver or over tighten to prevent breaking screw heads or stripping the terminal.

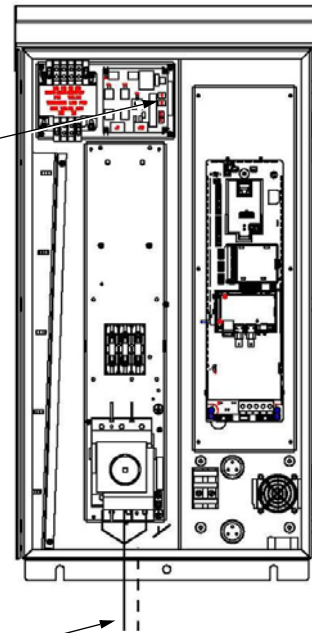
230 VAC	460 VAC	600 VAC
-04A6-2	-03A3-4	-02A7-6
-06A6-2	-04A1-4	-03A9-6
-07A5-2	-06A9-4	-06A1-6
-012A-2	-08A8-4	-09A0-6
-017A-2	-012A-4	-011A-6
-024A-2	-015A-4	-017A-6
-031A-2	-023A-4	



UL Type / NEMA 3R  
Enclosures

RHTR Temperature HI / LO Jumper (X1)	Heater ON Temperature	Heater OFF Temperature
Default Setting (X1 jumper in LO position)	14.4 °C 58 °F	21.4 °C 70.5 °F
Alternate Setting (X1 jumper in HI position)	17.8 °C 64 °F	24.7 °C 76.5 °C

The alternate (HI) setting further reduces the likelihood of condensate in high humidity environments.

Input  
Power

**WARNING!** Check the motor and motor wiring insulation before connecting the ACH550 to line power. Follow the procedure in the ACH550-UH User's Manual on page 1-23. Before proceeding with the insulation resistance measurements, check that the ACH550 is disconnected from incoming line power. Failure to disconnect line power could result in death or serious injury.

**Note:** For the remainder of the wiring (motor and control wiring) refer to the ACH550-UH User's Manual.



# Maintenance

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## Maintenance intervals

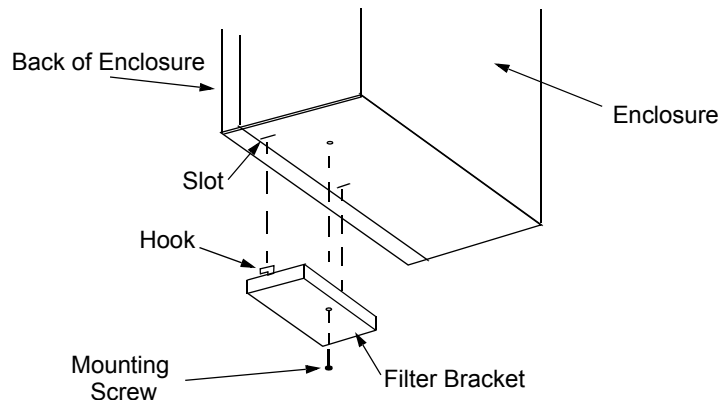
If installed in an appropriate environment, the drive requires very little maintenance. This table lists the routine maintenance intervals recommended by ABB.

Maintenance	Configuration	Interval	Instruction
Check/replace hinged door wall mount enclosure inlet air filter	Hinged door wall mount UL Type / NEMA 12 enclosures	Check every 3 months. Replace as needed.	<a href="#">Enclosure air filter replacement – UL Type / NEMA 12 hinged door wall mount enclosures</a> on page 3-18.
Check/replace floor mount enclosure inlet air filter	Floor mount UL Type / NEMA 12 enclosures	Check every 3 months. Replace as needed.	See <a href="#">Maintenance</a> in ACH550-UH User's Manual and <a href="#">Enclosure air filter replacement – UL Type / NEMA 12 hinged door wall mount enclosures</a> on page 3-18.
Check/replace NEMA 3R enclosure air filters	UL Type / NEMA 3R enclosures - PX3R-5 and higher	Check every 3 months. Replace as needed.	See PX3R dimensional information on page 3-30.
Check/replace floor mount enclosure exhaust air filter.	Floor mount UL Type / NEMA 12 enclosures	Check every 6 months. Replace as needed.	See <a href="#">Maintenance</a> in ACH550-UH User's Manual and <a href="#">Enclosure air filter replacement – UL Type / NEMA 12 hinged door wall mount enclosures</a> on page 3-18.
Check and clean heatsink.	All	Depends on the dustiness of the environment (every 6...12 months)	See <a href="#">Maintenance</a> in ACH550-UH User's Manual on page 1-289.
Replace drive module fan.	All	Every six years	See <a href="#">Maintenance</a> in ACH550-UH User's Manual on page 1-290.
Replace enclosure fan(s).	UL Type / NEMA 12 and 3R enclosures	Every three years	See <a href="#">Maintenance</a> in ACH550-UH User's Manual on page 1-291.
Change capacitor.	Frame sizes R5 and R6	Every ten years	See <a href="#">Maintenance</a> in ACH550-UH User's Manual on page 1-296.
Replace battery in the Assistant control panel.	All	Every ten years	See <a href="#">Maintenance</a> in ACH550-UH User's Manual on page 1-296.

