

**Variable Frequency Drive (VFD)
Remote Keypad Kit
For 2-Stage Cooling Units, 6-30 Tons**

Installation Instructions

P/N CRDISKIT001A00 and CRDISKIT003A00

NOTE: Read the entire instruction manual before starting the installation.

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CAUTION

CONFIGURATION OVERRIDE HAZARD

Do not use start-up assistant or first start assistant on this VFD application! Use of the assistant will override the factory VFD configurations!

SAFETY CONSIDERATIONS

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock or other conditions which may cause personal injury or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloths for brazing operations and have a fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions attached to the unit. Consult local building codes and appropriate national electrical codes (in U.S.A., ANSI/NFPA70, National Electrical Code (NEC); in Canada, CSA C22.1) for special requirements.

It is important to recognize safety information. This is the safety-alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, CAUTION, and NOTE. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices, which **may** result in minor personal

injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.


DANGER

ELECTRICAL SHOCK HAZARD

Failure to follow this warning will result in personal injury or death.

Before performing service or maintenance operations on unit, turn off main power switch to unit and install lock(s) and lockout tag(s). Ensure electrical service to rooftop unit agrees with voltage and amperage listed on the unit rating plate. Unit may have more than one power switch.


CAUTION

PERSONAL INJURY HAZARD

Failure to follow this caution may result in personal injury.

Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing, safety glasses and gloves when handling parts and servicing air conditioning equipment.

GENERAL

Variable Frequency Drive (VFD) Option 2-Speed Indoor Fan Motor System

The 2-Speed Indoor Fan system utilizes a Fan Speed control board and Variable Frequency Drive (VFD) to automatically adjust the indoor fan motor speed in sequence with the unit’s ventilation, cooling and heating operation. Per ASHRAE 90.1-2016 and IECC-2015 standards, during the first stage of cooling operation the VFD option will adjust the fan motor to provide 66% of the design airflow rate for the unit. When the call for the second stage of cooling is required, the VFD option will allow the design air-flow rate for the unit established (100%). During the heating mode, the VFD Option will allow total design airflow rate (100%) operation. During ventilation mode, the VFD option will operate the fan motor at 66% of full speed.

Figures 1-4 show the VFDs used for the 2-Speed Indoor Fan system.



Fig. 1 — ACS320 Variable Frequency Drive (VFD)

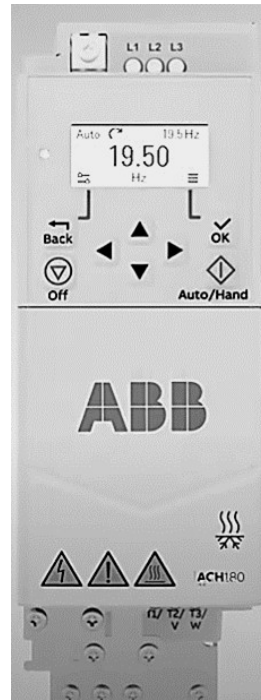


Fig. 2 — ACH180 Variable Frequency Drive (VFD)



Fig. 3 — ACH550 Variable Frequency Drive (VFD)



Fig. 4 — ACH580 Variable Frequency Drive (VFD)

Identifying Factory Option

This supplement only applies to units that meet the criteria detailed in Tables 1-3. If the unit does not meet that criteria, discard this document.

NOTE: See Figures 5-10 for examples of typical Model Number Nomenclature.

NOTE: 48/50LC units are not covered in this document; VFDs are standard equipment on belt drive LC units. VFD instructions for the 48/50LC series are found in the Installation Instructions for the LC base units.

Table 1 — Carrier Model, Size and VFD Option Indicator

MODEL	SIZES	POSITION IN MODEL NUMBER	VFD FIOP INDICATOR
48/50TC	07-30	17	G-M
50TCQ	07-24	17	G-M
48/50HC	07-28	17	G-M
50HCQ	07-12	17	G-M
40RUA	07-30	9	T
40RUS	08-30	9	T
40RUQ	07-25	9	T

Table 2 — Bryant Model Size/VFD Option Indicator

MODEL	SIZES	POSITION IN MODEL NUMBER	VFD FIOP INDICATOR
580J/558J	07-30	17	D-E
548J	07-24	17	D-E
581J/551J	07-28	17	D-E
549J	07-12	17	D-E
524J*A	07A-30A	9	2
524J*H	07H-25H	9	2

Table 3 — ICP Model Size/VFD Option Indicator

MODEL	SIZES	POSITION IN MODEL NUMBER	VFD FIOP INDICATOR
RGS/RAS	072-336	14	T
RHS	090-240	14	T
RGH/RAH	072-303	14	T
RHH	072-120	14	T
FAS	072-300	11	2
FHS	072-240	11	2

Unit Installation with 2-Speed Indoor Fan System Option

48/50HC, 50HCQ, 48/50TC, 50TCQ, 581J/551J, 548J, 580J/558J, AND 548J, RGH/RAH, RHH, RGS/RAS, RHS ROOFTOP

Refer to the base unit installation instructions for standard required operating and service clearances.

40RU/40RUQ, 524J/524J*H, FAS/FHS WITHOUT REMOTE VFD KEYPAD

Additional service clearance is required on the rear for 40RU/40RUQ, 524J/524J*H, FAS/FHS fan coil unit equipped with the 2-speed indoor fan system option. Increase the recommended rear panel clearance to 30 inches.

40RU/40RUQ, 524J/524J*H, FAS/FHS WITH REMOTE VFD KEYPAD

Refer to the base unit installation instructions for standard required operating and service clearances. Install the accessory remote VFD keypad before positioning the 40RU/40RUQ, 524J/524J*H, FAS/FHS unit in its final operating location.

NOTE: The remote VFD keypad is a field-installed option. It is not included as part of the factory-installed VFD option.

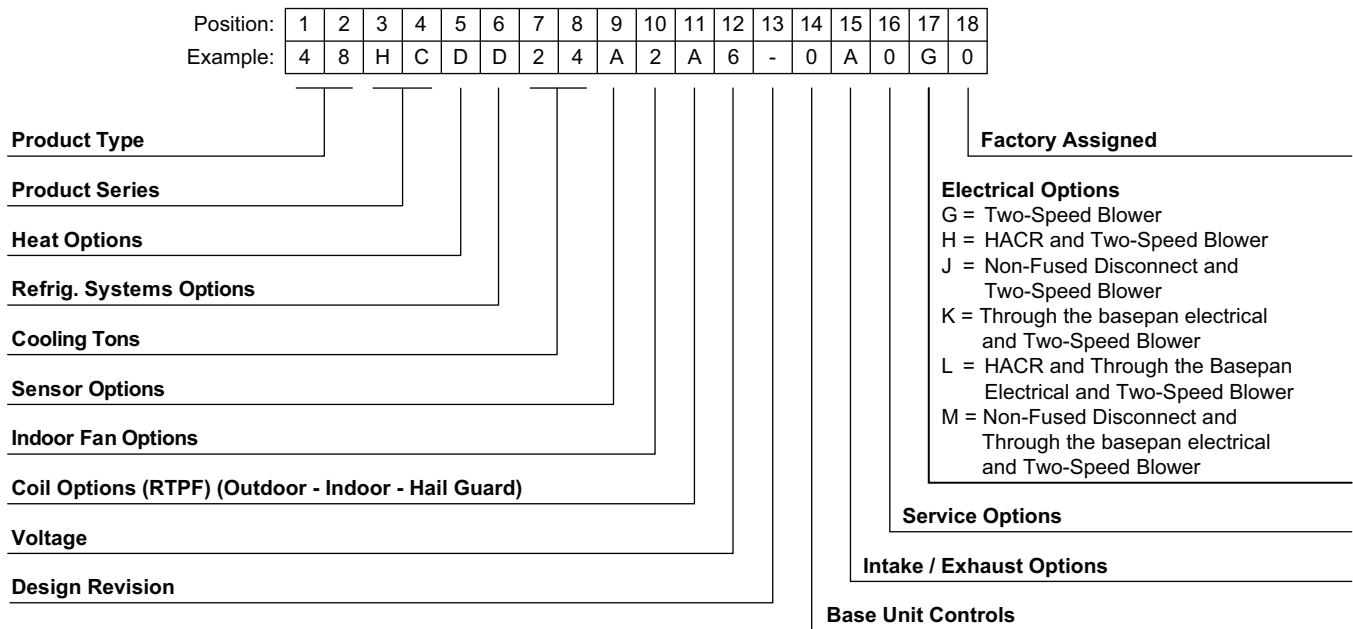


Fig. 5 — Model Number Nomenclature Example, Carrier 48/50-Series

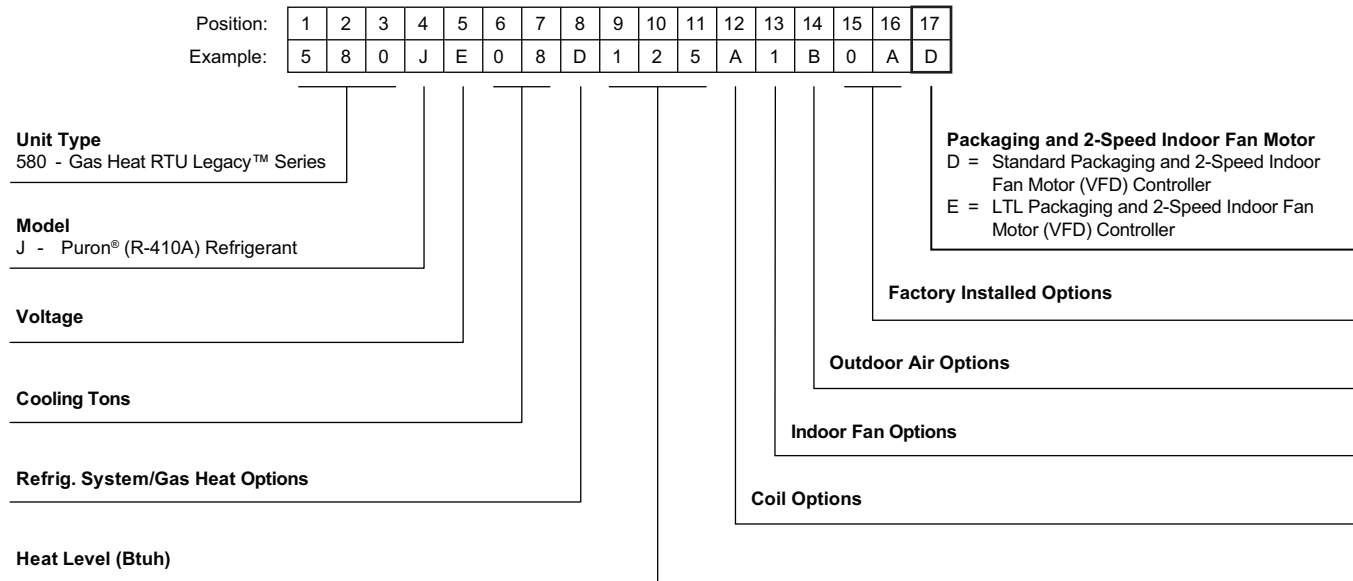


Fig. 6 — Model Number Nomenclature Example, Bryant 580J/558J/548J/581J/551J/549J-Series

MODEL SERIES	R	G	S	0	9	0	H	D	A	A	0	A	A	T	
Position Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
R = Rooftop		Type													
G = Gas/Electric															
S = Standard DOE 2018/ASHRAE 90.1 - 2016															Efficiency
Nominal Cooling Capacity															
Voltage															
Heating Capacity															
															Motor Option
Outdoor Air Options															
															Factory Installed Options
Standard Condenser/Evaporator Coil Configuration															
T = Two-Speed Indoor Motor Controller (VFD) - Standard on U.S. models														Indoor Fan Motor	

Fig. 7 — Model Number Nomenclature Example, ICP RGS/RAS/RHS/RGH/RAH/RHH-Series

Position:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Example:	4	0	R	U	A	A	1	2	T	1	A	6	-	0	A	0	A	0
Model Type Packaged Air-Handling Unit Puron																		Packaging
Type of Coil																		Future Use
Refrigeration Options																		Cabinet Paint
Nominal Tonnage																		Future Use
Staged Air Volume T = SAV/VFD																		Future Use
Indoor Fan Options - Belt Drive																		Revision Number
Coil Options																		Voltage

Fig. 8 — Model Number Nomenclature Example, Carrier 40RU-Series

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
5	2	4	J	E	1	2	A	2	0	0	A	1	0	A	A	A

Model Type
524J = Packaged Air Handler with
Puron® R-410A Refrigerant

Voltage

Nominal Tonnage

Type of Coil

Indoor Fan Motor Controller
2 = 2-Speed Motor Controller (VFD)

Not Used

Packaging

Not Used

Unit Paint Options

Not Used

Indoor Fan Motor Options — Belt Drive

Coil Options

Not Used

Fig. 9 — Model Number Nomenclature Example, Bryant 524J-Series

MODEL SERIES	F	A	S	0	9	1	M	A	A	A	2	A	0	A
Position Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
F = R-410A Fan Coil Unit														
A = Air Conditioning (Cooling Only)														
S = Standard Efficiency														
2 = Two Speed Indoor Fan Motor Controller (VFD)														
A = Standard														

Type
Efficiency
Nominal Tonnage
Voltage
Fan Motor Options
Indoor Coil
Future Use
Fan Speed Controller
Painted Cabinet Options
Future Use
Packaging

Fig. 10 — Model Number Nomenclature Example, ICP FAS/FHS-Series

IMPORTANT: Do NOT change units equipped with the VFD option to operate at less than the preset 66% minimum Hz setting (40 Hz). For example, do not change a unit equipped with a standard static motor to operate at less than 40 Hz (which is 66% of its 60 Hz rating). Tables 4-28 list the minimum recommended cfm per fan motor type (single speed or 2-speed) for the units covered in this document.

Table 4 — 48TC Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
48TC 07	1800	1800	1188
48TC 08	2250	2250	1485
48TC 09	2550	2873	1896
48TC 12	3000	3380	2231
48TC 14	3600	4225	2789
48TC 16	4500	5625	3713
48TC 17	4500	4500	2970
48TC 20	5250	5250	3465
48TC 24	6000	6000	3960
48TC 28	7500	8450	5577
48TC 30	8250	8250	5445

Table 5 — 580J Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
580J*07	1800	1800	1188
580J*08	2250	2250	1485
580J*09	2550	2873	1896
580J*12	3000	3380	2231
580J*14	3600	4225	2789
580J*16	4500	5625	3713
580J*17	4500	4500	2970
580J*20	5250	5250	3465
580J*24	6000	6000	3960
580J*28	7500	8450	5577
580J*30	8250	8250	5445

Table 6 — RGS Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
RGS072	1800	1800	1188
RGS090	2250	2250	1485
RGS102	2550	2873	1896
RGS120	3000	3380	2231
RGS150	3600	4225	2789
RGS180	4500	5625	3713
RGS210	5250	5250	3465
RGS240	6000	6000	3960
RGS300	7500	8450	5577
RGS336	8250	8250	5445

Table 7 — 50TC Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	SPEED FAN MOTOR (AT LOW SPEED)
50TC 07	1800	1800	1188
50TC 08	2250	2250	1485
50TC 09	2550	2873	1896
50TC 12	3000	3380	2231
50TC 14	3600	4225	2789
50TC 16	4500	5625	3713
50TC 17	4500	4500	2970
50TC 20	5250	5250	3465
50TC 24	6000	6000	3960
50TC 28	7500	8450	5577
50TC 30	8250	8250	5445

Table 8 — 558J Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	SPEED FAN MOTOR (AT LOW SPEED)
558J*07	1800	1800	1188
558J*08	2250	2250	1485
558J*09	2550	2873	1896
558J*12	3000	3380	2231
558J*14	3600	4225	2789
558J*16	4500	5625	3713
558J*17	4500	4500	2970
558J*20	5250	5250	3465
558J*24	6000	6000	3960
558J*28	7500	8450	5577
558J*30	8250	8250	5445

Table 9 — RAS Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	SPEED FAN MOTOR (AT LOW SPEED)
RAS072	1800	1800	1188
RAS090	2250	2250	1485
RAS102	2550	2873	1896
RAS120	3000	3380	2231
RAS150	3600	4225	2789
RAS180	4500	5625	3713
RAS210	5250	5250	3465
RAS240	6000	6000	3960
RAS300	7500	8450	5577
RAS336	8250	8250	5445

Table 10 — 50TCQ Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
50TCQ 07	1800	1800	1188
50TCQ 08	2250	2535	1673
50TCQ 09	2550	2873	1896
50TCQ 12	3000	3000	1980
50TCQ 14	3750	4225	2789
50TCQ 17	4500	5070	3346
50TCQ 24	6000	6760	4462

Table 11 — 548J Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
548J*07	1800	1800	1188
548J*08	2250	2535	1673
548J*09	2550	2873	1896
548J*12	3000	3000	1980
548J*14	3750	4225	2789
548J*17	4500	5070	3346
548J*24	6000	6760	4462

Table 12 — RHS Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
RHS072	1800	1800	1188
RHS090	2250	2535	1673
RHS102	2550	2873	1896
RHS120	3000	3000	1980
RHS150	3750	4225	2789
RHS181/183	4500	5070	3346
RHS240/243	6000	6760	4462

Table 13 — 48HC Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
48HC 07	1800	1800	1300
48HC 08	2250	2535	1673
48HC 09	2550	2550	1683
48HC 11	3000	3380	2231
48HC 12	3000	3380	2231
48HC 14	3750	4225	2789
48HC 17	4500	5070	3346
48HC 20	5250	5915	3904
48HC 24	6000	7500	4950
48HC 28	7500	8450	5577

Table 14 — 581J Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
581J*07	1800	1800	1300
581J*08	2250	2535	1673
581J*09	2550	2550	1683
581J*11	3000	3380	2231
581J*12	3000	3380	2231
581J*14	3750	4225	2789
581J*17	4500	5070	3346
581J*20	5250	5915	3904
581J*24	6000	7500	4950
581J*28	7500	8450	5577

Table 15 — RGH Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
RGH072	1800	1800	1300
RGH090	2250	2535	1673
RGH102	2550	2550	1683
RGH110	3000	3380	2231
RGH120	3000	3380	2231
RGH150	3750	4225	2789
RGH181/183	4500	5070	3346
RGH210/213	5250	5915	3904
RGH240/243	6000	7500	4950
RGH300/303	7500	8450	5577

Table 16 — 50HC Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
50HC 07	1800	1800	1200
50HC 08	2250	2535	1673
50HC 09	2550	2550	1683
50HC 11	3000	3380	2231
50HC 12	3000	3380	2231
50HC 14	3750	4225	2789
50HC 17	4500	5070	3346
50HC 20	5250	5915	3904
50HC 24	6000	7500	4950
50HC 28	7500	8450	5577

Table 17 — 551J Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
551J*07	1800	1800	1200
551J*08	2250	2535	1673
551J*09	2550	2550	1683
551J*11	3000	3380	2231
551J*12	3000	3380	2231
551J*14	3750	4225	2789
551J*17	4500	5070	3346
551J*20	5250	5915	3904
551J*24	6000	7500	4950
551J*28	7500	8450	5577

Table 18 — RAH Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
RAH072	1800	1800	1200
RAH090	2250	2535	1673
RAH102	2550	2550	1683
RAH110	3000	3380	2231
RAH120	3000	3380	2231
RAH150	3750	4225	2789
RAH 181/183	4500	5070	3346
RAH210/213	5250	5915	3904
RAH240/243	6000	7500	4950
RAH300/303	7500	8450	5577

Table 19 — 50HCQ Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
50HCQ 07	1800	1800	1188
50HCQ 08	2250	2250	1485
50HCQ 09	2550	2873	1896
50HCQ 12	3000	3380	2231

Table 20 — 549J Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
549J*07	1800	1800	1188
549J*08	2250	2250	1485
549J*09	2550	2873	1896
549J*12	3000	3380	2231

Table 21 — RHH Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
RHH072	1800	1800	1188
RHH090	2250	2250	1485
RHH102	2550	2873	1896
RHH120	3000	3380	2231

Table 22 — 40RUA Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
40RUA 07	1800	2030	1338
40RUA 08	2250	2535	1673
40RUA 12	3000	3380	2231
40RUA 14	3750	4225	2789
40RUA 16	4500	4500	2970
40RUA 25	6000	6000	3960
40RUA 28	7500	8450	5577
40RUA 30	9000	9295	6135

Table 23 — 524J*A Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
524J*A07	1800	2030	1338
524J*A08	2250	2535	1673
524J*A12	3000	3380	2231
524J*A14	3750	4225	2789
524J*A16	4500	4500	2970
524J*A25	6000	6000	3960
524J*A28	7500	8450	5577
524J*A30	9000	9295	6135

Table 24 — FAS Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
FAS072	1800	2030	1338
FAS091	2250	2535	1673
FAS120	3000	3380	2231
FAS150	3750	4225	2789
FAS180	4500	4500	2970
FAS240	6000	6000	3960
FAS300	7500	8450	5577
FAS336	9000	9295	6135

Table 25 — 40RUS Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
40RUS 08	2250	2535	1673
40RUS 10	2550	2873	1896
40RUS 12	3000	3380	2231
40RUS 14	3750	4225	2789
40RUS 16	4500	4500	2970
40RUS 25	6000	6000	3960
40RUS 28	7500	8450	5577
40RUS 30	9000	9295	6135

Table 26 — 40RUQ Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
40RUQ 07	1800	2030	1338
40RUQ 08	2250	2535	1673
40RUQ 12	3000	3380	2231
40RUQ 16	4500	4500	2970
40RUQ 25	6000	6000	3960

Table 27 — 524J*H Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
524J*H07	1800	2030	1338
524J*H08	2250	2535	1673
524J*H12	3000	3380	2231
524J*H16	4500	4500	2970
524J*H25	6000	6000	3960

Table 28 — FHS Min cfm Per Fan Motor Type

MODEL-SIZE	SINGLE SPEED FAN MOTOR	2-SPEED FAN MOTOR (AT HIGH SPEED)	2-SPEED FAN MOTOR (AT LOW SPEED)
FHS072	1800	2030	1338
FHS091	2250	2535	1673
FHS120	3000	3380	2231
FHS180	4500	4500	2970
FHS240	6000	6000	3960

Pre-Start Check, 2-Speed Indoor Fan System Option

1. Remove the access panel to reach the VFD.
 - Carrier 48/50 Series: Blower compartment panel
 - Bryant 548J, 549J, 551J, 558J, 580J, 581J: Blower compartment panel
 - ICP RGS, RAS, RHS, RGH, RAH, RHH: Blower compartment panel
 - Carrier 40RU: Rear access panel
 - Bryant 524J*A/H: Rear access panel
 - ICP FAS, FHS: Rear access panel

NOTE: See Fig. 11-28 for VFD location in the units covered by this document.
2. Read all safety, caution and warning labels.
3. Inspect wiring at the VFD for loose or disconnected wires at the terminal strip and for wires in contact with sharp edges and moving parts (pulley, belt).

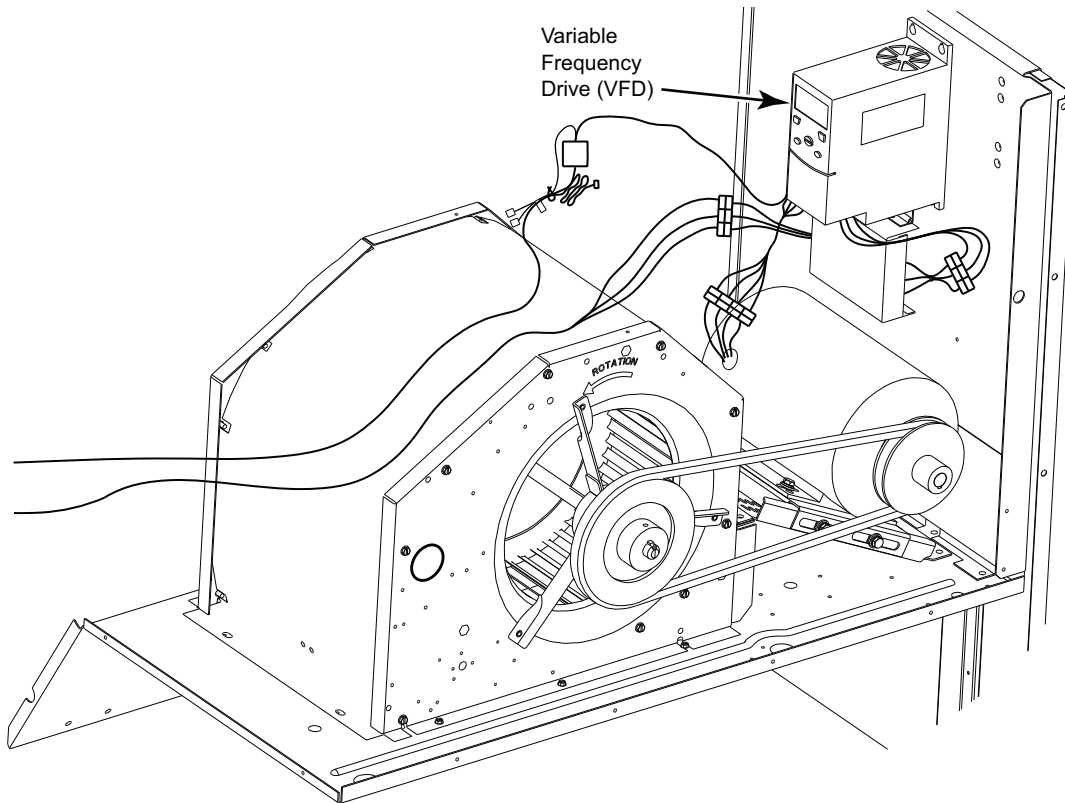


Fig. 11 — ACS320/ACH180 VFD location for the following units (208/230V and 460V units only):
 48/50TC 07 and 50TCQ 07
 580J/558J*07 and 548J*07
 RGS072, RAS072

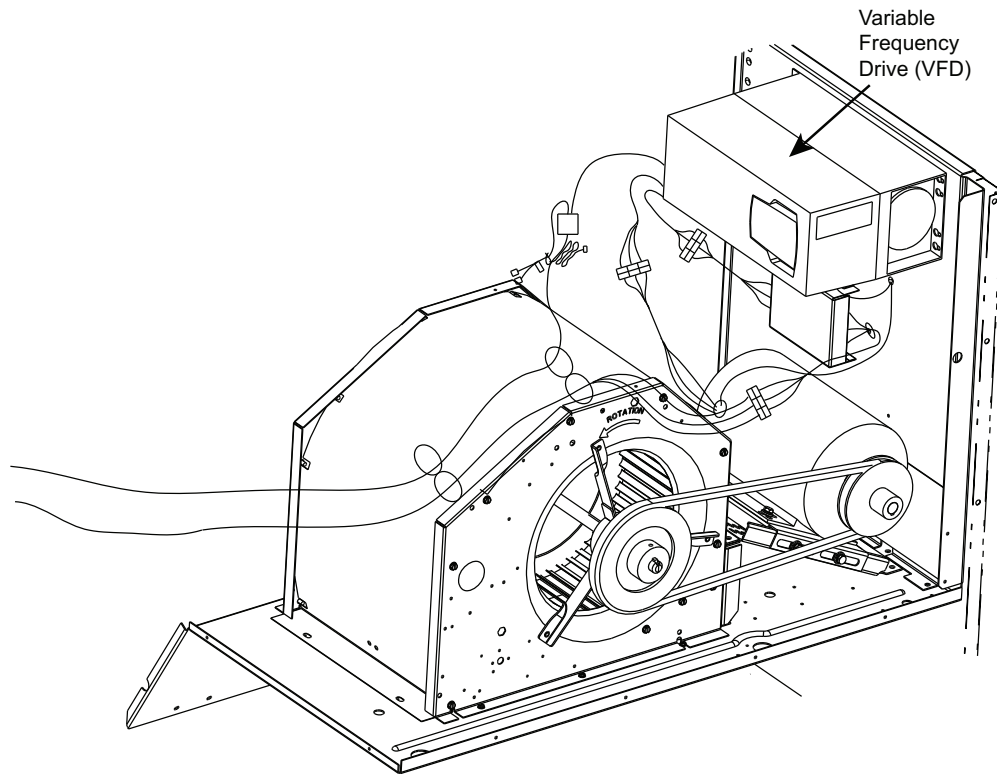


Fig. 12 — ACH550/580 VFD location for the following units (575V units only):
 48/50TC 07
 580J/558J*07
 RGS072, RAS072

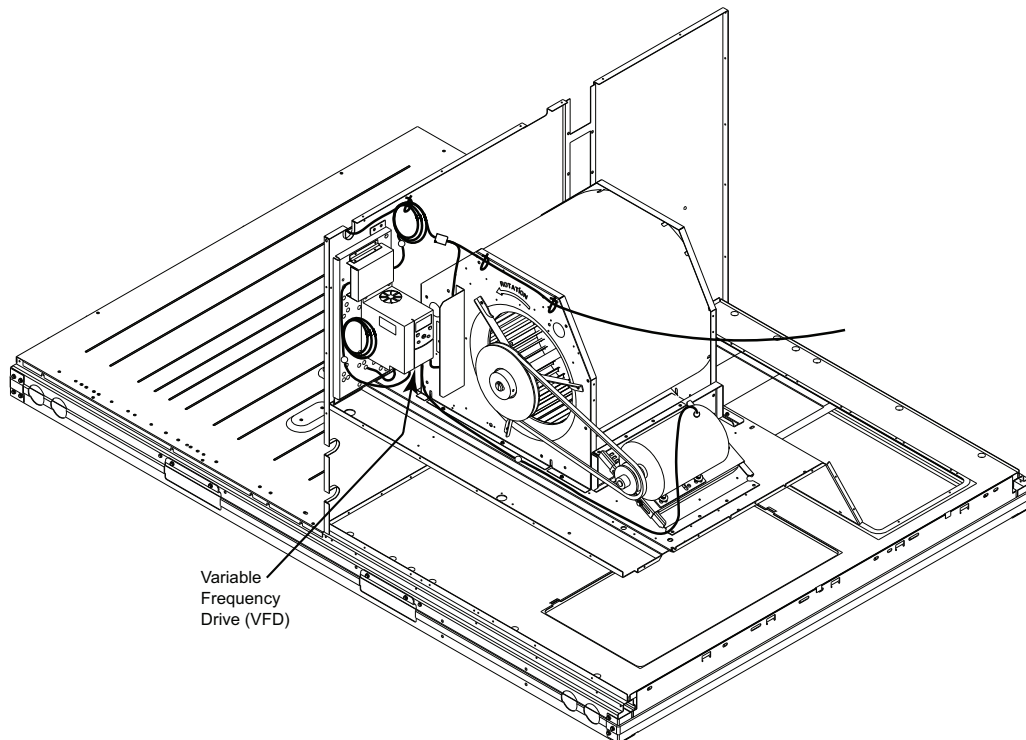


Fig. 13 — ACS320/ACH180 VFD location for the following units (208/230V and 460V units only):
 48/50TC 08
 580J/558J*08
 RGS089/090, RAS089/090

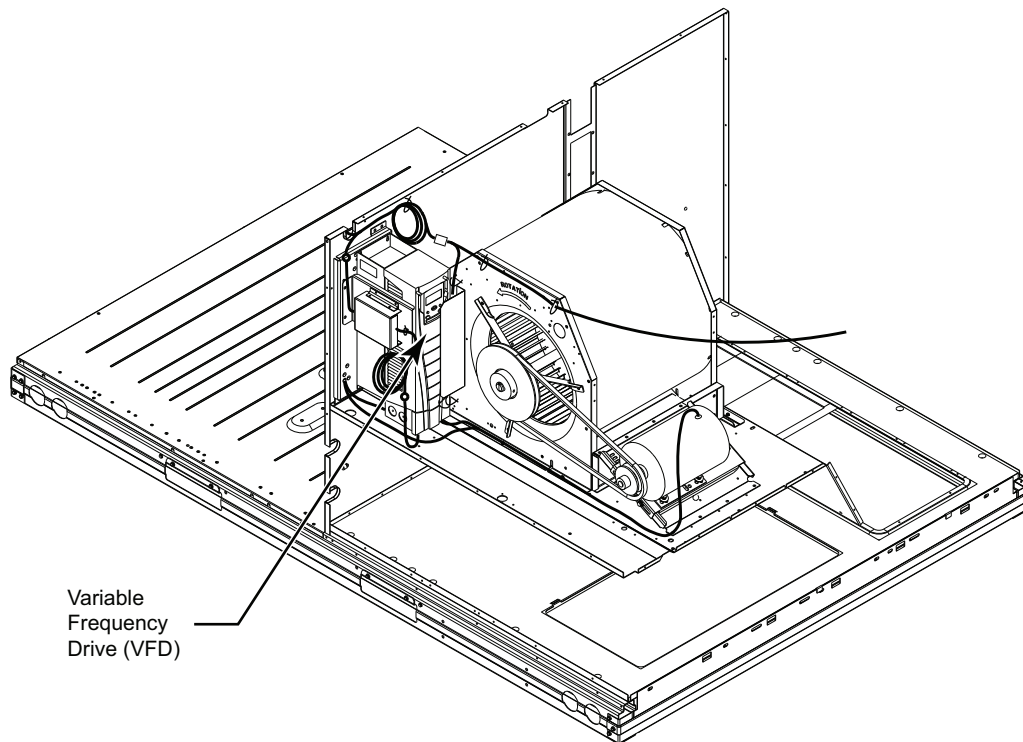


Fig. 14 — ACH550/580 VFD location for the following units (575V units only):
48/50TC 08
580J/558J*08
RGS089/090, RAS089/090

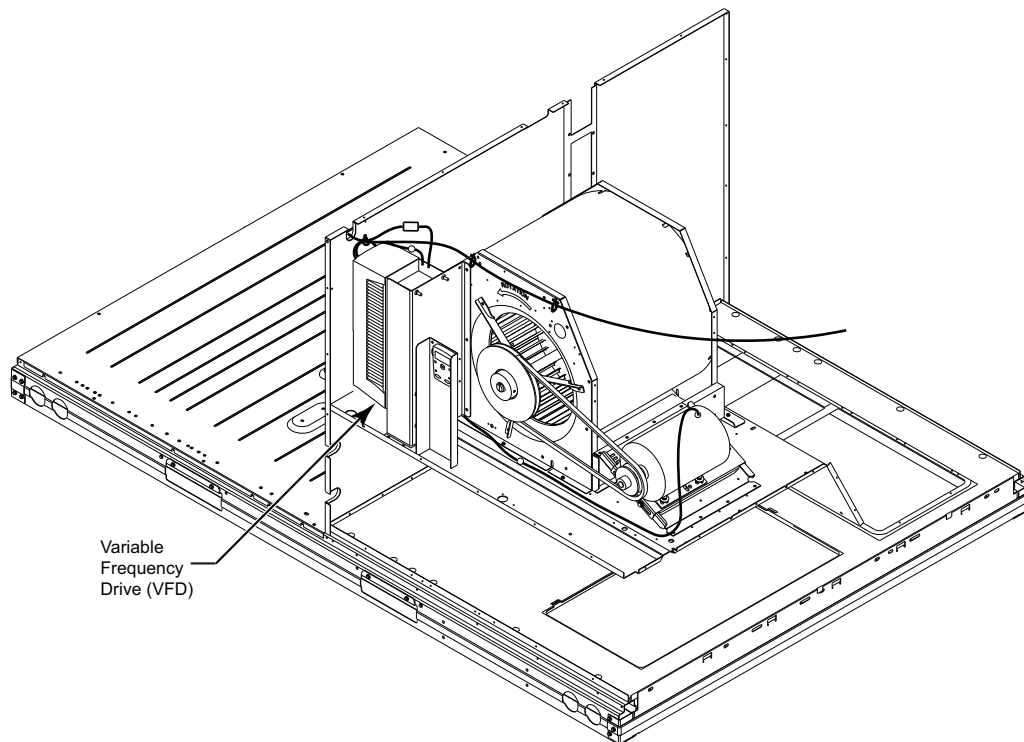


Fig. 15 — ACH550/580 VFD location for the following units:
48/50HC 07 and 50HCQ 07
581J/551J*07 and 549J*07
RGH072/073, RAH072/073 and RHH072/073

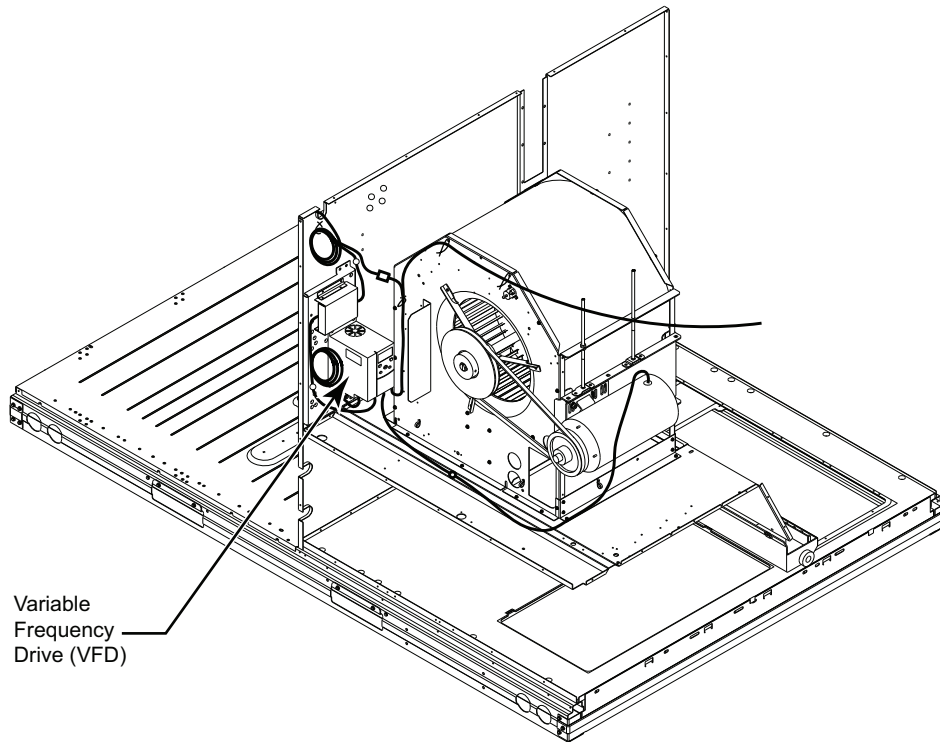


Fig. 16 — ACS320/ACH180 VFD location for the following units (208/230V and 460V units only):
 48/50TC 09-14 and 50TCQ 08-12
 580J/558J*09-14 and 548J*09-12
 RGS100/102/119/120/150, RAS100/102/119/120/150 and RHS090/102/120

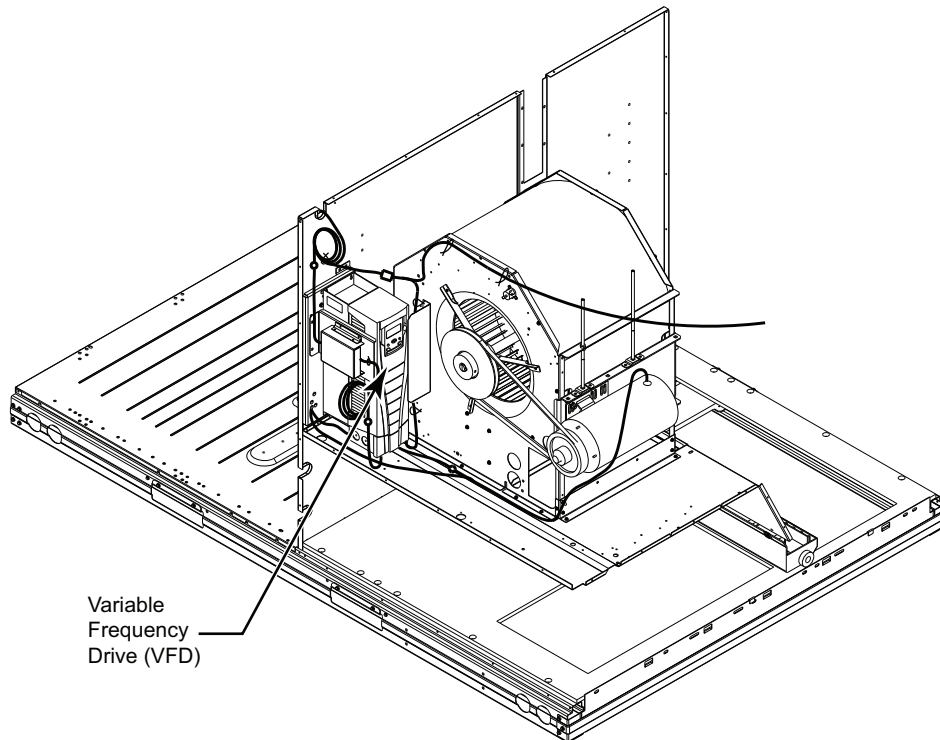


Fig. 17 — ACH550/580 VFD location for the following units (575V units only):
 48/50TC 09-14 and 50TCQ 08-12
 580J/558J*09-14 and 548J*08-12
 RGS100/102/119/120/150, RAS100/102/119/120/150 and RHS090/102/120

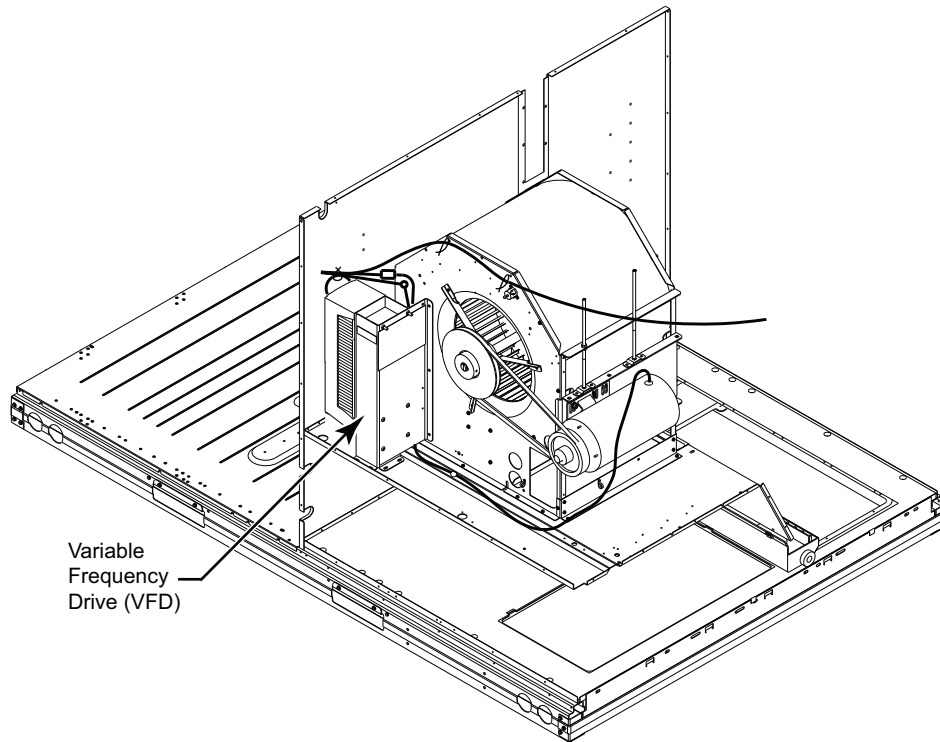


Fig. 18 — ACH550/580 VFD location for the following units:
48/50HC 08-09 and 50HCQ 08-09
581J/551J*08 and 549J*08
RGH090, RAH090 and RHH090

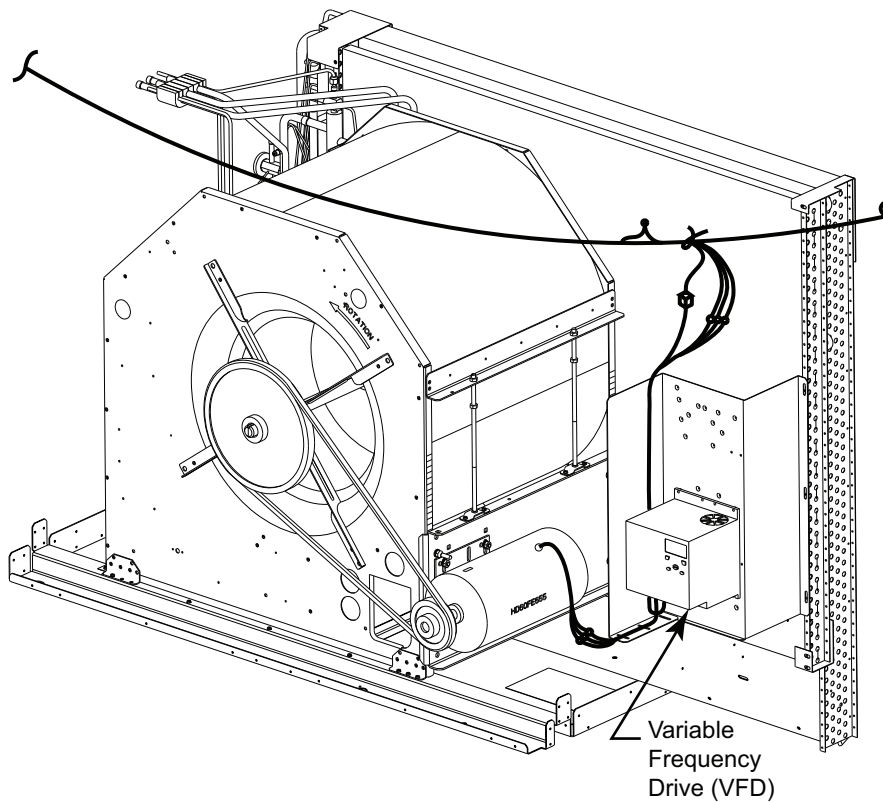


Fig. 19 — ACS320/ACH180 VFD location for the following units (208/230V and 460V units only):
48/50TC 16 and 50TCQ 14
580J/558J*16 and 548J*14
RGS180, RAS180 and RHS150