## Enclosure air filter replacement – UL Type / NEMA 12 hinged door wall mount enclosures

This procedure applies to drive with disconnect configurations in UL Type / NEMA 12 hinged door wall mount enclosures. This filter is located at the bottom of the enclosure. Use the following procedure to check and replace filters.

1. On the enclosure, remove the screw holding the filter bracket in place.
2. Slide the filter bracket forward until the hooks on the bracket clear the slots on the enclosure base. This step allows the filter and bracket to drop free from the enclosure.



3. Lift the filter out of the filter bracket and replace as appropriate.
4. With the filter in the filter bracket, align the hooks on the bracket with the slots in the enclosure base, and press the hooks up into the slots.
5. Slide the filter bracket back, making sure that the hooks catch on the enclosure.
6. Replace the mounting screw. Tighten until the gasket on the bracket is about 50% compressed.

## Enclosure air filter replacement – UL Type / NEMA 12 floor mount enclosures

### Filter material

Enclosure Type	Inlet (door)	Outlet (roof)
UL Type / NEMA 12	3AUA0000006723 (qty 1)	3AUA0000006722 (qty 2)

**Note:** When installing the filter media, the white side must face the outside of the cabinet and the colored side must face the inside of the cabinet. Refer to the ACH550-UH User's Manual on page [1-293](#) for installation instructions.

# Technical data

## Input power connections (supplement to ACH550-UH User's Manual)

### Fuses

**NOTE:** Although fuses listed are similar in functional characteristics to fuses listed in the ACH550-UH User's Manual, physical characteristics may differ. Fuses from other manufacturers can be used if they meet the functional characteristics of those in these tables.

#### 208/240 volt fuses

208/240 Volt		Frame Size	Drive Input Fuse Ratings	
HP	Type Code <sup>1</sup>		Amps (600V)	Bussmann Type
1	ACH550-PDR-04A6-2	R1	15	KTK-R-15
1.5	ACH550-PDR-06A6-2	R1	15	KTK-R-15
2	ACH550-PDR-07A5-2	R1	15	KTK-R-15
3	ACH550-PDR-012A-2	R1	15	KTK-R-15
5	ACH550-PDR-017A-2	R1	30	KTK-R-30
7.5	ACH550-PDR-024A-2	R2	30	KTK-R-30
10	ACH550-PDR-031A-2	R2	60	JJS-60
15	ACH550-PDR-046A-2	R3	100	JJS-100
20	ACH550-PDR-059A-2	R3	100	JJS-100
25	ACH550-PDR-075A-2	R4	100	JJS-100
30	ACH550-PxR-088A-2	R4	200	170M1370 <sup>2</sup> or 170M2617
40	ACH550-PxR-114A-2	R4	200	170M1370 <sup>2</sup> or 170M2617
50	ACH550-PxR-143A-2	R6	200	170M1370 <sup>2</sup> or 170M2617
60	ACH550-PxR-178A-2	R6	315	170M1372 <sup>2</sup> or 170M2619
75	ACH550-PxR-221A-2	R6	315	170M1372 <sup>2</sup> or 170M2619
100	ACH550-PxR-248A-2	R6	315	170M1372 <sup>2</sup> or 170M2619

1. "PxR" represents both PCR and PDR.

2. UL Type / NEMA 3R enclosed units are provided with Bussman Type JJS or equivalent fuses. Fuse ratings shown relate to latest production. Where installed product includes fuses of a lower rating, either rating may be used.

## 480 volt fuses

480 Volt		Frame Size	Drive Input Fuse Ratings	
HP	Type Code <sup>1</sup>		Amps (600V)	Bussmann Type
1/1.5	ACH550-PDR-03A3-4	R1	15	KTK-R-15
2	ACH550-PDR-04A1-4	R1	15	KTK-R-15
3	ACH550-PDR-06A9-4	R1	15	KTK-R-15
5	ACH550-PDR-08A8-4	R1	15	KTK-R-15
7.5	ACH550-PDR-012A-4	R1	15	KTK-R-15
10	ACH550-PDR-015A-4	R2	30	KTK-R-30
15	ACH550-PDR-023A-4	R2	30	KTK-R-30
20	ACH550-PDR-031A-4	R3	60	JJS-60
25	ACH550-PDR-038A-4	R3	60	JJS-60
30	ACH550-PDR-045A-4	R3	100	JJS-100
30	ACH550-PDR-044A-4	R4	100	JJS-100
40	ACH550-PDR-059A-4	R4	100	JJS-100
50	ACH550-PDR-072A-4	R4	100	JJS-100
60	ACH550-PDR-078A-4	R4	100	JJS-100
75	ACH550-PxR-097A-4	R4	200	170M1370 <sup>2</sup> or 170M2617
60	ACH550-PxR-077A-4	R5	125	170M1368
75	ACH550-PxR-096A-4	R5	125	170M1368 <sup>2</sup>
100	ACH550-PxR-125A-4	R5	200	170M1370 <sup>2</sup> or 170M2617
100	ACH550-PxR-124A-4	R6	160	170M1369 <sup>2</sup>
125	ACH550-PxR-157A-4	R6	200	170M1370 <sup>2</sup> or 170M2617
150	ACH550-PxR180A-4	R6	315	170M1372 <sup>2</sup> or 170M2619
200	ACH550-PxR-246A-4	R6	315	170M1372 <sup>2</sup> or 170M2619
200	ACH550-PxR-245A-4	R7	400	JJS-400
250	ACH550-PxR-316A-4	R8	400	JJS-400
300	ACH550-PxR-368A-4	R8	400	JJS-400
350	ACH550-PxR-414A-4	R8	600	JJS-600
400	ACH550-PxR-486A-4	R8	600	JJS-600
450	ACH550-PxR-526A-4	R8	800	JJS-800
500	ACH550-PxR-602A-4	R8	800	JJS-800
550	ACH550-PxR-645A-4	R8	800	JJS-800

1. "PxR" represents both PCR and PDR.