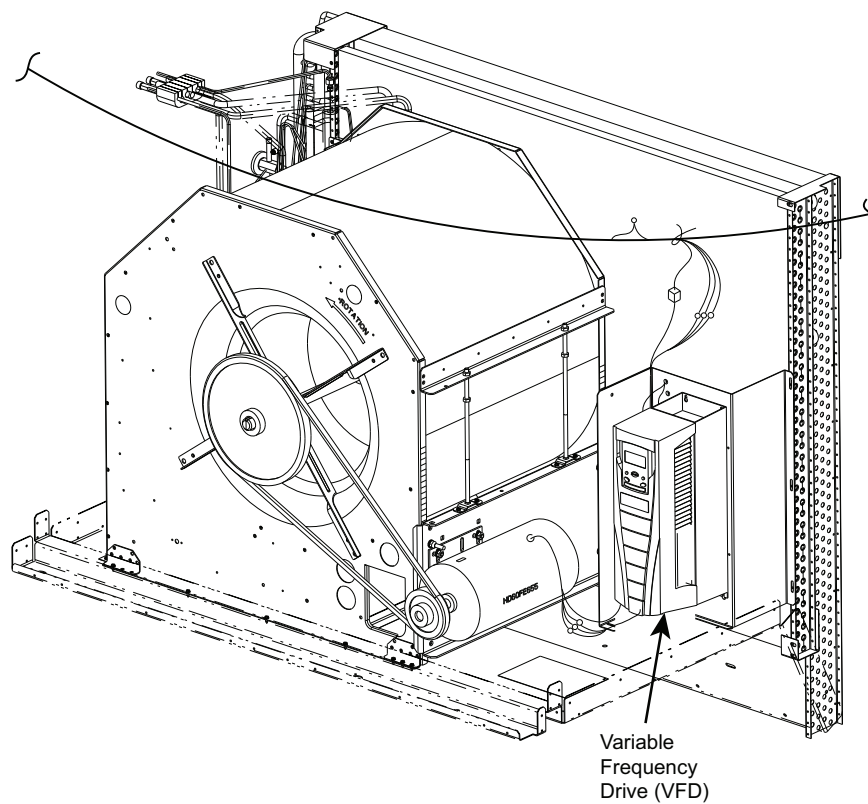
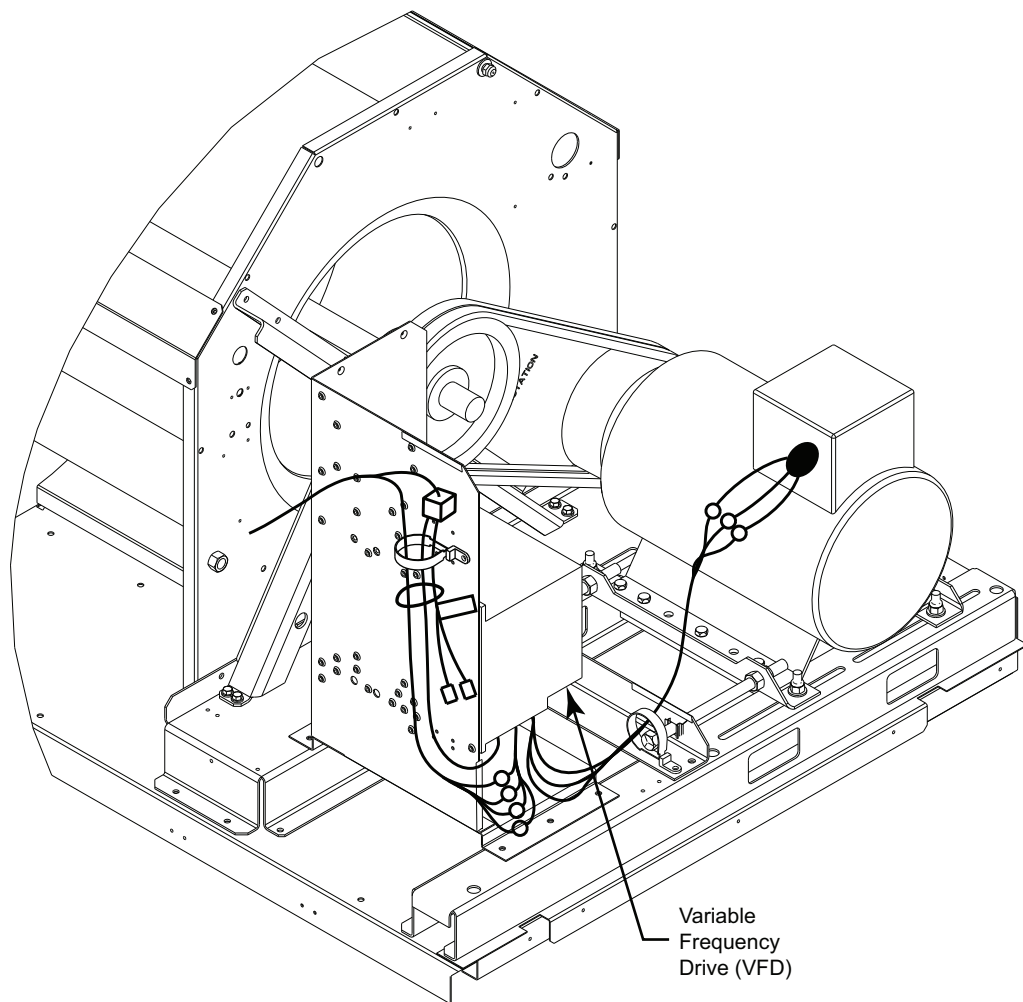


Fig. 20 — ACH550/580 VFD location for the following units (575V units only):
48/50TC 16 and 50TCQ 14
580J/558J*16 and 548J*14
RGS180, RAS180 and RHS150



**Fig. 21 — ACS320/ACH180 VFD location for the following units
(no ComfortLink Controls [208/230V and 460V units only]):
48/50TC 17-30, 50TCQ 17-24 and 48/50HC 17-28
580J/558J 17-30, 548J 17-24 and 581J/551J 17-28
RGS210/240/300/336, RAS210/240/300/336, RHS181/183/240/243
and RGH181/183/210/213/240/243/300/303, RAH181/183/210/213/240/243/300/303**

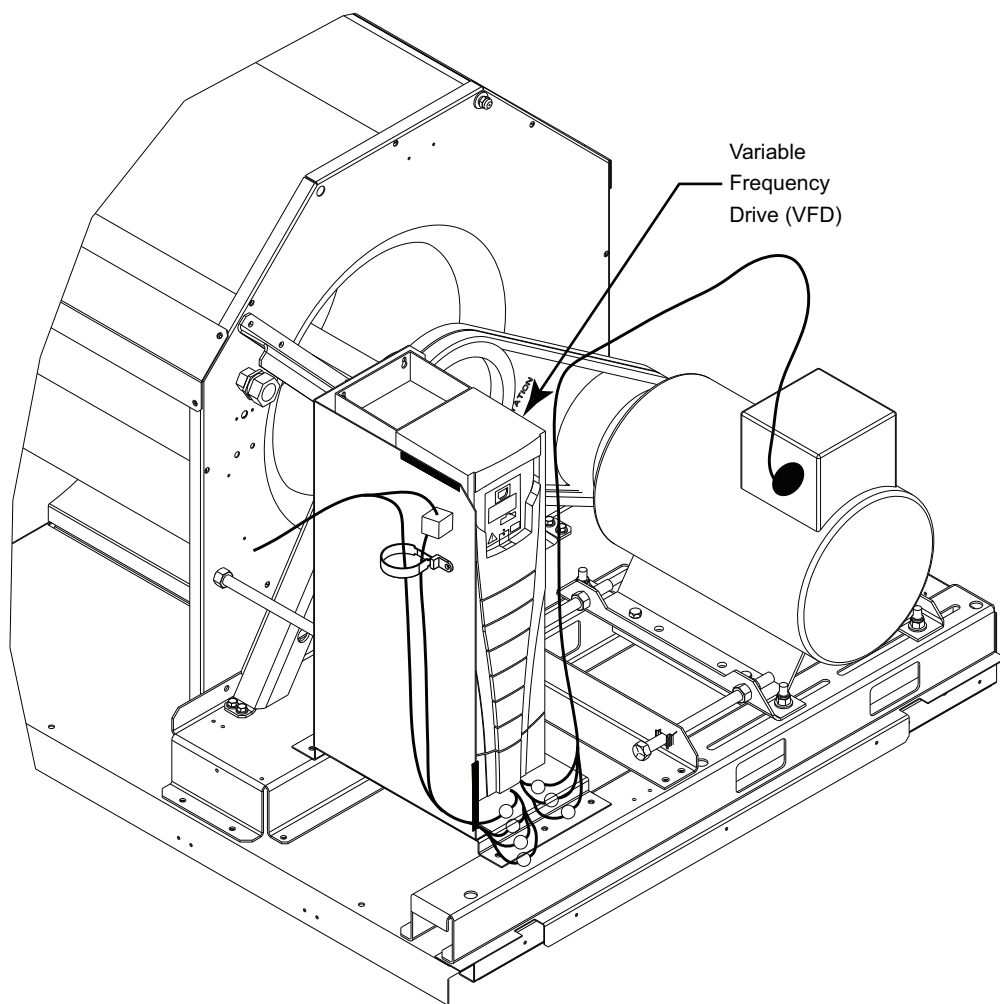


Fig. 22 — ACH550/580 VFD location for the following units (575V units only):
48/50TC 17-30 and 50TCQ 17-24,
48/50HC 17-28 (ComfortLink Controls)
580J/558J 17-30 and 548J 17-24
581J/551J 17-28
RGS210/240/300/336, RAS210/240/300/336 and RHS181/183/240/243,
RGH181/183/210/213/240/243/300/303, RAH181/183/210/213/240/243/300/303

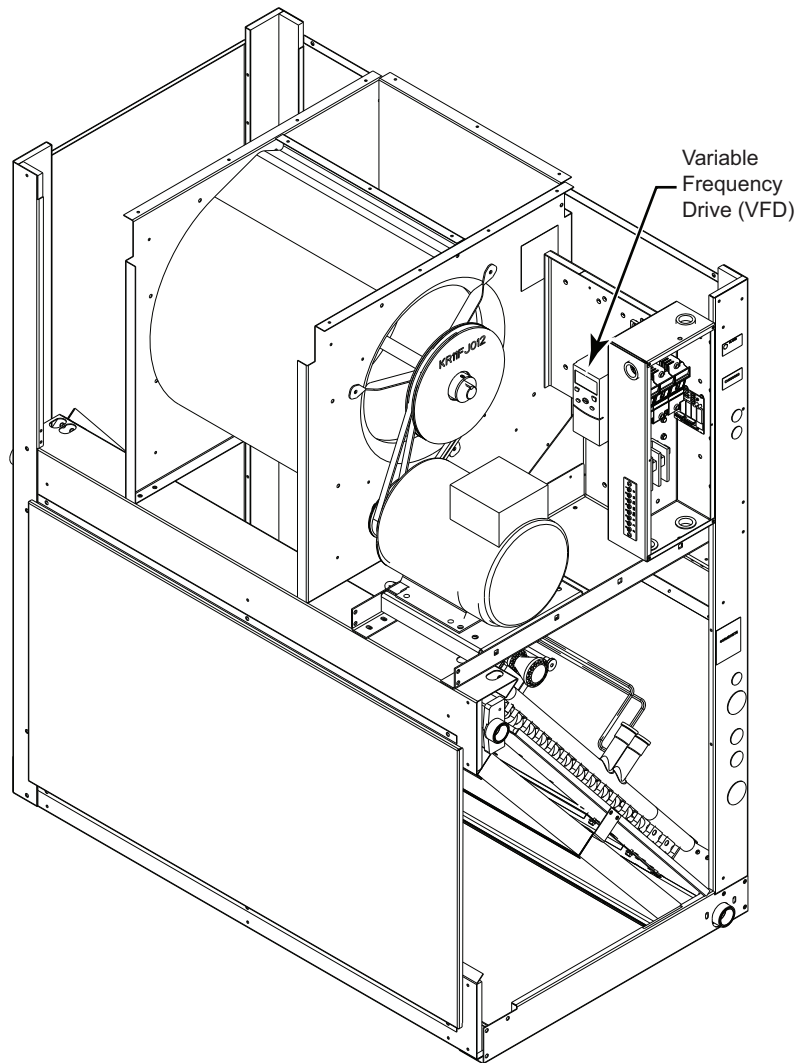


Fig. 23 — ACS320/ACH180 VFD location for the following units (208/230V and 460V only):
40RUA/RUQ 07-12, 40RUS 08-12
524J*A/H 07-12
FAS072/091/120, FHS072/091/120

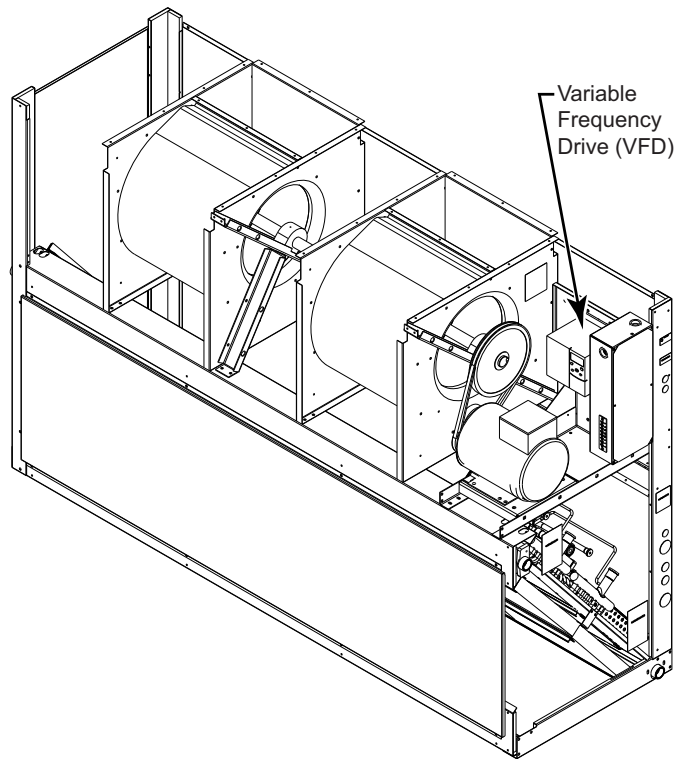


Fig. 24 — ACS320/ACH180 VFD location for the following units (208/230V and 460V only):
40RUA/RUS 14-25 and 40RUQ 16-25
524J*A 14A-25A and 524J*H 16H-25H
FAS150/180/240 and FHS180/240

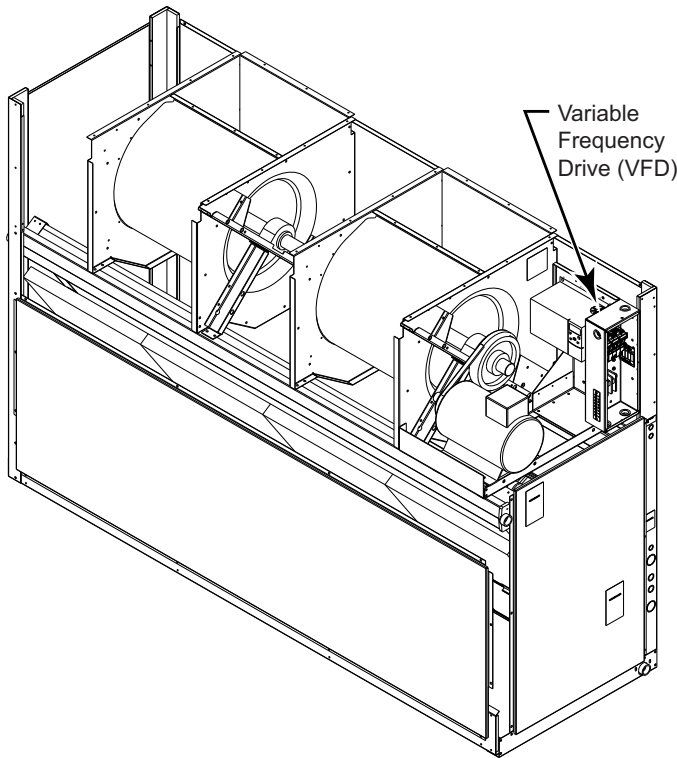


Fig. 25 — ACS320/ACH180 VFD location for the following units (208/230V and 460V only):
40RUA/RUS 28-30
524J*A 28A-30A
FAS300

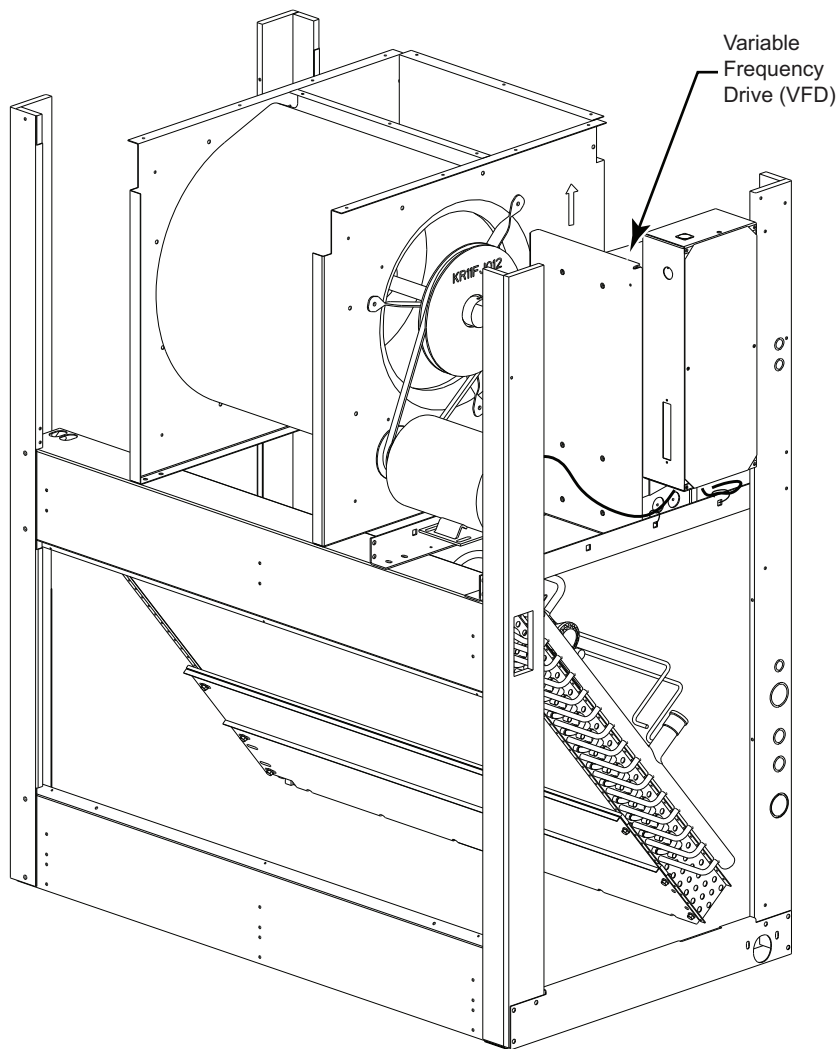


Fig. 26 — ACH550/580 VFD location for the following units (575V only):
40RUA 07-12, 40RUS 08-12 and RUQ 07-12
524J*A 07-12 and 524J*H 07-12
FAS072/091/120 and FHS072/091/120

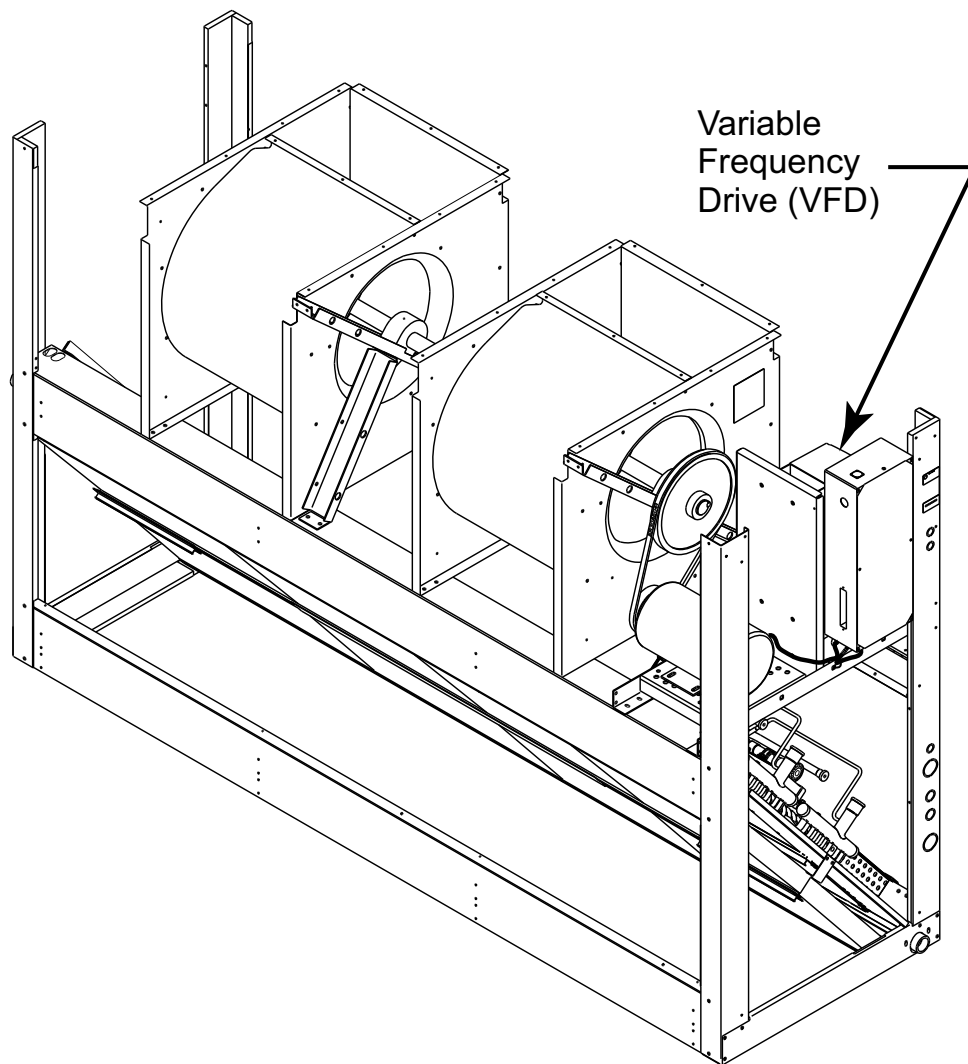


Fig. 27 — ACH550/580 VFD location for the following units (575V only):
40RUA/RUS 14-25 and 40RUQ 16-25
524J*A 14A-25A and 524J*H 16H-25H
FAS150/180/240 and FHS180/240

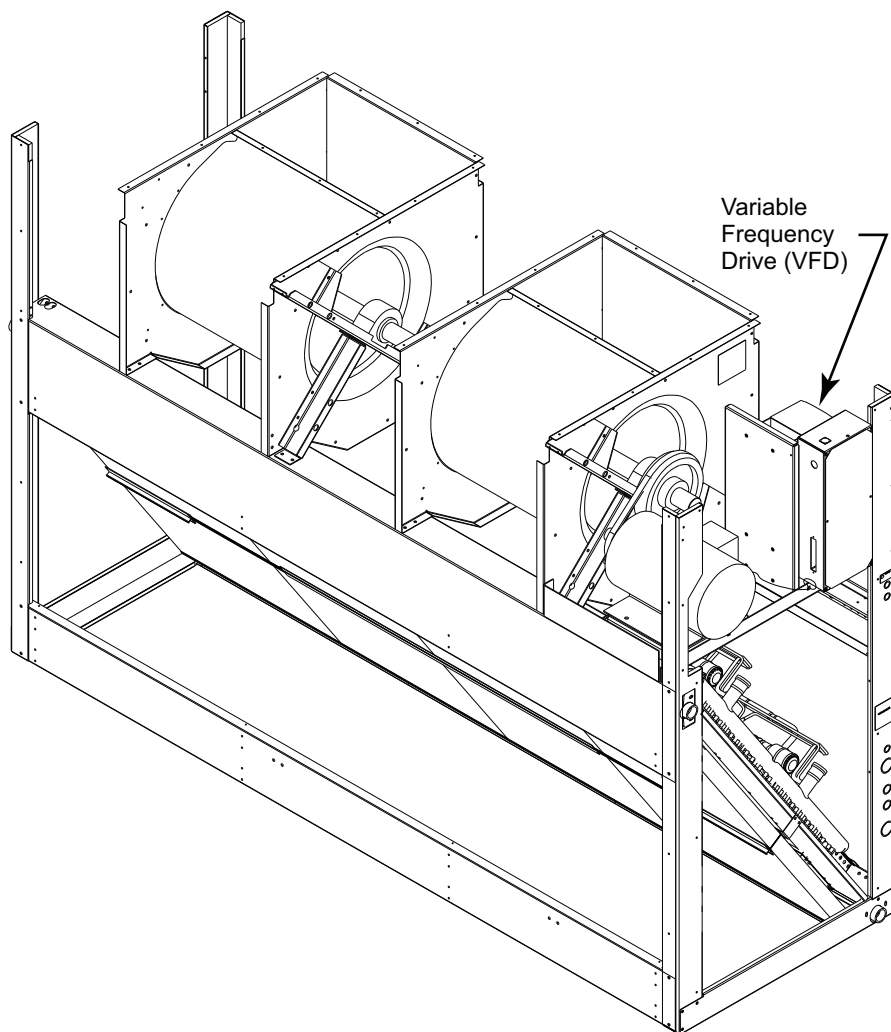


Fig. 28 — ACH550/580 VFD location for the following units (575V only):
40RUA/RUS 28-30
524J*A 28A-30A
FAS300

Operating Fan for Test and Balance

During the Test and Balance procedure, it is necessary to operate the supply fan in High Speed without concurrent operation of the Cooling or Heating systems. Use the following procedure to force the fan speed to High.

UNIT WITH ACCESSORY VFD KEYPAD

1. Set the space thermostat to SYSTEM OFF and FAN in AUTO.
2. Disconnect unit power. Lock-out/tag-out.
3. Open the fan access panel (see Fig. 11-28 for specific unit).
4. Locate pressure ports or pitot tubes in the return duct and supply duct to measure external static pressure. See Fig. 29 and Tables 29-31 for typical locations.
5. Restore unit power.
6. Set the space thermostat to FAN CONT.
7. At the VFD keypad, tap the HAND key and then tap the UP arrow button to increase the motor speed until 60.0 is displayed on the display screen.
8. Check the motor speed with stroboscope or similar tool. Motor shaft speed must be in 1725 to 1760 rpm (28.8 to 29.3 r/s) range for High Speed.
9. Replace the fan access panel.
10. Perform Test and Balance procedure.
11. Adjust the supply fan speed according to base unit instructions to deliver the project selection cfm value. Ensure the selection cfm value is not lower than the "Min cfm Per Fan Motor Type" for this unit-size as found in Tables 4-28 on pages 7-10.

To restore the unit to ready-to-start condition, tap the DOWN arrow button to reduce motor speed until the 40.0 is displayed on the display screen and then tap the AUTO key. Disconnect the unit power and lock-out/tag-out, set the space thermostat to FAN AUTO. Remove the test pressure ports from the external duct locations. Restore unit power.

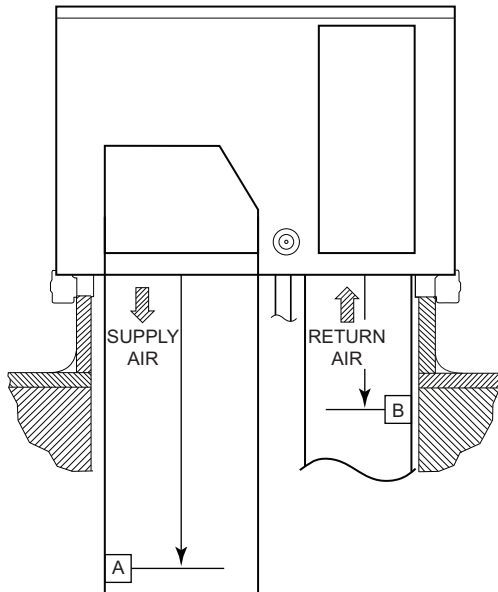


Fig. 29 — Measuring External Static Pressure — Distance Below Unit Base

Table 29 — Measuring External Static Pressure — Distance Below Unit Base — Carrier

AHRI PRESSURE LOCATIONS					
MODEL	SIZES	in.	in.	mm	mm
		Supply Air	Return Air	Supply Air	Return Air
		[A]	[B]	[A]	[B]
48/50HC	07-12	43-1/2	12	1100	310
	14	64-1/2	14	1640	350
	17-28	83	19	2110	490
48/50TC	07	32	10	830	260
	08-14	43-1/2	12	1100	310
	16	64-1/2	14	1640	350
	17-30	83	19	2110	490
50HCQ	04-06	32	10	1100	310
	07-09	43-1/2	12	1100	310
	12	44-1/2	13	1130	330
50TCQ	04-07	32	10	830	260
	08-12	43-1/2	12	1100	310
	14	44-1/2	14	1130	350
	17-24	83	19	2110	490

Table 30 — Measuring External Static Pressure — Distance Below Unit Base — Bryant

AHRI PRESSURE LOCATIONS					
MODEL	SIZES	in.	in.	mm	mm
		Supply Air	Return Air	Supply Air	Return Air
		[A]	[B]	[A]	[B]
581J/551J	07-12	43-1/2	12	1100	310
	14	64-1/2	14	1640	350
	17-28	83	19	2110	490
580J/558J	07	32	10	830	260
	08-14	43-1/2	12	1100	310
	16	64-1/2	14	1640	350
	17-30	83	19	2110	490
549J	07-09	43-1/2	12	1100	310
	12	44-1/2	13	1130	330
548J	07	32	10	830	260
	08-12	43-1/2	12	1100	310
	14	44-1/2	14	1130	350
	17-24	83	19	2110	490

Table 31 — Measuring External Static Pressure — Distance Below Unit Base — ICP

AHRI PRESSURE LOCATIONS					
MODEL	SIZES	in.	in.	mm	mm
		Supply Air	Return Air	Supply Air	Return Air
		[A]	[B]	[A]	[B]
RGH/RAH	090-120	43-1/2	12	1100	310
	150	64-1/2	14	1640	350
	181-303	83	19	2110	490
RGS/RAS	090-140	43-1/2	12	1100	310
	181-336	83	19	2110	490
RHH	090-102	43-1/2	12	1100	310
	120	44-1/2	13	1130	330
RHS	090-120	43-1/2	12	1100	310
	150	44-1/2	14	1130	350
	181-243	83	19	2110	490

REMOTE KEYPAD REFERENCE

This section only applies when a unit with the factory-installed Variable Frequency Drive (VFD) option is equipped with the field-installed Remote VFD Keypad (P/N: CRDISKIT001A00).

On single package rooftop units and fan coils equipped with the factory-installed VFD option, the supply fan speed is controlled by a 3-phase VFD. See Fig. 11-28 for the location of the VFD in the various units covered in this manual.

The VFD is powered during normal operation to prevent condensation from forming on the boards during the off mode and is stopped by driving the speed to 0. The units use ABB VFDs. The interface wiring for the VFDs is shown in Fig. 31 and 33. Terminal designations are shown in the Terminal Designation tables (see Tables 32 and 33). Configurations are shown in the VFD Parameters tables (see Appendix Tables A-I on pages 41-56).

Variable Frequency Drive

The VFD switches the indoor fan motor speed between full/high speed (60 Hz motor operation) and reduced/low speed (40 Hz motor operation) as required by ASHRAE 90.1-2016 and IECC-2015 requirements for two-stage HVAC units. The VFD is factory-configured to match the current and power requirements for each motor selection and all wiring connections are completed by the factory; no field adjustments or connections are necessary.

While the basic VFD retains all of its standard capabilities, the 2-speed indoor fan system application uses only a limited portion of these features to provide two discrete output speeds to the motor. Consequently the VFD is not equipped with a keypad. A keypad is available as an accessory for field-installation or expanded service access to VFD parameter and troubleshooting tables:

- P/N: CRDISKIT001A00 for ACH550/ACS320
- P/N: CRDISKIT003A00 for ACH580/ACH180

NOTE: The ACH180 comes with a factory integrated, non-removable keypad; however, an ACH580 remote keypad can be used on an ACH180 drive to view more detailed points and parameter settings. Use of a ACH580 remote keypad on an ACH180 device does not affect VFD performance.

CAUTION

CONFIGURATION OVERRIDE HAZARD

Do not use start-up assistant on this VFD application! Use of start-up assistant will override the factory VFD configurations!

The 2-Speed Indoor Fan system control circuit inputs to the VFD are 24-VDC signals.

- For ACS320/ACH180 VFDs the voltage is sourced from the VFD at its terminal 9/21 (+24 V). 2-Speed Indoor Fan system speed inputs are received at terminals 13/9 (DI2) for low speed (40 Hz) motor operation and 14/10 (DI3) for high speed (60 Hz) motor operation. See Table 32 and Fig. 30-32.
- For ACH550/580 VFDs the voltage is sourced from the VFD at its terminal 10 (+24 V). 2-Speed Indoor Fan system speed inputs are received at terminals 14 (DI2) for low speed (40 Hz) motor operation and 13 (DI3) for high speed (60 Hz) motor operation. See Table 33 and Fig. 33.

When neither input is present, the VFD will shut the fan motor off. There is no separate indoor fan contactor required in this application.

The VFD used in the 2-Speed Indoor Fan system has soft start capabilities to slowly ramp up the speeds, eliminating any high inrush of air volume during speed changes. It also has internal over current protection for the fan motor.

INDOOR FAN MOTOR

The indoor fan motors used with the VFD are specially manufactured for use with VFD power circuits. The motor winding insulation is specially formulated to resist breakdown due to voltage stress issues. The motor shaft includes grounding rings to prevent damage to bearings caused by grounding currents. Replace these motors with Factory Authorized Parts available from Replacement Components Division (RCD).

CONNECTION	TERM	DESCRIPTION	
Digital I/O and Relay Output Connections			
	24 V	Aux. +24 vdc, max 200 mA	
	DGND	Aux. voltage output common	
	DI1	Stop (0) / Start (1)	
	DI2	Not configured	
	DI3	Not configured	
	DI4	Start interlock 1 (1 = allow start)	
	DCOM	Digital input common	
	DO	Not energized	
	DO COM	Digital output common	
	DO SRC	Digital output auxiliary voltage	
	NC	Digital output	Running
	COM		
	NO		
	Analog I/O		
	AI1/DI5	Speed reference (0-10V)	
	AGND	Analog input circuit common	
	AI2	Not used	
	AGND	Analog output circuit common	
	AO	Output frequency (0-20 mA)	
	10V	Ref. voltage +10 vdc	
	SCREEN	Signal cable shield (screen)	
Safe Torque Off (STO) (only on ACH180-04S)			
	S+	Safe torque off function.	
	SGND	Connected at the factory.	
	S1	Drive starts only when both	
	S2	circuits are closed.	
EIA-485 Modbus RTU			
	B+	Embedded Modbus RTU (EIA-485)	
	A-		
	AGND		
	SHIELD		

Fig. 30 – Wiring Terminals

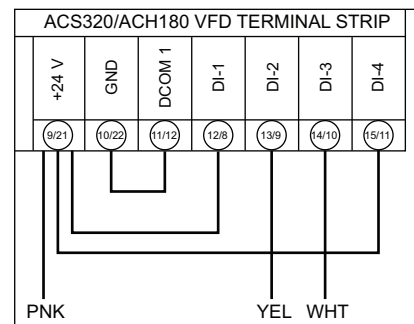


Fig. 31 – ACS320/ACH180 VFD Wiring

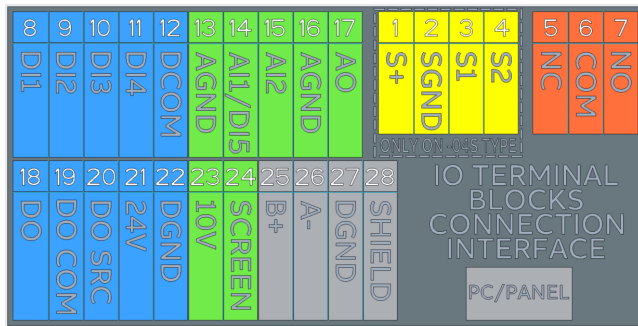


Fig. 32 — ACH180 Terminal Block Connections Label

Table 32 — ACS320/ACH180 VFD Terminal Designations

TERMINAL	FUNCTION
U1/L1 V1/L2 W1/L3	Three-phase main circuit input power supply
U2/T1 V2/T2 W2/T3	Three-phase AC output to motor, 0V to maximum input voltage level
10/22 (GND) 11/12 (COMMON)	- Auxiliary voltage output common - Digital input common
9/21 (24 VDC) 12/8 (DI1)	Auxiliary voltage output: +24 vdc, max 200 mA
9/21 (24 VDC) 15/11 (DI4)	Start Enable 1. When opened, the drive goes to emergency stop
13/9 (DI2) 14/10 (DI3)	Factory wired for 24 vdc input from Fan Speed Board

Table 33 — ACH550/580 VFD Terminal Designations

TERMINAL	FUNCTION
U1/L1 V1/L2 W1/L3	Three-Phase main circuit input power supply
U2 / T1/U V2 / T2/V W2 / T3/W	Three-Phase AC output to motor, 0-v to maximum input voltage level
11 (GND) 12 (COMMON)	Factory-supplied jumper
10 (24 VDC) 13 (DI1)	Run (factory-supplied jumper)
10 (24 VDC) 16 (DI4)	Start Enable 1 (factory-supplied jumper). When opened, the drive goes to emergency stop
14 (DI2) 15 (DI3)	Factory wired for 24 vdc input from Fan Speed Board

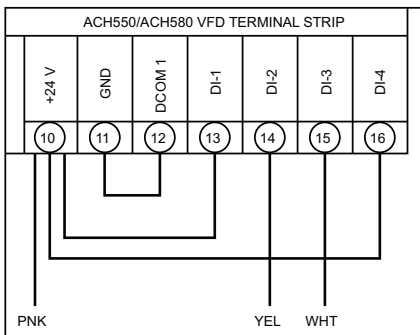


Fig. 33 — ACH550/580 VFD Wiring

VFD REMOTE KEYPAD

NOTE: The following only applies when a unit with the factory-installed 2-Speed Indoor Fan system option is equipped with the field-installed Remote VFD Keypad:

- CRDISKIT001A00 = ACH550/ACS320
- CRDISKIT003A00 = ACH580/ACH180

NOTE: The ACH180 comes with a factory integrated, non-removable keypad; however, an ACH580 remote keypad can be used on an ACH180 drive to view more detailed points and parameter settings. Use of a ACH580 remote keypad on an ACH180 device does not affect VFD performance.

On single package rooftop units and fan coils equipped with the 2-Speed Indoor Fan system option, the supply fan speed is controlled by a 3-phase VFD. See Fig. 11-28 for the location of the VFD in the units covered by this document.

The VFD is powered during normal operation to prevent condensation from forming on the boards during the off mode and is stopped by driving the speed to 0. The units use ABB VFDs. The interface wiring for the VFDs is shown in Fig. 31 and 33. Terminal designations are shown in the Terminal Designation table (see Tables 32 and 33. Configurations are shown in the VFD Keypad Parameters tables (see Tables A-G on pages 41-53).

Details on ACH550/ACS320 operation with remote keypad start below. For details on remote keypad for ACH580 VFDs see “ACH580 Operation with Remote Keypad” on page 32. For details on the keypad for ACH180 VFDs, see “ACH180 VFD Standard Keypad Detail” on page 37.

ACH550/ACS320 Operation with Remote Keypad

The remote keypad used with ACH550/ACS320 VFDs is shown in Fig. 34. The functions of SOFT KEYS (1 and 2) change depending on what is displayed on the screen. The function of SOFT KEY 1 matches the word in the lower left-hand box on the display screen. The function of SOFT KEY 2 matches the word in the lower right-hand box on the display screen. If the box is empty, then the SOFT KEY does not have a function on that specific screen. The UP and DOWN keys are used to navigate through the menus. The OFF key is used to turn off the VFD. The AUTO key is used to change control of the drive to automatic control. The HAND key is used to change control of the drive to local (hand-held) control. The HELP button is used to access the help screens.

For the VFD to operate on the units covered by this document, the drive must be set in AUTO mode. The word “AUTO” will appear in the upper left hand corner of the VFD display. Press the AUTO button to set the drive in AUTO mode.

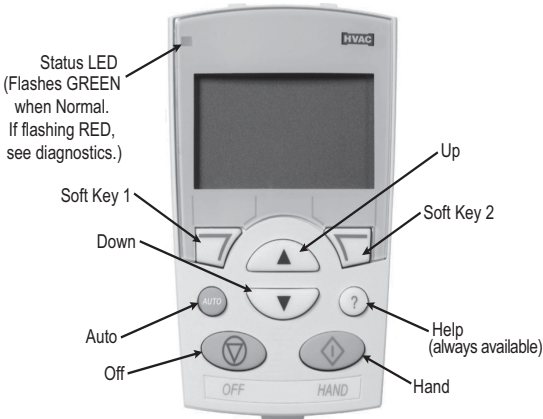


Fig. 34 — ACH550/ACS320 VFD Keypad

START UP WITH ASSISTANT

Initial start-up has been performed at the factory. Use of the start up assistant will override factory VFD configurations.

⚠ CAUTION

CONFIGURATION OVERRIDE HAZARD

Do not use start-up assistant on this VFD application! Use of start-up assistant will override the factory VFD configurations!

START UP BY CHANGING PARAMETERS INDIVIDUALLY

Initial start-up is performed at the factory. To start up the VFD by changing individual parameters, perform the following procedure:

1. Select MENU (SOFT KEY 2). The Main menu will be displayed.
2. Use the UP or DOWN keys to highlight PARAMETERS on the display screen and press ENTER (SOFT KEY 2).
3. Use the UP or DOWN keys to highlight the desired parameter group and press SEL (SOFT KEY 2).
4. Use the UP or DOWN keys to highlight the desired parameter and press EDIT 320/550 (SOFT KEY 2).
5. Use the UP or DOWN keys to change the value of the parameter.
6. Press SAVE (SOFT KEY 2) to store the modified value. Press CANCEL (SOFT KEY 1) to keep the previous value. Any modifications that are not saved will not be changed.
7. Choose another parameter or press EXIT/BACK (SOFT KEY 1) to return to the listing of parameter groups. Continue until all the parameters have been configured and then press EXIT/BACK (SOFT KEY 1) to return to the main menu.

NOTE: The current parameter value appears above the highlight parameter. To view the default parameter value, press the UP and DOWN keys simultaneously. To restore the default factory settings, select the application macro "HVAC Default." ACH550/ASC320 only.

ACH550/ACS320 VFD Modes

The VFD has several different modes for configuring, operating, and diagnosing the VFD. The modes are:

- Standard Display mode — shows drive status information and operates the drive.
- Parameters mode — edits parameter values individually.
- Start-up Assistant mode — guides the start up and configuration.
- Changed Parameters mode — shows all changed parameters.
- Drive Parameter Backup mode — stores or uploads the parameters.
- Clock Set mode — sets the time and date for the drive.
- I/O Settings mode — checks and edits the I/O settings.

STANDARD DISPLAY MODE

Use the standard display mode to read information on the drive status and operate the drive. To reach the standard display mode, press EXIT until the LCD display shows status information as described below. (See Fig. 35.)