2. UL Type / NEMA 3R enclosed units are provided with Bussman Type JJS or equivalent fuses. Fuse ratings shown relate to latest production. Where installed product includes fuses of a lower rating, either rating may be used.

*Fuses, 600 volt, fuses*

600 Volt		Frame Size	Drive Input Fuse Ratings	
HP	Type Code <sup>1</sup>		Amps (600V)	Bussmann Type
2	ACH550-PDR-02A7-6	R2	15	KTK-R-15
3	ACH550-PDR-03A9-6	R2	15	KTK-R-15
5	ACH550-PDR-06A1-6	R2	15	KTK-R-15
7.5	ACH550-PDR-09A0-6	R2	15	KTK-R-15
10	ACH550-PDR-011A-6	R2	30	KTK-R-30
15	ACH550-PDR-017A-6	R2	30	KTK-R-30
20	ACH550-PDR-022A-6	R3	60	JJS-60
25	ACH550-PDR-027A-6	R3	60	JJS-60
30	ACH550-PDR-032A-6	R4	100	JJS-100
40	ACH550-PDR-041A-6	R4	100	JJS-100
50	ACH550-PDR-052A-6	R4	100	JJS-100
60	ACH550-PDR-062A-6	R4	100	JJS-100
75	ACH550-PxR-077A-6	R6	200	170M1370 <sup>2</sup> or 170M2617
100	ACH550-PxR-099A-6	R6	200	170M1370 <sup>2</sup> or 170M2617
125	ACH550-PxR-125A-6	R6	200	170M1370 <sup>2</sup> or 170M2617
150	ACH550-PxR-144A-6	R6	200	170M1370 <sup>2</sup> or 170M2617

1. "PxR" represents both PCR and PDR.

2. UL Type / NEMA 3R enclosed units are provided with Bussman Type JJS or equivalent fuses. Fuse ratings shown relate to latest production. Where installed product includes fuses of a lower rating, either rating may be used.

### Power connection terminals

The following tables show maximum wire size and required tightening torque for incoming power, grounding and motor terminals.

#### 208/240 volt, terminals

208/240 Volt		Base Drive Frame Size	Power Wiring Data <sup>2</sup>						
HP	Type Code <sup>1</sup>		Circuit Breaker UL Type/ NEMA 1 &12	Circuit Breaker UL Type / NEMA 3R	Disconnect Switch UL Type/ NEMA 1&12	Disconnect Switch UL Type/ NEMA 3R	Motor Terminals	Ground Lugs UL Type/ NEMA 1&12	Ground Lugs UL Type / NEMA 3R
1	ACH550-PxR-04A6-2	R1	#10 35 in-lbs	#10 35 in-lbs	#10 7 in-lbs	#10 7 in-lbs	Refer to <i>Drive's power connection terminals</i> in the ACH550- UH HVAC User's Manual on page 1-307	#10 35 in-lbs	#10 35 in-lbs
1.5	ACH550-PxR-06A6-2	R1							
2	ACH550-PxR-07A5-2	R1							
3	ACH550-PxR-012A-2	R1							
5	ACH550-PxR-017A-2	R1							
7.5	ACH550-PxR-024A-2	R2	#6 45 in-lbs	#6 45 in-lbs	#8 7 in-lbs	#8 7 in-lbs		#6 35 in-lbs	#6 35 in-lbs
10	ACH550-PxR-031A-2	R2	#3 50 in-lbs	#3 50 in-lbs	#4 18 in-lbs	#4 18 in-lbs		#3 50 in-lbs	#3 50 in-lbs
15	ACH550-PxR-046A-2	R3							
20	ACH550-PxR-059A-2	R3	#1 50 in-lbs	#1 50 in-lbs	#1 55 in-lbs	#1 55 in-lbs		#2 50 in-lbs	#2 50 in-lbs
25	ACH550-PxR-075A-2	R4							
30	ACH550-PxR-088A-2	R4							
40	ACH550-PxR-114A-2	R4	350 MCM 274 in-lbs	300 MCM 200 in-lbs	#1/0 70 in-lbs	#1/0 70 in-lbs		3 x #3/0 250 in-lbs	#2/0 275 in-lbs
50	ACH550-PxR-143A-2	R6							
60	ACH550-PxR-178A-2	R6							
75	ACH550-PxR-221A-2	R6							
100	ACH550-PxR-248A-2	R6	2 x 500 MCM 274 in-lbs	2 x 500 MCM 274 in-lbs	2 x 500 MCM 274 in-lbs	2 x 500 MCM 274 in-lbs	350 MCM 100 in-lbs		

1. "PxR" represents both PCR and PDR.

2. Torque values shown relate to current production. Check component labels on previously installed units for required tightening torque.