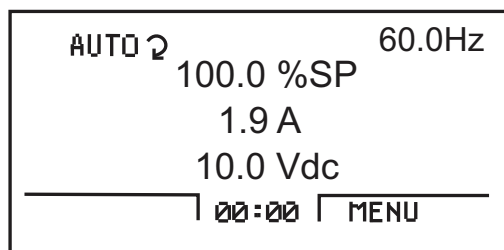


Fig. 35 — Standard Display Example

The top line of the LCD display shows the basic status information of the drive. The HAND icon indicates that the drive control is local from the control panel. The AUTO icon indicates that the drive is in remote control mode, such as the basic I/O or field bus.

The arrow icon indicates the drive and motor rotation status. A rotating arrow (clockwise or counterclockwise) indicates that the drive is running and at set point and the shaft direction is forward or reverse. A rotating blinking arrow indicates that the drive is running but not at set point. A stationary arrow indicates that the drive is stopped. For the units covered in this manual, the correct display rotation is clockwise.

The upper right corner shows the frequency set point that the drive will maintain.

Using parameter group 34, the middle of the LCD display can be configured to display 3 parameter values. The default display shows parameters 0103 (OUTPUT FREQ) in percent speed, 0104 (CURRENT) in amperes, and 0120 (All) in voltage DC.

The bottom corners of the LCD display show the functions currently assigned to the two soft keys. The lower middle displays the current time (if configured to show the time).

The first time the drive is powered up, it is in the OFF mode. To switch to local hand-held control and control the drive using the control panel, press and hold the HAND button. Pressing the HAND button switches the drive to hand control while keeping the drive running. Press the AUTO button to switch to remote input control. To start the drive press the HAND or AUTO buttons, to stop the drive press the OFF button.

To adjust the speed in HAND mode, press the UP or DOWN buttons (the reference changes immediately). The reference can be modified in the local control (HAND) mode, and can be parameterized (using Group 11 reference select) to also allow modification in the remote control mode.

PARAMETERS MODE

The Parameters mode is used to change the parameters on the drive. To change parameters, perform the following procedure:

1. Select MENU (SOFT KEY 2). The Main menu will be displayed.
2. Use the UP or DOWN keys to highlight PARAMETERS on the display screen and press ENTER (SOFT KEY 2).
3. Use the UP or DOWN keys to highlight the desired parameter group and press SEL (SOFT KEY 2).
4. Use the UP or DOWN keys to highlight the desired parameter and press EDIT (SOFT KEY 2).
5. Use the UP or DOWN keys to change the value of the parameter.
6. Press SAVE (SOFT KEY 2) to store the modified value. Press CANCEL (SOFT KEY 1) to keep the previous value. Any modifications that are not saved will not be changed.
7. Choose another parameter or press EXIT (SOFT KEY 1) to return to the listing of parameter groups. Continue until all the parameters have been configured and then press EXIT (SOFT KEY 1) to return to the main menu.

NOTE: The current parameter value appears above the highlight parameter. To view the default parameter value, press the UP and DOWN keys simultaneously. To restore the default factory settings, select the application macro.

CHANGED PARAMETERS MODE

The Changed Parameters mode is used to view and edit recently changed parameters on the drive. To view the changed parameters, perform the following procedure:

1. Select MENU (SOFT KEY 2). The Main menu will be displayed.
2. Use the UP or DOWN keys to highlight CHANGED PAR on the display screen and press ENTER (SOFT KEY 2). A list of the recently changed parameters will be displayed.

3. Use the UP or DOWN keys to highlight the desired parameter group and press EDIT (SOFT KEY 2) to change the parameter if desired.
4. Press EXIT (SOFT KEY 1) to exit the Changed Parameters mode.

DRIVE PARAMETER BACKUP MODE

The drive parameter back up mode is used to export the parameters from one drive to another. The parameters can be uploaded from a VFD to the removable control panel. The control panel can then be transferred to another drive and the parameters downloaded into memory.

Depending on the motor and application, there are two options available. The first option is to download all parameters. This copies both application and motor parameters to the drive from the control panel. This is recommended when using the same application for drives of the same size. This can also be used to create a backup of the parameters group for the drive.

The second option downloads only the application parameters to the drive. This is recommended when using the same application for drives of different sizes. Parameters 9905, 9906, 9907, 9908, 9909, 1605, 1607, 5201, and group 51 parameters and internal motor parameters are not copied.

Upload All Parameters

To upload and store parameters in the control panel from the VFD, perform the following procedure:

1. Select MENU (SOFT KEY 2). The Main menu will be displayed.
2. Use the UP or DOWN keys to highlight PAR BACKUP on the display screen and press ENTER (SOFT KEY 2).
3. Use the UP or DOWN keys to highlight UPLOAD TO PANEL and press SEL (SOFT KEY 2).
4. The text “Copying Parameters” will be displayed with a progress indicator. To stop the process, select ABORT (SOFT KEY 1).
5. When the upload is complete, the text “Parameter upload successful” will be displayed.
6. The display will then return to the PAR BACKUP menu. Select EXIT (SOFT KEY 1) to return to the main menu.
7. The control panel can now be disconnected from the drive.

Download All Parameters

To download all parameters from the control panel to the VFD, perform the following procedure:

1. Install the control panel with the correct parameters onto the VFD.
2. Select MENU (SOFT KEY 2). The Main menu will be displayed.
3. Use the UP or DOWN keys to highlight PAR BACKUP on the display screen and press ENTER (SOFT KEY 2).
4. Use the UP or DOWN keys to highlight DOWNLOAD TO DRIVE ALL and press SEL (SOFT KEY 2).
5. The text “Restoring Parameters” will be displayed with a progress indicator. To stop the process, select ABORT (SOFT KEY 1).
6. When the download is complete, the text “Parameter download successful” will be displayed.
7. The display will then return to the PAR BACKUP menu. Select EXIT (SOFT KEY 1) to return to the main menu.
8. The control panel can now be disconnected from the drive.

Download Application Parameters

To download application parameters only to the control panel from the VFD, perform the following procedure:

1. Install the control panel with the correct parameters onto the VFD.

2. Select MENU (SOFT KEY 2). The Main menu will be displayed.
3. Use the UP or DOWN keys to highlight PAR BACKUP on the display screen and press ENTER (SOFT KEY 2).
4. Use the UP or DOWN keys to highlight DOWNLOAD APPLICATION and press SEL (SOFT KEY 2).
5. The text “Downloading Parameters (partial)” will be displayed with a progress indicator. To stop the process, select ABORT (SOFT KEY 1).
6. When the download is complete, the text “Parameter download successful” will be displayed.
7. The display will then return to the PAR BACKUP menu. Select EXIT (SOFT KEY 1) to return to the main menu.
8. The control panel can now be disconnected from the drive.

CLOCK SET MODE

Use the clock set mode to set the date and time for the internal clock of the VFD. In order to use the timer functions of the VFD control, the internal clock must be set. The date is used to determine weekdays and is visible in the fault logs.

To set the clock, perform the following procedure:

1. Select MENU (SOFT KEY 2). The Main menu will be displayed.
2. Use the UP or DOWN keys to highlight CLOCK SET on the display screen and press ENTER (SOFT KEY 2). The clock set parameter list will be displayed.
3. Use the UP or DOWN keys to highlight CLOCK VISIBILITY and press SEL (SOFT KEY 2). This parameter is used to display or hide the clock on the screen. Use the UP or DOWN keys to change the parameter setting. Press OK (SOFT KEY 2) to save the configuration and return to the Clock Set menu.
4. Use the UP or DOWN keys to highlight SET TIME and press SEL (SOFT KEY 2). Use the UP or DOWN keys to change the hours and minutes. Press OK (SOFT KEY 2) to save the configuration and return to the Clock Set menu.
5. Use the UP or DOWN keys to highlight TIME FORMAT and press SEL (SOFT KEY 2). Use the UP or DOWN keys to change the parameter setting. Press OK (SOFT KEY 2) to save the configuration and return to the Clock Set menu.
6. Use the UP or DOWN keys to highlight SET DATE and press SEL (SOFT KEY 2). Use the UP or DOWN keys to change the day, month, and year. Press OK (SOFT KEY 2) to save the configuration and return to the Clock Set menu.
7. Use the UP or DOWN keys to highlight DATE FORMAT and press SEL (SOFT KEY 2). Use the UP or DOWN keys to change the parameter setting. Press OK (SOFT KEY 2) to save the configuration and return to the Clock Set menu.
8. Press EXIT (SOFT KEY 1) twice to return to the main menu.

I/O SETTINGS MODE

Use the I/O Settings mode to view and edit the I/O settings.

To configure the I/O settings, perform the following procedure:

1. Select MENU (SOFT KEY 2). The Main menu will be displayed.
2. Use the UP or DOWN keys to highlight I/O SETTINGS on the display screen and press ENTER (SOFT KEY 2). The I/O Settings parameter list will be displayed.
3. Use the UP or DOWN keys to highlight the desired I/O setting and press SEL (SOFT KEY 2).
4. Use the UP or DOWN keys to select the parameter to view. Press OK (SOFT KEY 2).
5. Use the UP or DOWN keys to change the parameter setting. Press SAVE (SOFT KEY 2) to save the configuration. Press CANCEL (SOFT KEY 1) to keep the previous value. Any modifications that are not saved will not be changed.

6. Press EXIT (SOFT KEY 1) twice to return to the main menu.

ACH550/ACS320 VFD Diagnostics

The drive detects error situations and reports them using:

- Green and red LEDs on the body of the drive (located under the keypad).
- Status LED on the control panel.
- Control panel display.
- The Fault Word and Alarm Word parameter bits (parameters 0305 to 0309).

The form of the display depends on the severity of the error. The user can specify the severity for many errors by directing the drive to ignore the error situation, report the situation as an alarm, or report the situation as a fault.

FAULTS (RED LED LIT)

The VFD signals that it has detected a severe error, or fault, by:

- Enabling the red LED on the drive (LED is either steady or flashing).
- Setting an appropriate bit in a Fault Word parameter (0305 to 0307).
- Overriding the control panel display with the display of a fault code.
- Stopping the motor (if it was on).

ALARMS (GREEN LED FLASHING)

For less severe errors, called alarms, the diagnostic display is advisory. For these situations, the drive is simply reporting that it had detected something unusual. In these situations, the drive:

- Flashes the green LED on the drive (does not apply to alarms that arise from control panel operation errors).
- Sets an appropriate bit in an Alarm Word parameter (0308 or 0309).
- Overrides the control panel display with the display of an alarm code and/or name.

Alarm messages disappear from the control panel display after a few seconds. The message returns periodically as long as the alarm condition exists. See “Correcting Alarms” below for more information.

Correcting Faults

The recommended corrective action for faults is shown in the Fault Codes Table 34. The VFD can also be reset to remove the fault. If an external source for a start command is selected and is active, the VFD may start immediately after fault reset.

To reset a fault indicated by a flashing red LED, turn off the power for 5 minutes. To reset a fault indicated by a red LED (not flashing), press RESET from the control panel or turn off the power for 5 minutes. Depending on the value of parameter 1604 (FAULT RESET SELECT), digital input or serial communication could also be used to reset the drive. When the fault has been corrected, the motor can be started.

History

For reference, the last three fault codes are stored into parameters 0401, 0412, 0413. For the most recent fault (identified by parameter 0401), the drive stores additional data (in parameters 0402 - 0411) to aid in troubleshooting a problem. For example, a parameter 0404 stores the motor speed at the time of the fault. To clear the fault history (all of Group 04, Fault History parameters), follow these steps:

1. In the control panel, Parameters mode, select parameter 0401.
2. Press EDIT.
3. Press the UP and DOWN buttons simultaneously.
4. Press SAVE.

Correcting Alarms

To correct alarms, first determine if the alarm requires any corrective action (an action is not always required). Use Table 35 to find and address the root cause of the problem.

If diagnostics troubleshooting has determined that the drive is defective during the warranty period, contact your local representative.

Table 34 — ACH550/ACS320 Fault Codes

FAULT CODE	FAULT NAME IN PANEL	DESCRIPTION AND RECOMMENDED CORRECTIVE ACTION
1	OVERCURRENT	Output current is excessive. Check for excessive motor load, insufficient acceleration time (parameters 2202 ACCELER TIME 1, default 30 seconds), or faulty motor, motor cables or connections.
2	DC OVERVOLT	Intermediate circuit DC voltage is excessive. Check for static or transient over voltages in the input power supply, insufficient deceleration time (parameters 2203 DECELER TIME 1, default 30 seconds), or undersized brake chopper (if present).
3	DEV OVERTEMP	Drive heat sink is overheated. Temperature is at or above 115°C (239°F). Check for fan failure, obstructions in the air flow, dirt or dust coating on the heat sink, excessive ambient temperature, or excessive motor load.
4	SHORT CIRC	Fault current. Check for short-circuit in the motor cable(s) or motor or supply disturbances.
5	OVERLOAD	Inverter overload condition. The drive output current exceeds the ratings.
6	DC UNDERVOLT	Intermediate circuit DC voltage is not sufficient. Check for missing phase in the input power supply, blown fuse, or under voltage on main circuit.
7	AI1 LOSS	Analog input 1 loss. Analog input value is less than AI1 FLT LIMIT (3021). Check source and connection for analog input and parameter settings for AI1 FLT LIMIT (3021) and 3001 AI<MIN FUNCTION.
8	AI2 LOSS	Analog input 2 loss. Analog input value is less than AI2 FLT LIMIT (3022). Check source and connection for analog input and parameter settings for AI2 FLT LIMIT (3022) and 3001 AI<MIN FUNCTION.
9	MOT OVERTEMP	Motor is too hot, as estimated by the drive. Check for overloaded motor. Adjust the parameters used for the estimate (3005 - 3009). Check the temperature sensors and Group 35 parameters.
10	PANEL LOSS	Panel communication is lost and either drive is in local control mode (the control panel displays LOC), or drive is in remote control mode (REM) and is parameterized to accept start/stop, direction or reference from the control panel. To correct check the communication lines and connections. Check parameter 3002 PANEL COMM ERROR, parameters in Group 10: Command Inputs and Group 11:Reference Select (if drive operation is REM).
11	ID RUN FAIL	The motor ID run was not completed successfully. Check motor connections.
12	MOTOR STALL	Motor or process stall. Motor is operating in the stall region. Check for excessive load or insufficient motor power. Check parameters 3010 - 3012.
13	—	Not used.
14	EXT FAULT 1	Digital input defined to report first external fault is active. See parameter 3003 EXTERNAL FAULT 1.
15	EXT FAULT 2	Digital input defined to report second external fault is active. See parameter 3004 EXTERNAL FAULT 2.
16	EARTH FAULT	The load on the input power system is out of balance. Check for faults in the motor or motor cable. Verify that motor cable does not exceed maximum specified length.

Table 34 — ACH550/ACS320 Fault Codes (cont)

FAULT CODE	FAULT NAME IN PANEL	DESCRIPTION AND RECOMMENDED CORRECTIVE ACTION
17	UNDERLOAD	Motor load is lower than expected. Check for disconnected load. Check parameters 3013 UNDERLOAD FUNCTION through 3015 UNDERLOAD CURVE.
18	THERM FAIL	Internal fault. The thermistor measuring the internal temperature of the drive is open or shorted. Contact your local representative.
19	OPEX LINK	Internal fault. A communication-related problem has been detected between the OMIO and OINT boards. Contact your local representative.
20	OPEX PWR	Internal fault. Low voltage condition detected on the OINT board. Contact your local representative.
21	CURR MEAS	Internal fault. Current measurement is out of range. Contact your local representative.
22	SUPPLY PHASE	Ripple voltage in the DC link is too high. Check for missing main phase or blown fuse.
23	—	Not used.
24	OVERSPEED	Motor speed is greater than 120% of the larger (in magnitude) of 2001 MINIMUM SPEED or 2002 MAXIMUM SPEED parameters. Check parameter settings for 2001 and 2002. Check adequacy of motor braking torque. Check applicability of torque control. Check brake chopper and resistor.
25	—	Not used.
26	DRIVE ID	Internal fault. Configuration block drive ID is not valid.
27	CONFIG FILE	Internal configuration file has an error. Contact your local representative.
28	SERIAL 1 ERR	Field bus communication has timed out. Check fault setup (3018 COMM FAULT FUNC and 3019 COMM FAULT TIME). Check communication settings (Group 51 or 53 as appropriate). Check for poor connections and/or noise on line.
29	EFB CON FILE	Error in reading the configuration file for the field bus adapter.
30	FORCE TRIP	Fault trip forced by the field bus. See the field bus reference literature.
31	EFB 1	Fault code reserved for the EFB protocol application. The meaning is protocol dependent.
32	EFB 2	Fault code reserved for the EFB protocol application. The meaning is protocol dependent.
33	EFB 3	Fault code reserved for the EFB protocol application. The meaning is protocol dependent.
34	MOTOR PHASE	Fault in the motor circuit. One of the motor phases is lost. Check for motor fault, motor cable fault, thermal relay fault, or internal fault.
35	OUTP WIRING	Error in power wiring suspected. Check that input power wired to drive output. Check for ground faults.
101 - 105	SYSTEM ERROR	Error internal to the drive. Contact your local representative and report the error number.
1000	PAR HZRPM	Parameter values are inconsistent. Check for any of the following: 2001 MINIMUM SPEED > 2002 MAXIMUM SPEED 2007 MINIMUM FREQ > 2008 MAXIMUM FREQ 2001 MINIMUM SPEED / 9908 MOTOR NOM SPEED is outside of the range: -128/+128 2002 MAXIMUM SPEED / 9908 MOTOR NOM SPEED is outside of the range: -128/+128 2007 MINIMUM FREQ / 9907 MOTOR NOM FREQ is outside of the range: - 128/+128 2008 MAXIMUM FREQ / 9907 MOTOR NOM FREQ is outside of the range: -128/+128
1001	PAR PFA REFNG	Parameter values are inconsistent. Check that 2007 MINIMUM FREQ is negative, when 8123 PFA ENABLE is active.
1002	PAR PFA IOCNF	Parameter values are inconsistent. The number of programmed PFA relays does not match with Interlock configuration, when 8123 PFA ENABLE is active. Check consistency of RELAY OUTPUT parameters 1401 - 1403, and 1410 - 1412. Check 8117 NR OF AUX MOTORS, 8118 AUTOCHANGE INTERV, and 8120 INTERLOCKS.
1003	PAR AI SCALE	Parameter values are inconsistent. Check that parameter 1301 AI 1 MIN > 1302 AI 1 MAX and that parameter 1304 AI 2 MIN > 1305 AI 2 MAX.
1004	PAR AO SCALE	Parameter values are inconsistent. Check that parameter 1504 AO 1 MIN > 1505 AO 1 MAX and that parameter 1510 AO 2 MIN > 1511 AO 2 MAX.
1005	PAR PCU 2	Parameter values for power control are inconsistent: Improper motor nominal kVA or motor nominal power. Check the following parameters: $1.1 < (9906 \text{ MOTOR NOM CURR} * 9905 \text{ MOTOR NOM VOLT} * 1.73 / \text{PN}) < 2.6$ Where: PN = $1000 * 9909 \text{ MOTOR NOM POWER}$ (if units are kW) or PN = $746 * 9909 \text{ MOTOR NOM POWER}$ (if units are HP, e.g., in US)
1006	PAR EXT RO	Parameter values are inconsistent. Check the extension relay module for connection and 1410 - 1412 RELAY OUTPUTS 4 - 6 have non-zero values.
1007	PAR FBUS	Parameter values are inconsistent. Check that a parameter is set for field bus control (e.g., 1001 EXT1 COMMANDS = 10 (COMM)), but 9802 COMM PROT SEL = 0.
1008	PAR PFA MODE	Parameter values are inconsistent. The 9904 MOTOR CTRL MODE must = 3 (SCALAR SPEED) when 8123 PFA ENABLE activated.
1009	PAR PCU 1	Parameter values for power control are inconsistent or improper motor nominal frequency or speed. Check for both of the following: $1 < (60 * 9907 \text{ MOTOR NOM FREQ} / 9908 \text{ MOTOR NOM SPEED}) < 16$ $0.8 < 9908 \text{ MOTOR NOM SPEED} / (120 * 9907 \text{ MOTOR NOM FREQ} / \text{Motor poles}) < 0.992$
1010	OVERRIDE/PFA CONFLICT	Override mode is enabled and PFA is activated at the same time. This cannot be done because PFA interlocks cannot be observed in the override mode.

Table 35 — ACH550/ACS320 Alarm Codes

ALARM CODE	ALARM NAME IN PANEL	DESCRIPTION AND RECOMMENDED CORRECTIVE ACTION
2001	—	Not used.
2002	—	Not used.
2003	—	Not used.
2004	DIR LOCK	The change in direction being attempted is not allowed. Do not attempt to change the direction of motor rotation, or Change parameter 1003 DIRECTION to allow direction change (if reverse operation is safe).
2005	I/O COMM	Field bus communication has timed out. Check fault setup (3018 COMM FAULT FUNC and 3019 COMM FAULT TIME). Check communication settings (Group 51 or 53 as appropriate). Check for poor connections and/or noise on line.
2006	AI1 LOSS	Analog input 1 is lost, or value is less than the minimum setting. Check input source and connections. Check the parameter that sets the minimum (3021) and the parameter that sets the Alarm/Fault operation (3001).
2007	AI2 LOSS	Analog input 2 is lost, or value is less than the minimum setting. Check input source and connections. Check parameter that sets the minimum (3022) and the parameter that sets the Alarm/Fault operation (3001).
2008	PANEL LOSS	Panel communication is lost and either the VFD is in local control mode (the control panel displays HAND), or the VFD is in remote control mode (AUTO) and is parameterized to accept start/stop, direction or reference from the control panel. To correct, check the communication lines and connections, Parameter 3002 PANEL LOSS, and parameters in groups 10 COMMAND INPUTS and 11 REFERENCE SELECT (if drive operation is REM).
2009	—	Not used.
2010	MOT OVERTEMP	Motor is hot, based on either the VFD estimate or on temperature feedback. This alarm warns that a Motor Overload fault trip may be near. Check for overloaded motor. Adjust the parameters used for the estimate (3005 - 3009). Check the temperature sensors and Group 35 parameters.
2011	UNDERLOAD	Motor load is lower than expected. This alarm warns that a Motor Underload fault trip may be near. Check that the motor and drive ratings match (motor is NOT undersized for the drive). Check the settings on parameters 3013 to 3015.
2012	MOTOR STALL	Motor is operating in the stall region. This alarm warns that a Motor Stall fault trip may be near.
2013 ^a	AUTORESET	This alarm warns that the drive is about to perform an automatic fault reset, which may start the motor. To control automatic reset, use parameter group 31 (AUTOMATIC RESET).
2014	AUTOCHANGE	This alarm warns that the PFA autochange function is active. To control PFA, use parameter group 81 (PFA) and the Pump Alternation macro.
2015	PFA INTERLOCK	This alarm warns that the PFA interlocks are active, which means that the drive cannot start any motor (when Autochange is used), or a speed regulated motor (when Autochange is not used).
2016	—	Not used.
2017 ^a	OFF BUTTON	This alarm indicates that the OFF button has been pressed.
2018	PID SLEEP	This alarm warns that the PID sleep function is active, which means that the motor could accelerate when the PID sleep function ends. To control PID sleep, use parameters 4022 - 4026 or 4122 - 4126.
2019	ID RUN	The VFD is performing an ID run.
2020	OVERRIDE	Override mode is activated.
2021	START ENABLE 1 MISSING	This alarm warns that the Start Enable 1 signal is missing. To control Start Enable 1 function, use parameter 1608. To correct, check the digital input configuration and the communication settings.
2022	START ENABLE 2 MISSING	This alarm warns that the Start Enable 2 signal is missing. To control Start Enable 2 function, use parameter 1609. To correct, check the digital input configuration and the communication settings.
2023	EMERGENCY STOP	Emergency stop is activated.