## 480 volt, terminals

480 Volt			Power Wiring Data <sup>2</sup>						
HP	Type Code <sup>1</sup>	Base Drive Frame Size	Circuit Breaker UL Type/ NEMA 1 & 12	Circuit Breaker UL Type/ NEMA 3R	Disconnect Switch UL Type/ NEMA 1&12	Disconnect Switch UL Type/ NEMA 3R	Motor Terminals	Ground Lugs UL Type/ NEMA 1&12	Ground Lugs UL Type / NEMA 3R
1/1.5	ACH550-PxR-03A3-4	R1	#10 35 in-lbs	#10 35 in-lbs	#10 7 in-lbs	#10 7 in-lbs	Refer to <a href="#">Drive's power connection terminals</a> in the ACH550-UH HVAC User's Manual on page 1-307	#10 35 in-lbs	#10 35 in-lbs
2	ACH550-PxR-04A1-4	R1							
3	ACH550-PxR-06A9-4	R1							
5	ACH550-PxR-08A8-4	R1							
7.5	ACH550-PxR-012A-4	R1							
10	ACH550-PxR-015A-4	R2	#6 45 in-lbs	#6 45 in-lbs	#8 7 in-lbs	#8 7 in-lbs		#6 35 in-lbs	#6 35 in-lbs
15	ACH550-PxR-023A-4	R2							
20	ACH550-PxR-031A-4	R3	#3 50 in-lbs	#3 50 in-lbs	#4 18 in-lbs	#4 18 in-lbs		#3 50 in-lbs	#3 50 in-lbs
25	ACH550-PxR-038A-4	R3							
30	ACH550-PxR-045A-4	R3							
40	ACH550-PxR-059A-4	R4	#1 50 in-lbs	#1 50 in-lbs	#1 55 in-lbs	#1 55 in-lbs		#1 50 in-lbs	#1 50 in-lbs
50	ACH550-PxR-072A-4	R4							
60	ACH550-PxR-078A-4	R4							
75	ACH550-PxR-097A-4	R4	350 MCM 274 in-lbs	300 MCM 200 in-lbs	#1/0 70 in-lbs	#1/0 70 in-lbs		3 x #3/0 250 in-lbs	#2 50 in-lbs
100	ACH550-PxR-125A-4	R5							
125	ACH550-PxR-157A-4	R6							
150	ACH550-PxR-180A-4	R6							
200	ACH550-PxR-246A-4	R6	2 x 500 MCM 274 in-lbs	2 x 500 MCM 274 in-lbs	2 x 500 MCM 274 in-lbs	2 x 500 MCM 274 in-lbs		5 Bus Bar Holes (13/32")	350 MCM 100 in-lbs
250	ACH550-PxR-316A-4	R8	2 x 500 MCM 274 in-lbs		2 x 500 MCM 274 in-lbs				
300	ACH550-PxR-368A-4	R8							
350	ACH550-PxR-414A-4	R8							
400	ACH550-PxR-486A-4	R8							
450	ACH550-PxR-526A-4	R8	3 x 400 MCM 375 in-lbs		3 x 400 MCM 375 in-lbs				
500	ACH550-PxR-602A-4	R8							
550	ACH550-PxR-645A-4	R8							

1. "PxR" represents both PCR and PDR.

2. Torque values shown relate to current production. Check component labels on previously installed units for required tightening torque.

## 600 volt, terminals

600 Volt		Frame Size	Power Wiring Data <sup>2</sup>						
HP	Type Code <sup>1</sup>		Circuit Breaker UL Type / NEMA 1 & 12	Circuit Breaker UL Type / NEMA 3R	Disconnect Switch UL Type / NEMA 1&12	Disconnect Switch UL Type / NEMA 3R	Motor Terminals	Ground Lugs UL Type / NEMA 1&12	Ground Lugs UL Type / NEMA 3R
2	ACH550-PxR-02A7-6	R2	#6 62 in-lbs	#6 62 in-lbs	#8 7 in-lbs	#8 7 in-lbs	Refer to <i>Drive's power connection terminals</i> in the ACH550- UH HVAC User's Manual on page <i>1-307</i>	#6 35 in-lbs	#6 35 in-lbs
3	ACH550-PxR-03A9-6	R2							
5	ACH550-PxR-06A1-6	R2							
7.5	ACH550-PxR-09A0-6	R2							
10	ACH550-PxR-011A-6	R2							
15	ACH550-PxR-017A-6	R2							
20	ACH550-PxR-022A-6	R3	#3 62 in-lbs	#3 62 in-lbs	#4 18 in-lbs	#4 18 in-lbs		#3 50 in-lbs	#3 50 in-lbs
25	ACH550-PxR-027A-6	R3							
30	ACH550-PxR-032A-6	R4	#1 62 in-lbs	#1 62 in-lbs	#1 55 in-lbs	#1 55 in-lbs		#2 50 in-lbs	#2 50 in-lbs
40	ACH550-PxR-041A-6	R4							
50	ACH550-PxR-052A-6	R4							
60	ACH550-PxR-062A-6	R4			#1 62 in-lbs	#1 62 in-lbs	#1/0 70 in-lbs		
75	ACH550-PxR-077A-6	R6							
100	ACH550-PxR-099A-6	R6	350 MCM 274 in-lbs	300 MCM 275 in-lbs	300 MCM 275 in-lbs	300 MCM 200 in-lbs	3 x #3/0 250 in-lbs	#2/0 375 in-lbs	
125	ACH550-PxR-125A-6	R6							
150	ACH550-PxR-144A-6	R6							

1. "PxR" represents both PCR and PDR.