NOTE(S):

- a. This alarm is not indicated by a relay output, even when the relay output is configured to indicate alarm conditions, parameter 1401 RELAY OUTPUT = 5 (ALARM) or 16 (FLT/ALARM).

Reset After Using Start-Up Assistant

⚠ CAUTION

CONFIGURATION OVERRIDE HAZARD

Do not use start-up assistant on this VFD application! Use of start-up assistant will override the factory VFD configurations!

The following section details how to reset the VFD after accidentally using Start-Up Assistant.

When the VFD has been incorrectly programmed by using Start-Up Assistant, the drive may be locked in an override loop because of motor ID Run Fail (error code 11) and First Start (error code 2025).

Use the following procedure to reset the factory configurations for ACS320 VFDs:

1. Disconnect unit power. Lock-out/tag out.
2. Remove the VFD's terminal cover.
3. Disconnect the DI1 input at terminal 12. The terminals are numbered on the bottom of the block (see Fig. 36 for the location of terminal block that contains terminal 12).
4. Connect the VFD Keypad accessory to the VFD (if not already connected).

NOTE: The VFD Keypad is a field-installed accessory; it is not included with the factory-installed VFD option.

5. Go immediately to parameter 1705 OVERRIDE ENABLE and select "Off".

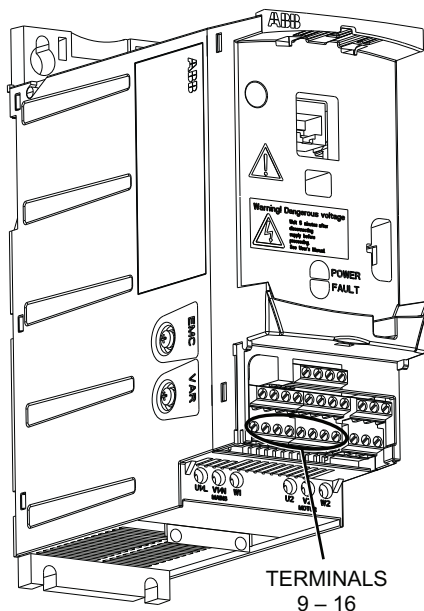


Fig. 36 — ACS320 Terminal Blocks

6. At this point, providing you have a clean backup of the drive, you can select "DOWNLOAD FULL SET" from "PAR BACKUP" from the Main Menu.
If you do not have a clean backup the drive will have to be manually programmed following the instructions in this document.
7. When the correct parameters have been uploaded, disconnect power to the unit, reconnect DI1 to Terminal 12, and replace the terminal cover.
8. Reconnect power to the unit. The VFD is now commissioned from the backup file.

Use the following procedure to reset the factory configurations for ACH180 VFDs:

1. Disconnect unit power. Lock-out/tag-out.
2. Remove the VFD's front cover.
3. Disconnect the DI1 input at Terminal 8 (see Fig. 37 for location of DI1).

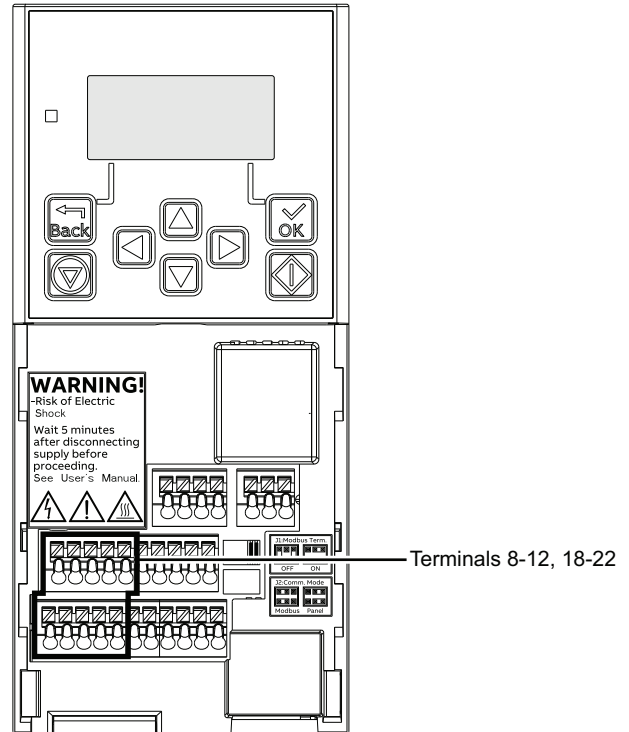


Fig. 37 — Digital Input Terminal Block Location on ACH180 VFD

4. If you have a clean backup of the drive, you can select "PARAMETER RESTORE" from "PARAMETERS" Menu from the Main Menu. (See "Options Menu and Main Menu" on page 37 for more information.)
5. If you do not have a clean backup the drive will have to be manually programmed following the instructions in this document.
6. When the correct parameters have been uploaded, disconnect power to the unit, reconnect DI1 to Terminal 8, and replace the VFD cover.
7. Reconnect power to the unit. The VFD is now commissioned from the backup file.

Use the following procedure to reset the factory configurations for ACH550 VFDs:

1. Disconnect unit power. Lock-out/tag-out.
2. Remove the VFD's front cover (see Fig. 38).
3. Disconnect the DI1 input at Terminal 13 (see Fig. 39 for location of DI1).
4. Connect the VFD Keypad accessory to the VFD (if not already connected)

NOTE: The VFD Keypad is a field-installed accessory; it is not included with the factory-installed VFD option.

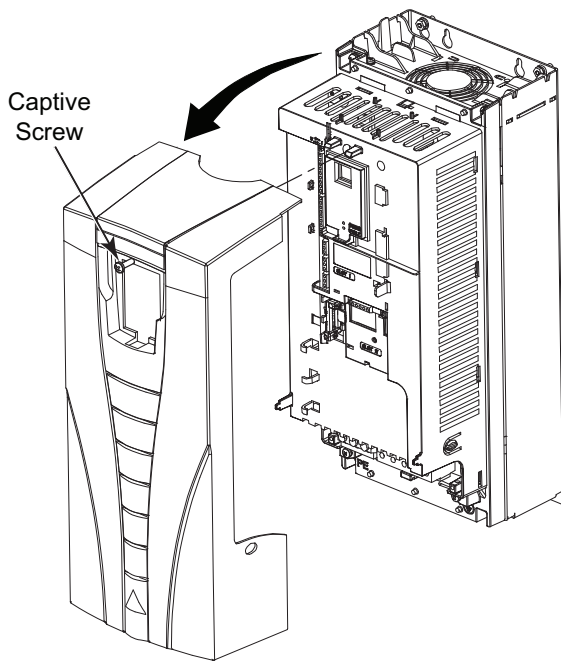


Fig. 38 — Remove ACH550 VFD Front Cover

5. With the wire disconnected, use the keypad to stop the loop and enter “358” in parameter 1704 OVERRIDE PASS CODE.
6. Go immediately to parameter 1705 OVERRIDE ENABLE and select “Off”.
7. At this point, providing you have a clean backup of the drive, you can select “DOWNLOAD FULL SET” from “PAR BACKUP” from the Main Menu.
8. If you do not have a clean backup the drive will have to be manually programmed following the instructions in this document.
9. When the correct parameters have been uploaded, disconnect power to the unit, reconnect DI1 to Terminal 13, and replace the VFD cover.
10. Reconnect power to the unit. The VFD is now commissioned from the backup file.

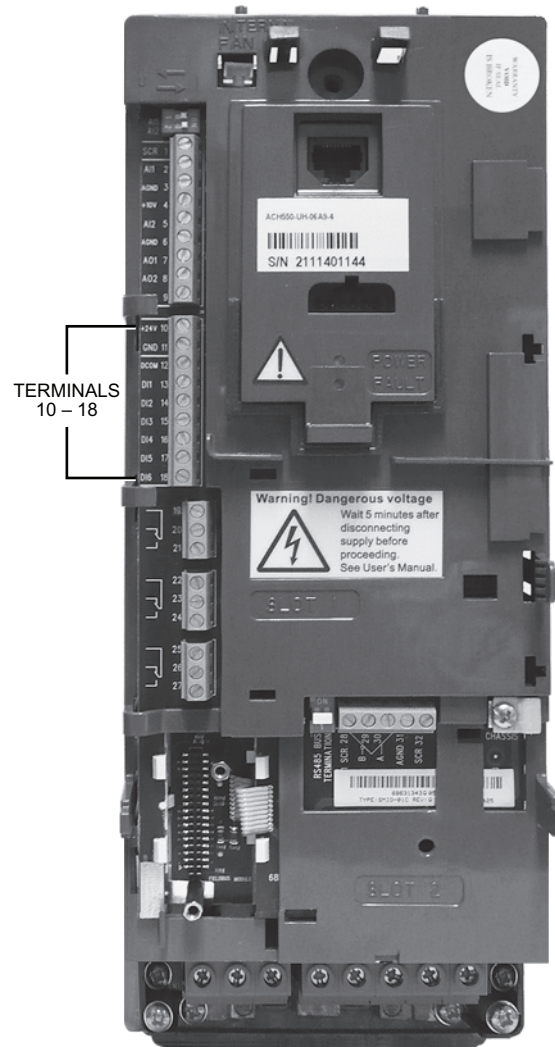


Fig. 39 — Terminal Block Location on ACH550 VFD

ACH580 Operation with Remote Keypad

The VFD keypad is shown in Fig. 40 and Fig. 41. The functions of the Left and Right Softkeys (⏏ and ⏏) change depending on what is displayed on the screen. The function of Left Softkey matches the word in the lower left-hand box on the display screen. The function of Right Softkey matches the word in the lower right-hand box on the display screen. If the box is empty, then the Softkey does not have a function on that specific screen. The Arrow Keys are used to navigate through the menus. The Off key is used to turn off the VFD. The AUTO key is used to change control of the drive to automatic control. The Hand key is used to change control of the drive to local (handheld) control. The Help key is used to access the help screens.

For the VFD to operate on the units covered by this document, the drive must be set in AUTO mode. The word “AUTO” will appear in the upper left hand corner of the VFD display. Press the AUTO button to set the drive in AUTO mode.



Fig. 40 — ACH580 VFD Keypad — Front

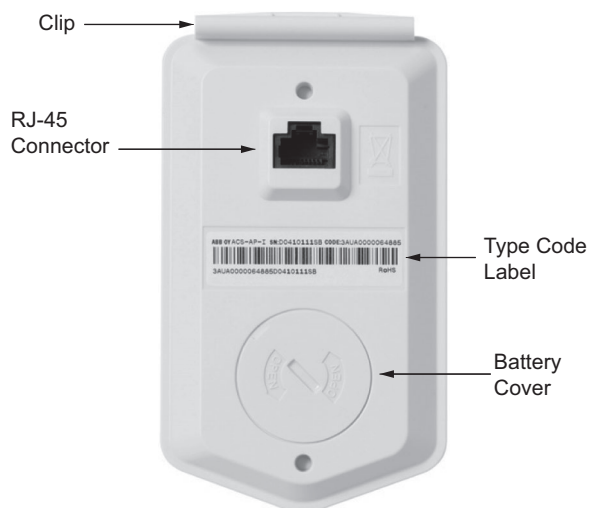


Fig. 41 — ACH580 VFD Keypad — Back

FIRST START ASSISTANT

Initial start-up has been performed at the factory. Use of the start up assistant will override factory VFD configurations.

⚠ CAUTION

CONFIGURATION OVERRIDE HAZARD

Do not use start-up assistant on this VFD application! Use of start-up assistant will override the factory VFD configurations!

Use the following procedure to reset the factory configurations for ACH580 VFDs:

1. Disconnect unit power. Lock-out/tag-out.
2. Remove the VFD's front cover.
3. Disconnect the DI1 input at Terminal 13 (see Fig. 42 for location of DI1).

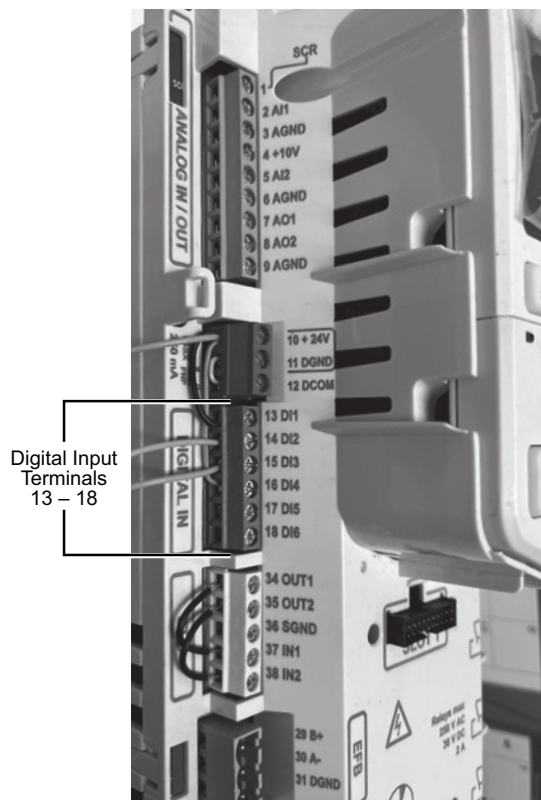


Fig. 42 — Digital Input Terminal Block Location on ACH580 VFD

4. Connect the VFD Keypad accessory to the VFD (if not already connected).

NOTE: The VFD Keypad is a field-installed accessory; it is not included with the factory-installed VFD option.

5. At this point, providing you have a clean backup of the drive, you can select "RESTORE" from "BACKUP" Menu from the Main Menu.

Please Note: To restore a backup, the drive has to be in Local control.

6. If you do not have a clean backup the drive will have to be manually programmed following the instructions in this document.
7. When the correct parameters have been uploaded, disconnect power to the unit, reconnect DI1 to Terminal 13, and replace the VFD cover.
8. Reconnect power to the unit. The VFD is now commissioned from the backup file.

START UP BY CHANGING PARAMETERS INDIVIDUALLY

Initial start-up is performed at the factory. To start up the VFD by changing individual parameters, perform the following procedure:

1. Select MENU (Press). The Main menu is displayed.
2. Use the UP or DOWN keys to highlight PARAMETERS on the display screen and press ENTER (Press).
3. Use the UP or DOWN keys to highlight the desired parameter group and press SEL (Press).
4. Use the UP or DOWN keys to highlight the desired parameter and press EDIT (Press).
5. Use the UP or DOWN keys to change the value of the parameter.
6. Press SAVE (Press) to store the modified value. Press CANCEL (Press) to keep the previous value. Any modifications that are not saved will not be changed.

7. Choose another parameter or press EXIT/BACK (Press ) to return to the listing of parameter groups. Continue until all the parameters have been configured and then press EXIT/BACK (Press ) to return to the main menu.

NOTE: The current parameter value appears above the highlight parameter. To view the default parameter value, press the UP and DOWN keys simultaneously.

ACH580 VFD Modes

The VFD has several different modes for configuring, operating, and diagnosing the VFD. The modes are:

- Standard Display mode — shows drive status information and operates the drive.
- Parameters mode — edits parameter values individually.
- Start-up Assistant mode — guides the start up and configuration.
- Changed Parameters mode — shows all changed parameters.
- Drive Parameter Backup mode — stores or uploads the parameters.
- Clock Set mode — sets the time and date for the drive.
- I/O Settings mode — checks and edits the I/O settings.

ACH580 STANDARD DISPLAY MODE

Use the standard display mode to read information on the drive status and operate the drive. To reach the standard display mode, press BACK until the LCD display shows status information as described below. (See Fig. 43.)

The top line of the LCD display shows the basic status information of the drive. The HAND icon indicates that the drive control is local from the control panel. The AUTO icon indicates that the drive is in remote control mode, such as the basic I/O or field bus.

The arrow icon indicates the drive and motor rotation status. A rotating arrow (clockwise or counterclockwise) indicates that the drive is running and at set point and the shaft direction is forward or reverse. A rotating blinking arrow indicates that the drive is running but not at set point. A stationary arrow indicates that the drive is stopped. For the units covered in this manual, the correct display rotation is clockwise.

The upper right corner shows the frequency set point that the drive will maintain. From Home view press “Options” then “Edit Home View” to change the Home layout, the middle of the LCD display can be configured to display 3 parameter values, Graphs or digital indicators. The default display shows (OUTPUT FREQ) in percent speed, (CURRENT) in amperes, and (AI1) in voltage DC.

The bottom corners of the LCD display show the functions currently assigned to the two soft keys. The lower middle displays the current time (if configured to show the time).

The first time the drive is powered up, it is in the OFF mode. To switch to local hand-held control and control the drive using the control panel, press and hold the HAND button. Pressing the HAND button switches the drive to hand control while keeping the drive running. Press the AUTO button to switch to remote input control. To start the drive press the HAND or AUTO buttons, to stop the drive press the OFF button.

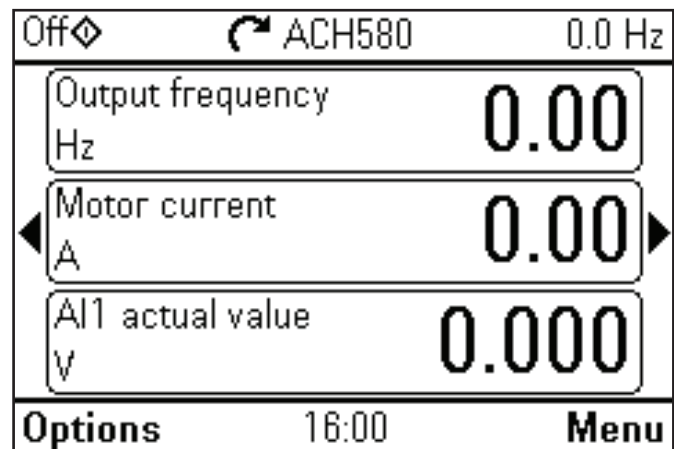


Fig. 43 — ACH580 Standard Display Example

The top line of the LCD display shows the basic status information of the drive. The HAND icon indicates that the drive control is local from the control panel. The AUTO icon indicates that the drive is in remote control mode, such as the basic I/O or field bus.

The arrow icon indicates the drive and motor rotation status. A rotating arrow (clockwise or counterclockwise) indicates that the drive is running and at set point and the shaft direction is forward or reverse. A rotating blinking arrow indicates that the drive is running but not at set point. A stationary arrow indicates that the drive is stopped. For the units covered in this manual, the correct display rotation is clockwise.

The upper right corner shows the frequency set point that the drive will maintain.

From Home view press “Options” then “Edit Home View” to change the Home layout, the middle of the LCD display can be configured to display 3 parameter values, Graphs or digital indicators. The default display shows (OUTPUT FREQ) in percent speed, (CURRENT) in amperes, and (AI1) in voltage DC.

The bottom corners of the LCD display show the functions currently assigned to the two soft keys. The lower middle displays the current time (if configured to show the time).

The first time the drive is powered up, it is in the OFF mode. To switch to local hand-held control and control the drive using the control panel, press and hold the HAND button. Pressing the HAND button switches the drive to hand control while keeping the drive running. Press the AUTO button to switch to remote input control. To start the drive press the HAND or AUTO buttons, to stop the drive press the OFF button.

To adjust the speed in HAND mode, press the UP or DOWN buttons (the reference changes immediately). The reference can be modified in the local control (HAND) mode, and can be parameterized (using Group 11 reference select) to also allow modification in the remote control mode.

PARAMETERS MODE

The Parameters mode is used to change the parameters on the drive. To change parameters, perform the following procedure:

1. Select MENU (Press ). The Main menu will be displayed.
2. Use the UP or DOWN keys to highlight PARAMETERS on the display screen and press Select (Press .
3. Use the UP or DOWN keys to highlight the desired parameter group and press Select (Press .
4. Use the UP or DOWN keys to highlight the desired parameter and press EDIT (Press .
5. Use the UP or DOWN keys to change the value of the parameter.

6. Press SAVE (Press ) to store the modified value. Press CANCEL (Press ) to keep the previous value. Any modifications that are not saved will not be changed.
7. Choose another parameter or press BACK (Press ) to return to the listing of parameter groups. Continue until all the parameters have been configured and then press EXIT (Press ) to return to the main menu.

CHANGED PARAMETERS MODE

The Changed Parameters mode is used to view and edit recently changed parameters on the drive. To view the changed parameters, perform the following procedure:

1. Select MENU (Press ). The Main menu will be displayed.
2. Use the UP or DOWN keys to highlight PARAMETERS on the display screen and press Select (Press )
3. Use the UP or DOWN keys to highlight MODIFIED on the display screen and press Select (Press )
4. Use the UP or DOWN keys to highlight the desired parameter group and press EDIT (Press ) to change the parameter if desired.
5. Press BACK (Press ) to exit the Changed Parameters mode.

DRIVE PARAMETER BACKUP MODE

The drive parameter back up mode is used to export the parameters from one drive to another. The parameters can be uploaded from a VFD to the removable control panel. The control panel can then be transferred to another drive and the parameters downloaded into memory.

Depending on the motor and application, there are two options available. The first option is to download all parameters. This copies both application and motor parameters to the drive from the control panel. This is recommended when using the same application for drives of the same size. This can also be used to create a backup of the parameters group for the drive.

The second option downloads only the application parameters to the drive. This is recommended when using the same application for drives of different sizes. Parameters 99.07, 99.06, 99.08, 99.09, 99.10, and group 51 parameters and internal motor parameters are not copied.

Upload All Parameters

To upload and store parameters in the control panel from the VFD insert the Keypad into the VFD slot (Fig. 44) and animation will appear loading the VFD configuration.

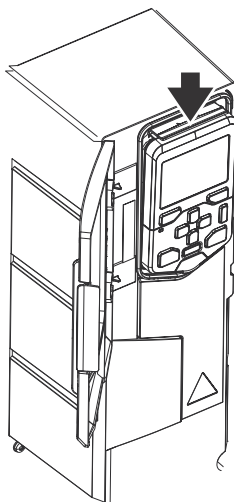


Fig. 44 — Insert Keypad in Slot

Download All Parameters From Backup

To download all parameters from the control panel to the VFD, perform the following procedure:

1. Install the control panel with the correct parameters onto the VFD.
2. Select MENU (Press )
3. Use the UP or DOWN keys to highlight BACKUPS on the display screen and press SEL (Press )
4. Use the UP or DOWN keys to highlight the backup file and press SEL (Press )
5. The text “Restoring Parameters” will be displayed with a progress indicator. To stop the process, select CANCEL (Press )
6. When the download is complete, the text “Parameter download successful” will be displayed.
7. The display will then return to the PAR BACKUP menu. Select BACK (Press ) to return to the main menu.
8. The control panel can now be disconnected from the drive.

CLOCK SET MODE

Use the clock set mode to set the date and time for the internal clock of the VFD. In order to use the timer functions of the VFD control, the internal clock must be set. The date is used to determine weekdays and is visible in the fault logs.

To set the clock, perform the following procedure:

1. Select MENU (Press )
2. Use the UP or DOWN keys to highlight PRIMARY SETT. on the display screen and press ENTER (Press )
3. Use the UP or DOWN keys to highlight Clock, region, display and press SEL (Press )
4. Use the UP or DOWN keys to highlight SET TIME and press SEL (Press )
5. Use the UP or DOWN keys to highlight TIME FORMAT and press SEL (Press )
6. Use the UP or DOWN keys to highlight SET DATE and press SEL (Press )
7. Use the UP or DOWN keys to highlight DATE FORMAT and press SEL (Press )
8. Press BACK (Press ) twice to return to the main menu.

I/O SETTINGS MODE

Use the I/O Settings mode to view and edit the I/O settings.

To configure the I/O settings, perform the following procedure:

1. Select MENU (Press ). The Main menu will be displayed.
2. Use the UP or DOWN keys to highlight PRIMARY SETT. on the display screen and press SEL (Press ). The Sub list will be displayed.
3. Use the UP or DOWN keys to highlight ADVANCED OPTIONS/FUNCTIONS. on the display screen and press SEL (Press ). The Sub list will be displayed.
4. Use the UP or DOWN keys to highlight I/O SETTINGS on the display screen and press SEL (Press ). The I/O Settings parameter list will be displayed.
5. Use the UP or DOWN keys to highlight the desired I/O setting and press SEL (Press ).
6. Use the UP or DOWN keys to select the parameter to view. Press OK (Press ).
7. Use the UP or DOWN keys to change the parameter setting. Press SAVE (Press ). to save the configuration. Press CANCEL (SOFT KEY 1) to keep the previous value. Any modifications that are not saved will not be changed.
8. Press BACK (Press ) twice to return to the main menu.

ACH580 VFD Diagnostics

The drive detects error situations and reports them using:

- Status LED on the control panel.
- Control panel display.
- The Fault Word and Alarm Word parameter bits.

The form of the display depends on the severity of the error. The user can specify the severity for many errors by directing the drive to ignore the error situation, report the situation as an alarm, or report the situation as a fault.

FAULTS (RED LED LIT)

The VFD signals that it has detected a severe error, or fault, by:

- Enabling the red LED on the drive (LED is either steady or flashing).
- Setting an appropriate bit in a Fault Word parameter.
- Overriding the control panel display with the display of a fault code.
- Stopping the motor (if it was on).

The fault code on the control panel display is temporary. Pressing the MENU, (Press ). buttons removes the fault message. The message reappears after a few seconds if the control panel is not touched, and the fault is still active. See Table 36 for a list of fault codes.

ALARMS (GREEN LED FLASHING)

For less severe errors, called alarms, the diagnostic display is advisory. For these situations, the drive is simply reporting that it had detected something unusual. In these situations, the drive:

- Flashes the green LED on the drive (does not apply to alarms that arise from control panel operation errors).
- Sets an appropriate bit in an Alarm Word parameter.
- Overrides the control panel display with the display of an alarm code and/or name.

Alarm messages disappear from the control panel display after a few seconds. The message returns periodically as long as the alarm condition exists. See Table 36 for a list of alarm codes.

Correcting Faults

The recommended corrective action for faults is shown in Table 36. The VFD can also be reset to remove the fault. If an external source for a start command is selected and is active, the VFD may start immediately after fault reset.

To reset a fault indicated by a flashing red LED, turn off the power for 5 minutes. To reset a fault indicated by a red LED (not flashing), press RESET from the control panel or turn off the power for 5 minutes. Depending on the value of parameter, digital input or serial communication could also be used to reset the drive. When the fault has been corrected, the motor can be started.

Correcting Alarms

To correct alarms, first determine if the alarm requires any corrective action (an action is not always required). Use Table 36 to find and address the root cause of the problem.

If diagnostics troubleshooting has determined that the drive is defective during the warranty period, contact your local representative.

ACH180 START-UP AND TEST

1. Close and secure the fan access door and the VFD cover.
2. Apply power and allow drive to initialize.
3. Ensure VFD has been programmed with the correct values for parameters 30.14 to maximum VFD output frequency to limit motor speed to the fan maximum.
4. Verify max fan rpm.
5. Verify motor hp, Hz and nominal operating speed on motor nameplate.
6. Verify motor voltage and nominal amperage on motor nameplate.
7. Select MENU to enter the main menu.
8. Select PARAMETERS with the UP/DOWN buttons.
9. Select SAVE to store the modified value.
10. Select BACK to return to the listing of parameters.
11. Select Parameter 30.14 and verify it equals the maximum VFD output frequency.
12. If values are equal, then go to Step 15.
13. If values are not equal, select EDIT, press the UP/DOWN buttons to match the required value.
14. Select SAVE to store the modified value.
15. Select EXIT/BACK to return to the listing of parameters.
16. Select EXIT/BACK to return to the main menu.
17. Press the HAND button and verify that the drive operates at 8 Hz.
18. Press Up arrow to increase speed and Down arrow to decrease speed.
19. Press the Off button and verify that the fan stops.
20. Press the Auto button to operate the drive from Control board unit system. Verify that all VFD interface functions are working (start/stop, speed controls, fire/smoke, etc.) between the VFD and the unit.
21. Refer to Appendix Tables E-H for additional ACH180 VFD information.

ACH180 VFD STANDARD KEYPAD DETAIL

By default, the ACH180 has an integrated control panel. (See Fig. 45.)

1. Display, shows the **Home** view as default.
2. **Status LED**, green and red colors indicate the state and potential problems.
3. **Back** key, opens the **Options** view.
4. Arrow keys, for menu navigation and setting values.
5. **OK** key, opens the **Menu** in the **Home** view.
6. **Off** key, stops the drive and switches to the Off mode.
7. **Auto/Hand** key, opens a selection screen view that allows the user to select between **Auto** and **Hand** modes.

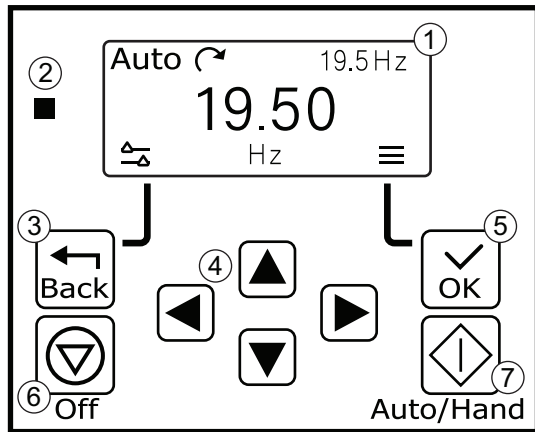
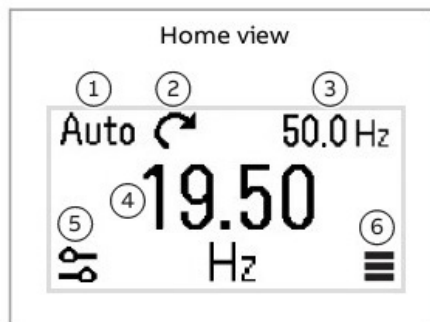


Fig. 45 — ACH180 Integrated Keypad

Submenus

The Main menu items have submenus. Some submenus also have menus and/or option lists. The content of the submenus depends on the drive type.

The Home view is the main view. You can open the main Menu and Options menu from the Home view. (See Fig. 46.)



1	Control location - Hand, Off or Auto
2	Rotation direction - forward or reverse
3	Location reference setting - enabled
4	Frequency - target
5	Options menu - quick access menu
6	Main menu - menu list

Fig. 46 — ACH180 Home View

Options Menu and Main Menu

The ACH180 drives have 5 menu options available (see Fig. 47):

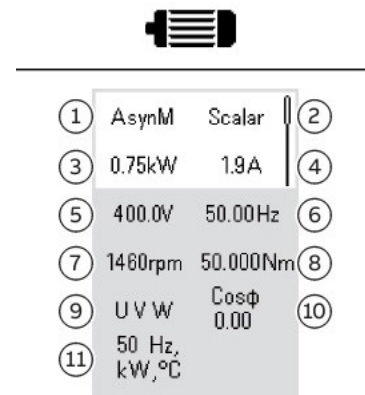
1. Motor data/motor parameters
2. Motor Control
3. Diagnostics
4. Energy Efficiency
5. Parameters

Figures 48-52 show the available options and information within each of the submenus.



Fig. 47 — ACH180 Options Menu Items

Motor data



1	Motor type - AsynM, PMSM, EC, Ti
2	Control mode - Scalar, Vector
3	Nominal power
4	Nominal current
5	Nominal voltage
6	Nominal frequency
7	Nominal speed
8	Nominal torque
9	Phase order, U V W, U W V
10	Nominal Cosphi
11	Unit selection, SI or US units

Fig. 48 — Motor Data Submenu

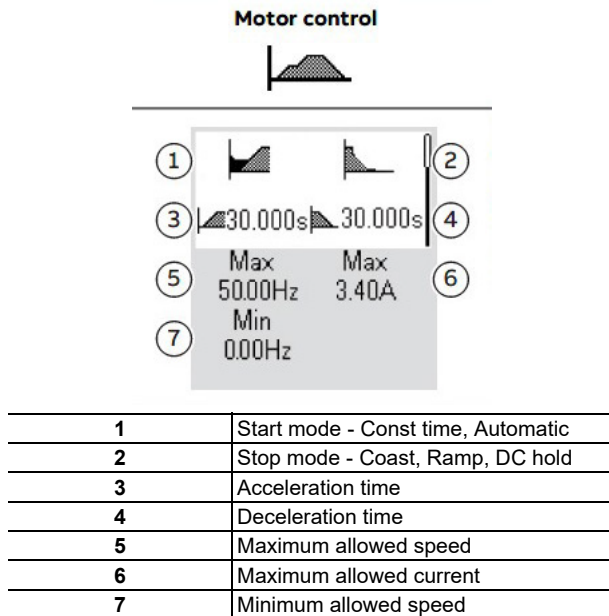


Fig. 49 — Motor Control Submenu

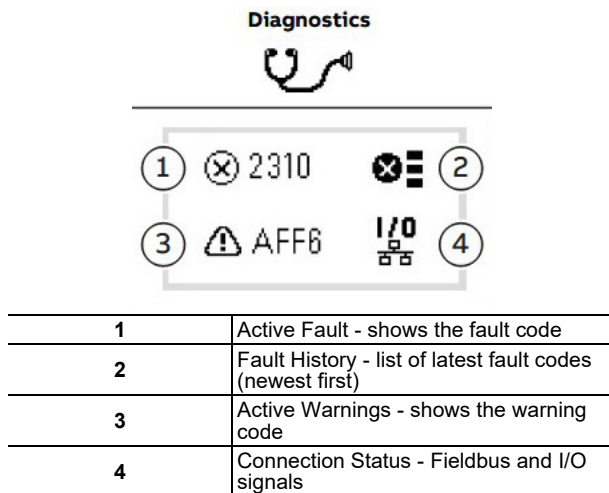


Fig. 50 — Diagnostics Submenu

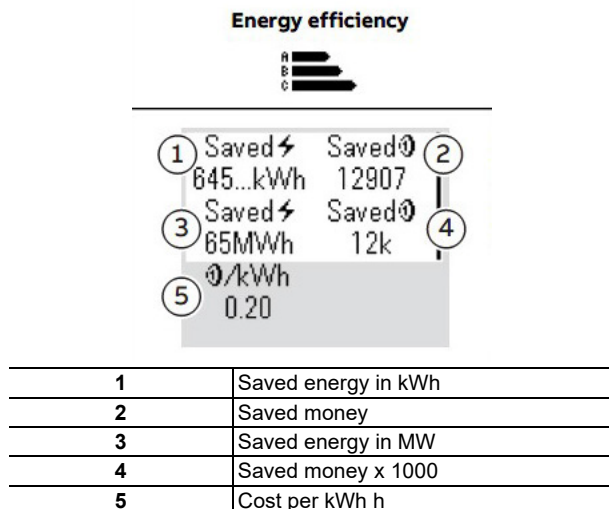


Fig. 51 — Energy Efficiency Submenu

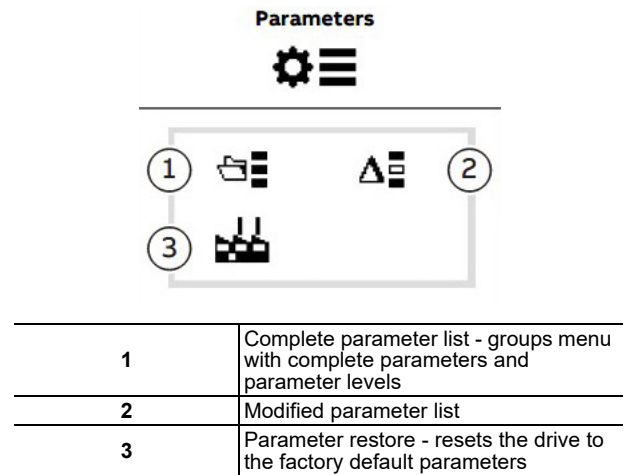


Fig. 52 — Parameters Submenu

ACH180 VFD Diagnostics

The drive detects error situations and reports them using the Status LED on the control panel (see Fig. 45). See Table 36 for more information about the Fault and Alarm Codes.

FAULTS (RED LED LIT)

The VFD signals that it has detected a severe error, or fault, by:

1. Enabling the red LED on the drive (LED is either steady or flashing).
2. Setting an appropriate bit in a Fault Word parameter.
3. Overriding the control panel display with the display of a fault code.
4. Stopping the motor (if it was on).

ALARMS (GREEN LED FLASHING)

For less severe errors, called alarms, the diagnostic display is advisory. For these situations, the drive is simply reporting that it had detected something unusual. In these situations, the drive:

1. Flashes the green LED on the drive (does not apply to alarms that arise from control panel operation errors).
2. Sets an appropriate bit in an Alarm Word parameter.
3. Overrides the control panel display with the display of an alarm code and/or name.

ALL ACH580, ACH550, ACH180 AND ACS320 KEYPADS

Control Panel Cleaning

Use a soft damp cloth to clean the control panel. Avoid harsh cleaners which could scratch the display window.

Battery Replacement

A battery is only used in assistant control panels that have the clock function available and enabled. The battery keeps the clock operating in memory during power interruptions. The expected life for the battery is greater than ten years. To remove the battery, use a coin to rotate the battery holder on the back of the control panel. Replace the battery with type CR2032.

Table 36 — Fault and Alarm Codes for ACH580/ACH180 VFD

CODE (HEX)	WARNING / AUX. CODE	CAUSE	WHAT TO DO
A2B1	Overcurrent	Output current has exceeded internal fault limit. In addition to an actual overcurrent situation, this warning may also be caused by an earth fault or supply phase loss.	Check motor load. Check acceleration times in parameter group 23 Speed reference ramp (speed control) or 28 Frequency reference chain (frequency control). Also check parameters 46.01 Speed scaling, 46.02 Frequency scaling and 46.03 Torque scaling. Check motor and motor cable (including phasing and delta/star connection). Check for an earth fault in motor or motor cables by measuring the insulation resistances of motor and motor cable. See chapter Electrical installation, section Checking the insulation of the assembly in the Hardware manual of the drive. Check there are no contactors opening and closing in motor cable. Check that the start-up data in parameter group 99 Motor data corresponds to the motor rating plate. Check that there are no power factor correction capacitors or surge absorbers in motor cable.
A2B3	Earth leakage	Drive has detected load unbalance typically due to earth fault in motor or motor cable.	Check there are no power factor correction capacitors or surge absorbers in motor cable. Check for an earth fault in motor or motor cables by measuring the insulation resistances of motor and motor cable. See chapter Electrical installation, section Checking the insulation of the assembly in the Hardware manual of the drive. If an earth fault is found, fix or change the motor cable and/or motor. If no earth fault can be detected, contact your local representative.
A2B4	Short circuit	Short-circuit in motor cable(s) or motor.	Check motor and motor cable for cabling errors. Check motor and motor cable (including phasing and delta/star connection). Check for an earth fault in motor or motor cables by measuring the insulation resistances of motor and motor cable. See chapter Electrical installation, section Checking the insulation of the assembly in the Hardware manual of the drive. Check there are no power factor correction capacitors or surge absorbers in motor cable.
A6A4	Motor nominal value	The motor parameters are set incorrectly.	Check the auxiliary code. Refer to codes A780-A784 below.
	Motor nominal value 0001	The drive is not dimensioned correctly.	Check the auxiliary code. Refer to codes A780-A784 below. Check the settings of the motor configuration parameters in groups 98 and 99. Check that the drive is sized correctly for the motor.
A780	Motor stall Programmable warning: 31.24 Stall function	Motor is operating in stall region because of, for example, excessive load or insufficient motor power.	Check motor load and drive ratings. Check fault function parameters.
A783	Motor overload	Motor current is too high.	Check for overloaded motor. Adjust the parameters used for the motor overload function (35.51...35.53) and 35.55...35.56.
A784	Motor disconnect	All three output phases are disconnected from motor.	Check that switches between drive and motor are closed. Check that all cables between drive and motor are connected and secured. If no issue was detected and drive output was actually connected to motor, contact your local representative.
A7AB	Extension I/O configuration failure	Installed extension module is not the same as configured.	Check that the installed extension module (shown by parameter 15.02 Detected extension module) is the same as selected by parameter 15.01 Extension module type.
A7C1	FBA A communication Programmable warning: 50.02 FBA A communication loss function	Cyclical communication between drive and fieldbus adapter module A or between PLC and fieldbus adapter module A is lost.	Check status of fieldbus communication. See user documentation of fieldbus interface. Check settings of parameter groups 50 Fieldbus adapter (FBA), 51 FBA A settings, 52 FBA A data in and 53 FBA A data out. Check cable connections. Check if communication master is able to communicate.
A7CE	EFB comm loss Programmable warning: 58.14 Communication loss action	Communication break in embedded fieldbus (EFB) communication.	Check the status of the fieldbus master (online/offline/error, etc.). Check cable connections to the EIA-485/X5 terminals 29, 30 and 31 on the control unit.
A7EE	Panel loss Programmable warning: 49.05 Communication loss action	Control panel or PC tool selected as active control location for drive has ceased communicating.	Check PC tool or control panel connection. Check control panel connector. Check mounting platform if being used. Disconnect and reconnect the control panel.
A88F	Cooling fan	Maintenance timer limit exceeded.	Consider changing the cooling fan. Parameter 05.04 Fan on-time counter shows the running time of the cooling fan.
AFAA	Auto reset	A fault is about to be auto reset.	Informative warning. See the settings in parameter group 31 Fault functions.
AFE1	Emergency stop (off2)	Drive has received an emergency stop (mode selection off2) command.	Check that it is safe to continue operation. Then return emergency stop push button to normal position. Restart drive. If the emergency stop was unintentional, check the source selected by parameter 21.05 Emergency stop source.
AFE2	Emergency stop (off 1 or off3)	Drive has received an emergency stop (mode selection off1 or off3) command.	Check that it is safe to continue operation. Then return emergency stop push button to normal position. Restart drive. If the emergency stop was unintentional, check the source selected by parameter 21.05 Emergency stop source. Informative warning. See parameter 21.22 Start delay.