2. Torque values shown relate to current production. Check component labels on previously installed units for required tightening torque.

## Dimensional references

The following tables contain dimensional references that identify the dimensional information applying to a given type code.

### 208/240V drive with disconnect

HP	Type Code <sup>1</sup>	AMP	Base Drive Frame	UL Type / NEMA 1 Dim. Ref. Page 3-28	(+B055) UL Type / NEMA 12 Dim. Ref. Page 3-29	(+B058) UL Type / NEMA 3R Dim. Ref. Page 3-30
1	ACH550-PxR-04A6-2	4.6	R1	PX1-1	PX12-1	PX3R-1
1.5	ACH550-PxR-06A6-2	6.6	R1	PX1-1	PX12-1	PX3R-1
2	ACH550-PxR-07A5-2	7.5	R1	PX1-1	PX12-1	PX3R-1
3	ACH550-PxR-012A-4	11.8	R1	PX1-1	PX12-1	PX3R-1
5	ACH550-PxR-017A-2	16.7	R1	PX1-1	PX12-1	PX3R-1
7.5	ACH550-PxR-024A-2	24.2	R2	PX1-2	PX12-2	PX3R-2
10	ACH550-PxR-031A-2	30.8	R2	PX1-2	PX12-2	PX3R-3
15	ACH550-PxR-046A-2	46.2	R3	PX1-3	PX12-3	PX3R-3
20	ACH550-PxR-059A-2	59.4	R3	PX1-3	PX12-3	PX3R-3
25	ACH550-PxR-075A-2	74.8	R4	PX1-4	PX12-4	PX3R-4
30	ACH550-PxR-088A-2	88	R4	PX1-5	PX12-5	PX3R-5
40	ACH550-PxR-114A-2	114	R4	PX1-5	PX12-5	PX3R-5
50	ACH550-PxR-143A-2	143	R6	PX1-6	PX12-6	PX3R-6
60	ACH550-PxR-178A-2	178	R6	PX1-6	PX12-6	PX3R-6
75	ACH550-PxR-221A-2	221	R6	PX1-6	PX12-6	PX3R-6
100	ACH550-PxR-248A-2	248	R6	PX1-6	PX12-6	PX3R-6

1. "PxR" represents both PCR and PDR.

## 480V drive with disconnect

HP	Type Code <sup>1</sup>	AMP	Base Drive Frame	UL Type / NEMA 1 Dim. Ref. Page 3-28	(+B055) UL Type / NEMA 12 Dim. Ref. Page 3-29	(+B058) UL Type / NEMA 3R Dim. Ref. Page 3-30
1.5	ACH550-PxR-03A3-4	3.3	R1	PX1-1	PX12-1	PX3R-1
2	ACH550-PxR-04A1-4	4.1	R1	PX1-1	PX12-1	PX3R-1
3	ACH550-PxR-06A9-4	6.9	R1	PX1-1	PX12-1	PX3R-1
5	ACH550-PxR-08A8-4	8.8	R1	PX1-1	PX12-1	PX3R-1
7.5	ACH550-PxR-012A-4	11.9	R1	PX1-1	PX12-1	PX3R-1
10	ACH550-PxR-015A-4	15.4	R2	PX1-2	PX12-2	PX3R-2
15	ACH550-PxR-023A-4	23	R2	PX1-2	PX12-2	PX3R-2
20	ACH550-PxR-031A-4	31	R3	PX1-3	PX12-3	PX3R-3
25	ACH550-PxR-038A-4	38	R3	PX1-3	PX12-3	PX3R-3
30	ACH550-PxR-045A-4	44	R3	PX1-3	PX12-3	PX3R-3
40	ACH550-PxR-059A-4	59	R4	PX1-4	PX12-4	PX3R-4
50	ACH550-PxR-072A-4	72	R4	PX1-4	PX12-4	PX3R-4
60	ACH550-PxR-078A-4	77	R4	PX1-4	PX12-4	PX3R-4
75	ACH550-PxR-097A-4	96	R4	PX1-5	PX12-5	PX3R-5
100	ACH550-PxR-125A-4	124	R5	PX1-5	PX12-5	PX3R-6
125	ACH550-PxR-157A-4	157	R6	PX1-6	PX12-6	PX3R-6
150	ACH550-PxR-180A-4	180	R6	PX1-6	PX12-6	PX3R-6
200	ACH550-PxR-246A-4	245	R6	PX1-6	PX12-6	PX3R-6
250	ACH550-PxR-316A-4	316	R8	PX1-8	PX12-8	
300	ACH550-PxR-368A-4	368	R8	PX1-8	PX12-8	
350	ACH550-PxR-414A-4	414	R8	PX1-8	PX12-8	
400	ACH550-PxR-486A-4	486	R8	PX1-8	PX12-8	
450	ACH550-PxR-526A-4	526	R8	PX1-8	PX12-8	
500	ACH550-PxR-602A-4	602	R8	PX1-8	PX12-8	
550	ACH550-PxR-645A-4	645	R8	PX1-8	PX12-8	

1. "PxR" represents both PCR and PDR.

*600V drive with disconnect*

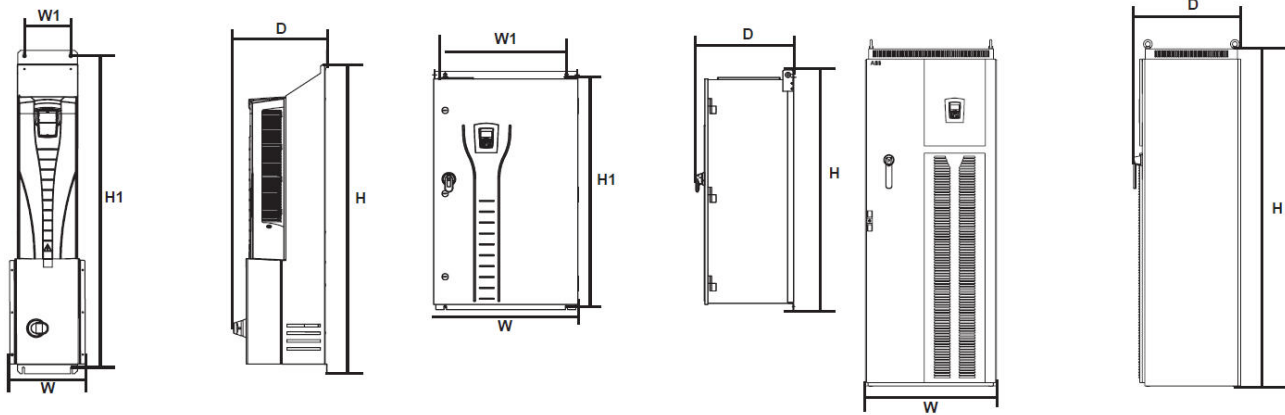
HP	Type Code <sup>1</sup>	AMP	Base Drive Frame	UL Type / NEMA 1 Dim. Ref. Page 3-28	(+B055) UL Type / NEMA 12 Dim. Ref. Page 3-29	(+B058) UL Type / NEMA 3R Dim. Ref. Page 3-30
2	ACH550-PxR-02A7-6	2.7	R2	PX1-2	PX12-2	PX3R-2
3	ACH550-PxR-03A9-6	3.9	R2	PX1-2	PX12-2	PX3R-2
5	ACH550-PxR-06A1-6	6.1	R2	PX1-2	PX12-2	PX3R-2
7.5	ACH550-PxR-09A0-6	9	R2	PX1-2	PX12-2	PX3R-2
10	ACH550-PxR-011A-6	11	R2	PX1-2	PX12-2	PX3R-2
15	ACH550-PxR-017A-6	17	R2	PX1-2	PX12-2	PX3R-2
20	ACH550-PxR-022A-6	22	R3	PX1-3	PX12-3	PX3R-3
25	ACH550-PxR-027A-6	27	R3	PX1-3	PX12-3	PX3R-3
30	ACH550-PxR-032A-6	32	R4	PX1-4	PX12-4	PX3R-4
40	ACH550-PxR-041A-6	41	R4	PX1-4	PX12-4	PX3R-4
50	ACH550-PxR-052A-6	52	R4	PX1-4	PX12-4	PX3R-4
60	ACH550-PxR-062A-6	62	R4	PX1-4	PX12-4	PX3R-4
75	ACH550-PxR-077A-6	77	R6	PX1-6	PX12-6	PX3R-6
100	ACH550-PxR-099A-6	99	R6	PX1-6	PX12-6	PX3R-6
125	ACH550-PxR-125A-6	125	R6	PX1-6	PX12-6	PX3R-6
150	ACH550-PxR-144A-6	144	R6	PX1-6	PX12-6	PX3R-6

1. "PxR" represents both PCR and PDR.

## Dimensions and weights (supplement to ACH550-UH User's Manual)

### Mounting dimensions

Dimensions: ACH550-PxR UL Type / NEMA 1



Wall Mount (PX1-1 - PX1-4)

Wall Mount (PX1-5 - PX1-6)

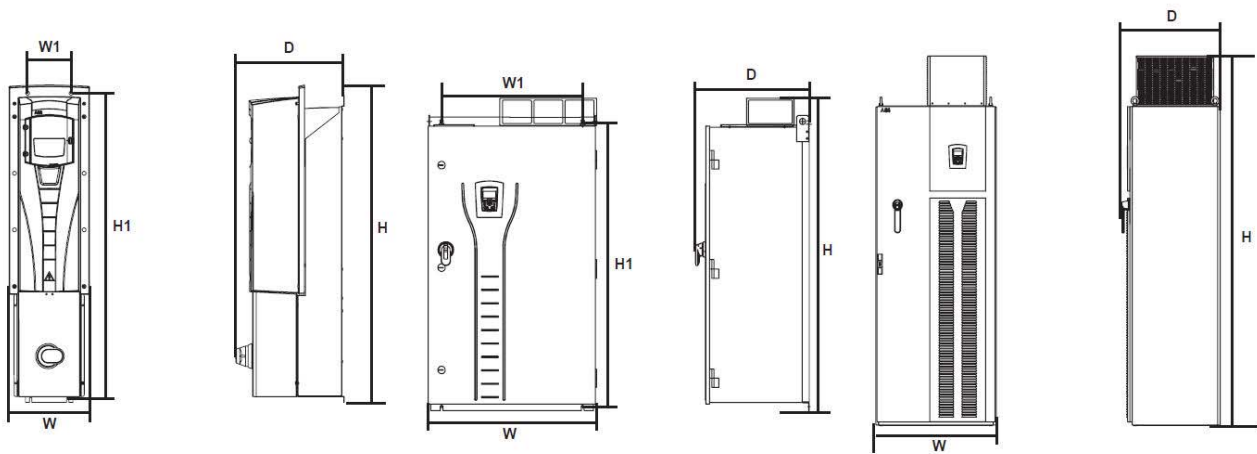
Floor Mount (PX1-8)

Dimension Reference	UL Type / NEMA 1 Mounting Dimensions mm [inches]			UL Type / NEMA 1 Dimensions and Weights mm kg [inches] [lbs]				
	H1	W1	Mounting Hardware	Height (H)	Weight (W)	Depth (D)	Weight	Dimension Drawing
PX1-1	712 [28]	98 [3.9]	M6 [0.25]	729 [28.7]	198 [7.8]	283 [11.2]	15 [33]	3AUA000008216 Sheet 1
PX1-2	812 [32]	98 [3.9]	M6 [0.25]	829 [32.6]	198 [7.8]	295 [11.6]	19 [42]	3AUA000008218 Sheet 1
PX1-3	983 [38.7]	160 [6.3]	M6 [0.25]	1013 [39.9]	260 [10.2]	304 [11.9]	34 [75]	3AUA000008220 Sheet 1
PX1-4	1117 [44]	160 [6.3]	M6 [0.25]	1147 [45.2]	260 [10.2]	332 [13.1]	43 [95]	3AUA000008221 Sheet 1
PX1-5	1175 [46.3]	600 [23.6]	M10 [0.375]	1212 [47.7]	713 [28.1]	483 [19]	121 [267]	3AUA000021148 Sheet 1
PX1-6	1175 [46.3]	600 [23.6]	M10 [0.375]	1212 [47.7]	713 [28.1]	483 [19]	163 [359]	3AUA000021148 Sheet 1
PX1-8 <sup>1</sup>	Free Standing		Ø16 [Ø0.63]	2125 [83.7]	806 [31.7]	659 [25.9]	360 [794]	3AUA000021152 Sheet 1

1. See page 3-31 for mounting dimension details and additional free space recommendations.

**Note:** Keep a minimum of 50 mm (2") of free space on each side and 200 mm (8") of free space above and below all units from non-heat producing sources. Double these distances from heat producing sources.

## Dimensions: ACH550-PxR UL Type / NEMA 12



Wall Mount (PX12-1 - PX12-4)

Wall Mount (PX12-5 - PX12-6)

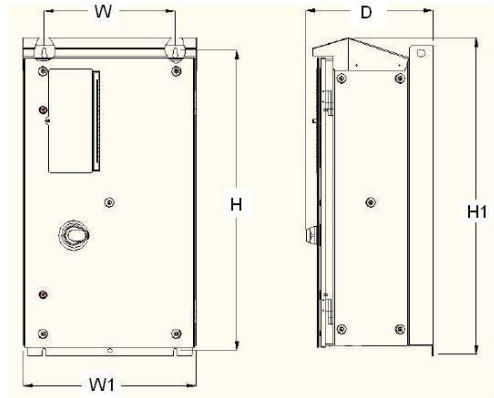
Floor Mount (PX12-8)

Dimension Reference	UL Type / NEMA 12 Mounting Dimensions mm [inches]			UL Type / NEMA 12 Dimensions and Weights mm kg [inches] [lbs]				
	H1	W1	Mouting Hardware	Height (H)	Weight (W)	Depth (D)	Weight	Drawing Dimension
PX12-1	712 [28]	98 [3.9]	M6 [0.25]	744 [29.3]	221 [8.7]	283 [11.2]	17 [37]	3AUA0000008216 Sheet 2
PX12-2	812 [32]	98 [3.9]	M6 [0.25]	844 [33.2]	221 [8.7]	295 [11.6]	21 [46]	3AUA0000008218 Sheet 2
PX12-3	983 [38.7]	160 [6.3]	M6 [0.25]	1030 [40.6]	267 [10.5]	304 [11.9]	36 [79]	3AUA0000008220 Sheet 2
PX12-4	1117 [44]	160 [6.3]	M6 [0.25]	1163 [45.8]	267 [10.5]	332 [13.1]	45 [99]	3AUA0000008221 Sheet 2
PX12-5	1175 [46.3]	600 [23.6]	M10 [0.375]	1380 [54.3]	713 [28.1]	483 [19]	121 [267]	3AUA0000021149 Sheet 1
PX12-6	1175 [46.3]	600 [23.6]	M10 [0.375]	1380 [54.3]	713 [28.1]	483 [19]	163 [359]	3AUA0000021149 Sheet 1
PX12-8 <sup>1</sup>	Free Standing		Ø16 [Ø0.63]	2377 [93.6]	806 [31.7]	659 [25.9]	380 [838]	3AUA0000021153 Sheet 1

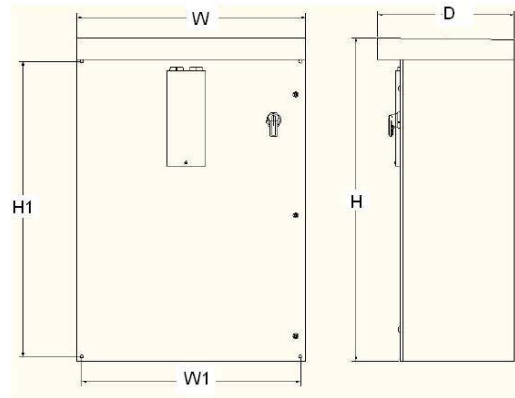
1. See page 3-31 for mounting dimension details and additional free space recommendations.

**Note:** Keep a minimum of 50 mm (2") of free space on each side and 200 mm (8") of free space above and below all units from non-heat producing sources. Double these distances from heat producing sources.

Dimensions: ACH550-PxR UL Type / NEMA 3R



Wall Mount (PX3R-1 - PX3R-4)



Wall Mount (PX3R-5 - PX3R-6)

Dimension Reference	UL Type / NEMA 3R Mounting Dimensions mm [inches]			UL Type / NEMA 3R Dimensions and Weights mm kg [inches] [lbs]				
	H1	W1	Mouting Hardware	Height (H)	Weight (W)	Depth (D)	Weight	Drawing Dimension
PX3R-1	810 [31.9]	320 [12.6]	M10 [0.375]	865 [34]	452 [17.8]	343 [13.5]	58 [128]	3AUA0000016377 Sheet 1
PX3R-2	810 [31.9]	320 [12.6]	M10 [0.375]	865 [34]	452 [17.8]	343 [13.5]	61 [134]	3AUA0000016377 Sheet 1
PX3R-3	918 [36.1]	400 [15.7]	M10 [0.375]	968 [38.1]	530 [20.9]	389 [15.3]	80 [176]	3AUA0000016380 Sheet 1
PX3R-4	918 [36.1]	400 [15.7]	M10 [0.375]	968 [38.1]	530 [20.9]	389 [15.3]	88 [194]	3AUA0000016380 Sheet 1
PX3R-5	876 [34.5]	724 [28.5]	M10 [0.375]	991 [39]	762 [30]	394 [15.5]	92.3 [203]	3AUA0000060123 Sheet 2
PX3R-6	1181 [46.5]	876 [34.5]	M10 [0.375]	1295 [51]	914 [36]	546 [21.5]	179.1 [395]	3AUA0000060124 Sheet 2

**Note:** UL Type 3R, PX3R-1...PX3R-4 enclosures are designed to be mounted on a wall. Mounting these 3R enclosures on an open rack system requires the use of the supplied 3R enclosure back plates to maintain 3R integrity.

**Note:** Keep a minimum of 50 mm (2") of free space on each side and 200 mm (8") of free space above and below all units from non-heat producing sources. Double these distances from heat producing sources.



**UL Type / NEMA 1 & 12, Floor mount enclosure mounting dimensions**

UL Type/ NEMA 1 & 12 – Dimensions for each Frame Size			
Ref.	R7 & R8		Top View
	mm	in	
<b>W</b>	806	31.7	
<b>D</b>	659	25.9	
<b>a</b>	675	26.6	
<b>b</b>	474.5	18.7	
<b>c</b>	61	2.4	
<b>d</b>	65.5	2.6	
<b>Mounting Hardware</b>			
	11 mm	13/32	

**Additional free space recommendations**

In addition to the free space requirements for cooling shown in the ACH550-UH User's Manual ([Cooling](#) on page 1-318), allow:

- 800 mm (31.5 in) in front of UL Type/NEMA 1&12 floor mount enclosures – room for the cabinet door to swing open.
- 305 mm (12 in) above UL Type 12/NEMA 12 floor mount enclosures – room for fan replacement.

**Degrees of protection**




Available enclosures:

- UL Type 1 (NEMA 1 / IP 21) enclosure. The site must be free of airborne dust, corrosive gases or liquids, and conductive contaminants such as condensation, carbon dust, and metallic particles.
- UL Type 12 (NEMA 12 / IP 54) enclosure. This enclosure provides protection from airborne dust and light sprays or splashing water from all directions.
- UL Type 3R (NEMA 3R) enclosure. This enclosure provides protection from the ingress of water (rain, sleet, or snow). The external formation of ice does not damage this enclosure.

Plenum Rating: ACH550 drives have been evaluated in accordance with the requirements of UL508, meets all of the requirements for plenum rated drives, and is "Suitable for Installation in a Compartment Handling Conditioned Air".

## Applicable standards

Drive compliance with the following standards is identified by the standards “marks” on the type code label.

Mark	Applicable Standards	
	UL 508C and C22.2 No. 14	UL Standard for Safety, Power Conversion Equipment, and CSA Standard for Industrial Control Equipment
	UL 508A	UL Standard for Safety, Industrial Control Panels
	C22.2 No. 14	CSA Standard for Industrial Control Equipment

Compliance is valid with the following provisions:

- The motor and control cables are chosen as specified in this manual.
- The installation rules of this manual are followed.

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Refer to the ACH550-UH HVAC Drives (1...550 HP) User's Manual [Index](#) on page [1-332](#) for topics not listed here.

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