Table 36 — Fault and Alarm Codes for ACH580/ACH180 VFD (cont)

CODE (HEX)	WARNING / AUX. CODE	CAUSE	WHAT TO DO
AFE9	Start delay	The start delay is active and the drive will start the motor after a predefined delay.	Check that it is safe to continue operation. Then return emergency stop push button to normal position. Restart drive. If the emergency stop was unintentional, check the source selected by parameter 21.05 Emergency stop source.
AFED	Run permissive	Run permissive is keeping the drive from running the motor.	Informative warning. See parameter 21.22 Start delay. Check the setting of (and source selected by) parameter 20.40 Run permissive.
AFEE	Start interlock 1	Start interlock 1 is keeping the drive from starting.	Check the signal source selected for parameter 20.41 Start interlock 1.
AFEF	Start interlock 2	Start interlock 2 is keeping the drive from starting.	Check the signal source selected for parameter 20.42 Start interlock 2.
AFF0	Start interlock 3	Start interlock 3 is keeping the drive from starting.	Check the signal source selected for parameter 20.43 Start interlock 3.
AFF1	Start interlock 4	Start interlock 4 is keeping the drive from starting.	Check the signal source selected for parameter 20.44 Start interlock 4.
AFF2	Run permissive forced warning	A forced DI is used as a source for parameter 20.40 Run permissive.	If 20.40 Run permissive uses DIx as the source, check if the bit corresponding to DIx in parameter 10.03 DI force selection is 1.
AFF3	Start interlock forced warning	One or more forced DIs is used as a source for one or more of parameters 20.41 Start interlock 1 ... 20.44 Start interlock 4.	Check all parameters 20.41 Start interlock 1 ... 20.44 Start interlock 4. If any of these parameters uses DIx as the source, check if the bit corresponding to DIx in parameter 10.03 DI force selection is 1.
AFF5	Override new start required	The Safe torque off function was active and has been reset while in Override.	A new start signal is required to start the drive again.
AFF6	Identification run	Motor ID run will occur at next start.	Informative warning.
AFF8	Motor heating active	Pre-heating is being performed	Informative warning. Motor pre-heating is active. Current specified by parameter 21.16 Preheating current is being passed through the motor.
AFFE	Override active	Drive is in Override mode.	Informative warning.
B5A2	Power applied	The drive was powered up or the control board was rebooted successfully.	Informative event.
B681	Hand mode selected	The drive was placed in Hand mode.	Informative event. Check the control panel to ensure that the current control location is correct.
B682	Off mode selected	The drive was placed in Off mode.	Informative event. Check the control panel to ensure that the current control location is correct.
B683	Auto mode selected	The drive was placed in Auto mode.	Informative event. Check the control panel to ensure that the current control location is correct.
2310	Overcurrent	Output current has exceeded internal fault limit. In addition to an actual overcurrent situation, this fault may also be caused by an earth fault or supply phase loss.	Check motor load. Check acceleration times in parameter group 23 Speed reference ramp (speed control) or 28 Frequency reference chain (frequency control). Also check parameters 46.01 Speed scaling, 46.02 Frequency scaling and 46.03 Torque scaling. Check motor and motor cable (including phasing and delta/star connection). Check there are no contactors opening and closing in motor cable. Check that the start-up data in parameter group 99 corresponds to the motor rating plate. Check that there are no power factor correction capacitors or surge absorbers in motor cable. Check for an earth fault in motor or motor cables by measuring the insulation resistances of motor and motor cable. See chapter Electrical installation, section Checking the insulation of the assembly in the Hardware manual of the drive.
FF61	ID run	Motor ID run was not completed successfully.	Check safety circuit connections. For more information, see chapter The Safe torque off function in the Hardware manual of the drive and description of parameter 31.22 STO indication run/stop (page 520). Check the value of parameter 95.04 Control board supply. Check the nominal motor values in parameter group 99 Motor data. Check that no external control system is connected to the drive. Cycle the power to the drive (and its control unit, if powered separately). Check that no operation limits prevent the completion of the ID run. Restore parameters to default settings and try again. Check that the motor shaft is not locked. Check the auxiliary code.

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS

**Table A — ACH550/580 VFD Parameters —
48/50TC 07-14, 50TCQ 07-12, 48/50HC 07-12 and 50HCQ 08-09
580J/558J*07-14, 548J*07-12, 581J/551J*07-12 and 549J*08-09
RGS072/089/090/100/102/119/120/150, RAS072/089/090/100/102/119/120/150, RHS090/102/120
RGH072/089/090/100/102/119/120/150, RAH072/089/090/100/102/119/120/150, RHH090/102/120**

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	VOLTAGE 9905 / 99.07	NOM. AMPS 9906 / 99.06	MOTOR NOM. FREQ 9907 / 99.08	NOM. RPM 9908 / 99.09	NOM. HP 9909 / 99.10
HK30WA364	HK30WA302	HK30WB303	1.7 HP 230V	HD56FR233	230	5.8	60 Hz	1725	1.7
HK30WA356	HK30WA318	HK30WB319	1.7 HP 460V	HD56FR463	460	2.9	60 Hz	1725	1.7
HK30WA366	HK30WA332	HK30WB340	1.7 HP 575V	HD56FR579	575	3.1	60 Hz	1725	1.7
HK30WA352	HK30WA303	HK30WB304	2.4 HP 230V	HD56FE653	230	7.9	60 Hz	1725	2.4
HK30WA356	HK30WA318	HK30WB320	2.4 HP 460V	HD56FE653	460	4.0	60 Hz	1725	2.4
HK30WA360	HK30WA333	HK30WB340	2.4 HP 575V	HD56FE577	575	3.4	60 Hz	1725	2.4
HK30WA352	HK30WA303	HK30WB304	2.9 HP 230V	HD58FE654	230	8.6	60 Hz	1725	2.9
HK30WA356	HK30WA318	HK30WB320	3.7 HP 460V	HD58FE654	460	4.6	60 Hz	1725	2.9
HK30WA353	HK30WA304	HK30WB305	3.7 HP 230V	HD60FE656	230	11.2	60 Hz	1725	3.7
HK30WA357	HK30WA319	HK30WB321	3.7 HP 460V	HD60FE656	460	5.6	60 Hz	1725	3.7
HK30WA361	HK30WA334	HK30WB341	3.7 HP 575V	HD58FE577	575	4.2	60 Hz	1725	3.7
HK30WA354	HK30WA305	HK30WB306	5.3 HP 230V	HD60FK658	230	13.0	60 Hz	1740	5.3
HK30WA358	HK30WA320	HK30WB321	5.3 HP 460V	HD60FK658	460	6.4	60 Hz	1740	5.3
HK30WA362	HK30WA335	HK30WB341	5.3 HP 575V	HD60FE576	575	5.4	60 Hz	1725	5.3

**Table A — ACH550/580 VFD Parameters —
48/50TC 07-14, 50TCQ 07-12, 48/50HC 07-12 and 50HCQ 08-09
580J/558J*07-14, 548J*07-12, 581J/551J*07-12 and 549J*08-09
RGS072/089/090/100/102/119/120/150, RAS072/089/090/100/102/119/120/150, RHS090/102/120
RGH072/089/090/100/102/119/120/150, RAH072/089/090/100/102/119/120/150, RHH090/102/120 (cont)**

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	550 / 580 CONST SPEED SEL 1201 / 28.22	550 / 580 CONST SPEED SEL 1201 / 28.23	CONST SPEED 1 1202 / 28.26	CONST SPEED 2 1203 / 28.27	CONST SPEED 3 1204 / 28.28	RELAY OUT 3 1403 / 10.30
HK30WA364	HK30WA302	HK30WB303	1.7 HP 230V	HD56FR233	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA356	HK30WA318	HK30WB319	1.7 HP 460V	HD56FR463	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA366	HK30WA332	HK30WB340	1.7 HP 575V	HD56FR579	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA352	HK30WA303	HK30WB304	2.4 HP 230V	HD56FE653	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA356	HK30WA318	HK30WB320	2.4 HP 460V	HD56FE653	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA360	HK30WA333	HK30WB340	2.4 HP 575V	HD56FE577	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA352	HK30WA303	HK30WB304	2.9 HP 230V	HD58FE654	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA356	HK30WA318	HK30WB320	3.7 HP 460V	HD58FE654	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA353	HK30WA304	HK30WB305	3.7 HP 230V	HD60FE656	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA357	HK30WA319	HK30WB321	3.7 HP 460V	HD60FE656	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA361	HK30WA334	HK30WB341	3.7 HP 575V	HD58FE577	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA354	HK30WA305	HK30WB306	5.3 HP 230V	HD60FK658	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA358	HK30WA320	HK30WB321	5.3 HP 460V	HD60FK658	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA362	HK30WA335	HK30WB341	5.3 HP 575V	HD60FE576	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

Table A — ACH550/580 VFD Parameters —
48/50TC 07-14, 50TCQ 07-12, 48/50HC 07-12 and 50HCQ 08-09
580J/558J*07-14, 548J*07-12, 581J/551J*07-12 and 549J*08-09
RGS072/089/090/100/102/119/120/150, RAS072/089/090/100/102/119/120/150, RHS090/102/120
RGH072/089/090/100/102/119/120/150, RAH072/089/090/100/102/119/120/150, RHH090/102/120 (cont)

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	MAX AMPS 2003 / 30.17	MIN FREQ 2007 / 30.13	MAX FREQ 2008 / 30.14	SWITCH FREQ 2606 / 97.01
HK30WA364	HK30WA302	HK30WB303	1.7 HP 230V	HD56FR233	6.7	0 Hz	60 Hz	4kHz
HK30WA356	HK30WA318	HK30WB319	1.7 HP 460V	HD56FR463	3.3	0 Hz	60 Hz	4kHz
HK30WA366	HK30WA332	HK30WB340	1.7 HP 575V	HD56FR579	3.6	0 Hz	60 Hz	4kHz
HK30WA352	HK30WA303	HK30WB304	2.4 HP 230V	HD56FE653	9.1	0 Hz	60 Hz	4kHz
HK30WA356	HK30WA318	HK30WB320	2.4 HP 460V	HD56FE653	4.6	0 Hz	60 Hz	4kHz
HK30WA360	HK30WA333	HK30WB340	2.4 HP 575V	HD56FE577	3.9	0 Hz	60 Hz	4kHz
HK30WA352	HK30WA303	HK30WB304	2.9 HP 230V	HD58FE654	9.9	0 Hz	60 Hz	4kHz
HK30WA356	HK30WA318	HK30WB320	3.7 HP 460V	HD58FE654	5.3	0 Hz	60 Hz	4kHz
HK30WA353	HK30WA304	HK30WB305	3.7 HP 230V	HD60FE656	12.9	0 Hz	60 Hz	4kHz
HK30WA357	HK30WA319	HK30WB321	3.7 HP 460V	HD60FE656	5.6	0 Hz	60 Hz	4kHz
HK30WA361	HK30WA334	HK30WB341	3.7 HP 575V	HD58FE577	4.8	0 Hz	60 Hz	4kHz
HK30WA354	HK30WA305	HK30WB306	5.3 HP 230V	HD60FK658	15.0	0 Hz	60 Hz	4kHz
HK30WA358	HK30WA320	HK30WB321	5.3 HP 460V	HD60FK658	7.4	0 Hz	60 Hz	4kHz
HK30WA362	HK30WA335	HK30WB341	5.3 HP 575V	HD60FE576	6.2	0 Hz	60 Hz	4kHz

Table A — ACH550/580 VFD Parameters —
48/50TC 07-14, 50TCQ 07-12, 48/50HC 07-12 and 50HCQ 08-09
580J/558J*07-14, 548J*07-12, 581J/551J*07-12 and 549J*08-09
RGS072/089/090/100/102/119/120/150, RAS072/089/090/100/102/119/120/150, RHS090/102/120
RGH072/089/090/100/102/119/120/150, RAH072/089/090/100/102/119/120/150, RHH090/102/120 (cont)

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	START FCN 2101 / 21.19	STOP FCN 2102 / 21.03	ACCEL/ DECEL 2201 / 21.19	ACCEL 2202 / 28.72	DECEL 2203 / 28.73
HK30WA364	HK30WA302	HK30WB303	1.7 HP 230V	HD56FR233	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA356	HK30WA318	HK30WB319	1.7 HP 460V	HD56FR463	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA366	HK30WA332	HK30WB340	1.7 HP 575V	HD56FR579	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA352	HK30WA303	HK30WB304	2.4 HP 230V	HD56FE653	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA356	HK30WA318	HK30WB320	2.4 HP 460V	HD56FE653	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA360	HK30WA333	HK30WB340	2.4 HP 575V	HD56FE577	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA352	HK30WA303	HK30WB304	2.9 HP 230V	HD58FE654	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA356	HK30WA318	HK30WB320	3.7 HP 460V	HD58FE654	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA353	HK30WA304	HK30WB305	3.7 HP 230V	HD60FE656	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA357	HK30WA319	HK30WB321	3.7 HP 460V	HD60FE656	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA361	HK30WA334	HK30WB341	3.7 HP 575V	HD58FE577	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA354	HK30WA305	HK30WB306	5.3 HP 230V	HD60FK658	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA358	HK30WA320	HK30WB321	5.3 HP 460V	HD60FK658	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA362	HK30WA335	HK30WB341	5.3 HP 575V	HD60FE576	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

**Table B — ACH550/580 VFD Parameters —
48/50TC 16, 50TCQ 14, 48/50HC 14 and 50HCQ 12
580J/558J*16, 548J*14, 581J/551J*14 and 549J*12
RGS180/RAS180, RHS150, RGH150/RAH150 and RHH120**

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	VOLTAGE 9905 / 99.07	NOM. AMPS 9906 / 99.06	MOTOR NOM. FREQ 9907 / 99.08	NOM. RPM 9908 / 99.09	NOM. HP 9909 / 99.10
HK30WA352	HK30WA303	HK30WB304	2.4 HP 230V	HD56FE653	230	7.9	60 Hz	1725	2.4
HK30WA356	HK30WA318	HK30WB320	2.4 HP 460V	HD56FE653	460	4.0	60 Hz	1725	2.4
HK30WA360	HK30WA333	HK30WB341	2.4 HP 575V	HD56FE577	575	4.2	60 Hz	1725	2.4
HK30WA352	HK30WA303	HK30WB304	2.9 HP 230V	HD58FE654	230	9.2	60 Hz	1725	2.9
HK30WA356	HK30WA318	HK30WB320	2.9 HP 460V	HD58FE654	460	4.6	60 Hz	1725	2.9
HK30WA353	HK30WA304	HK30WB305	3.7 HP 230V	HD60FE656	230	11.2	60 Hz	1725	3.7
HK30WA357	HK30WA319	HK30WB321	3.7 HP 460V	HD60FE656	460	5.6	60 Hz	1725	3.7
HK30WA361	HK30WA334	HK30WB341	3.7 HP 575V	HD58FE577	575	4.2	60 Hz	1725	3.7
HK30WA354	HK30WA305	HK30WB306	5.0 HP 230V	HD60FL657	230	16.7	60 Hz	1745	5
HK30WA358	HK30WA320	HK30WB323	5.0 HP 460V	HD60FL657	460	6.8	60 Hz	1745	5
HK30WA362	HK30WA335	HK30WB341	5.0 HP 575V	HD60FL575	575	5.1	60 Hz	1725	5
HK30WA354	HK30WA305	HK30WB306	5.0 HP 230V	HD60FK657	230	14.7	60 Hz	1760	5
HK30WA358	HK30WA320	HK30WB321	5.0 HP 460V	HD60FK657	460	6.8	60 Hz	1760	5
HK30WA362	HK30WA335	HK30WB341	5.0 HP 575V	HD60FL576	575	5.4	60 Hz	1745	5

**Table B — ACH550/580 VFD Parameters —
48/50TC 16, 50TCQ 14, 48/50HC 14 and 50HCQ 12
580J/558J*16, 548J*14, 581J/551J*14 and 549J*12
RGS180/RAS180, RHS150, RGH150/RAH150 and RHH120 (cont)**

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	550 / 580 CONST SPEED SEL 1201 / 28.22	550 / 580 CONST SPEED SEL 1201 / 28.23	CONST SPEED 1 1202 / 28.26	CONST SPEED 2 1203 / 28.27	CONST SPEED 3 1204 / 28.28	RELAY OUT 3 1403 / 10.30
HK30WA352	HK30WA303	HK30WB304	2.4 HP 230V	HD56FE653	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ 14 Fault
HK30WA356	HK30WA318	HK30WB320	2.4 HP 460V	HD56FE653	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ 14 Fault
HK30WA360	HK30WA333	HK30WB341	2.4 HP 575V	HD56FE577	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ 14 Fault
HK30WA352	HK30WA303	HK30WB304	2.9 HP 230V	HD58FE654	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ 14 Fault
HK30WA356	HK30WA318	HK30WB320	2.9 HP 460V	HD58FE654	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ 14 Fault
HK30WA353	HK30WA304	HK30WB305	3.7 HP 230V	HD60FE656	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ 14 Fault
HK30WA357	HK30WA319	HK30WB321	3.7 HP 460V	HD60FE656	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ 14 Fault
HK30WA361	HK30WA334	HK30WB341	3.7 HP 575V	HD58FE577	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ 14 Fault
HK30WA354	HK30WA305	HK30WB306	5.0 HP 230V	HD60FL657	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ 14 Fault
HK30WA358	HK30WA320	HK30WB323	5.0 HP 460V	HD60FL657	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ 14 Fault
HK30WA362	HK30WA335	HK30WB341	5.0 HP 575V	HD60FL575	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ 14 Fault
HK30WA354	HK30WA305	HK30WB306	5.0 HP 230V	HD60FK657	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ 14 Fault
HK30WA358	HK30WA320	HK30WB321	5.0 HP 460V	HD60FK657	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ 14 Fault
HK30WA362	HK30WA335	HK30WB341	5.0 HP 575V	HD60FL576	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ 14 Fault

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

**Table B — ACH550/580 VFD Parameters —
48/50TC 16, 50TCQ 14, 48/50HC 14 and 50HCQ 12
580J/558J*16, 548J*14, 581J/551J*14 and 549J*12
RGS180/RAS180, RHS150, RGH150/RAH150 and RHH120 (cont)**

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	MAX AMPS 2003 / 30.17	MIN FREQ 2007 / 30.13	MAX FREQ 2008 / 30.14	SWITCH FREQ 2606 / 97.01
HK30WA352	HK30WA303	HK30WB304	2.4 HP 230V	HD56FE653	9.1	0 Hz	60 Hz	4kHz
HK30WA356	HK30WA318	HK30WB320	2.4 HP 460V	HD56FE653	4.6	0 Hz	60 Hz	4kHz
HK30WA360	HK30WA333	HK30WB341	2.4 HP 575V	HD56FE577	4.8	0 Hz	60 Hz	4kHz
HK30WA352	HK30WA303	HK30WB304	2.9 HP 230V	HD58FE654	12.9	0 Hz	60 Hz	4kHz
HK30WA356	HK30WA318	HK30WB320	2.9 HP 460V	HD58FE654	5.3	0 Hz	60 Hz	4kHz
HK30WA353	HK30WA304	HK30WB305	3.7 HP 230V	HD60FE656	4.8	0 Hz	60 Hz	4kHz
HK30WA357	HK30WA319	HK30WB321	3.7 HP 460V	HD60FE656	6.4	0 Hz	60 Hz	4kHz
HK30WA361	HK30WA334	HK30WB341	3.7 HP 575V	HD58FE577	9.7	0 Hz	60 Hz	4kHz
HK30WA354	HK30WA305	HK30WB306	5.0 HP 230V	HD60FL657	5.9	0 Hz	60 Hz	4kHz
HK30WA358	HK30WA320	HK30WB323	5.0 HP 460V	HD60FL657	7.8	0 Hz	60 Hz	4kHz
HK30WA362	HK30WA335	HK30WB341	5.0 HP 575V	HD60FL575	7.8	0 Hz	60 Hz	4kHz
HK30WA354	HK30WA305	HK30WB306	5.0 HP 230V	HD60FK657	6.2	0 Hz	60 Hz	4kHz
HK30WA358	HK30WA320	HK30WB321	5.0 HP 460V	HD60FK657	3.9	0 Hz	60 Hz	4kHz
HK30WA362	HK30WA335	HK30WB341	5.0 HP 575V	HD60FL576	10.6	0 Hz	60 Hz	4kHz

**Table B — ACH550/580 VFD Parameters —
48/50TC 16, 50TCQ 14, 48/50HC 14 and 50HCQ 12
580J/558J*16, 548J*14, 581J/551J*14 and 549J*12
RGS180/RAS180, RHS150, RGH150/RAH150 and RHH120 (cont)**

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	START FCN 2101 / 21.19	STOP FCN 2102 / 21.03	ACCEL/DECEL 2201 / 21.19	ACCEL 2202 / 28.72	DECEL 2203 / 28.73
HK30WA352	HK30WA303	HK30WB304	2.4 HP 230V	HD56FE653	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA356	HK30WA318	HK30WB320	2.4 HP 460V	HD56FE653	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA360	HK30WA333	HK30WB341	2.4 HP 575V	HD56FE577	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA352	HK30WA303	HK30WB304	2.9 HP 230V	HD58FE654	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA356	HK30WA318	HK30WB320	2.9 HP 460V	HD58FE654	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA353	HK30WA304	HK30WB305	3.7 HP 230V	HD60FE656	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA357	HK30WA319	HK30WB321	3.7 HP 460V	HD60FE656	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA361	HK30WA334	HK30WB341	3.7 HP 575V	HD58FE577	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA354	HK30WA305	HK30WB306	5.0 HP 230V	HD60FL657	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA358	HK30WA320	HK30WB323	5.0 HP 460V	HD60FL657	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA362	HK30WA335	HK30WB341	5.0 HP 575V	HD60FL575	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA354	HK30WA305	HK30WB306	5.0 HP 230V	HD60FK657	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA358	HK30WA320	HK30WB321	5.0 HP 460V	HD60FK657	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA362	HK30WA335	HK30WB341	5.0 HP 575V	HD60FL576	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

**Table C — ACH550/580 VFD Parameters —
48/50TC17-30, 50TCQ 17-24 and 48/50HC 17-28
580J/558J*17-30, 548J*17-24 and 581J/551J*17-28
RGS210/240/300/336, RAS210/240/300/336, RHS181/183/240/243
and RGH181/183/210/213/240/243/300/303, RAH181/183/210/213/240/243/300/303**

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	VOLTAGE 9905 / 99.07	NOM. AMPS 9906 / 99.06	MOTOR NOM. FREQ 9907 / 99.08	NOM. RPM 9908 / 99.09	NOM. HP 9909 / 99.10
HK30WA352	HK30WA303	HK30WB304	2.9 HP 230V	HD58FE654	230	9.2	60 Hz	1725	2.9
HK30WA356	HK30WA318	HK30WB320	2.9 HP 460V	HD58FE654	460	4.6	60 Hz	1725	2.9
HK30WA353	HK30WA304	HK30WB305	3.7 HP 230V	HD60FE656	230	11.2	60 Hz	1725	3.7
HK30WA357	HK30WA319	HK30WB321	3.7 HP 460V	HD60FE656	460	5.6	60 Hz	1725	3.7
HK30WA361	HK30WA334	HK30WB341	3.7 HP 575V	HD58FE577	575	4.2	60 Hz	1725	3.7
HK30WA354	HK30WA305	HK30WB305	5.0 HP 230V	HD60FK657	230	16.7	60 Hz	1760	5.0
HK30WA358	HK30WA320	HK30WB322	5.0 HP 460V	HD60FK657	460	8.4	60 Hz	1760	5.0
HK30WA362	HK30WA335	HK30WB342	5.0 HP 575V	HD60FL576	575	5.4	60 Hz	1745	5.0
HK30WA354	HK30WA305	HK30WB306	7.5 HP 230V	HD62FK654	230	23.5	60 Hz	1760	7.5
HK30WA358	HK30WA320	HK30WB321	7.5 HP 460V	HD62FK654	460	11.9	60 Hz	1760	7.5
HK30WA362	HK30WA335	HK30WB342	7.5 HP 575V	HD62FL576	575	9.0	60 Hz	1750	7.5
HK30WA354	HK30WA305	HK30WB306	5.0 HP 230V	HD60FL650	230	16.7	60 Hz	1740	5.0
HK30WA358	HK30WA320	HK30WB322	5.0 HP 460V	HD60FL650	460	8.4	60 Hz	1740	5.0
HK30WA362	HK30WA335	HK30WB342	5.0 HP 575V	HD60FL575	575	5.1	60 Hz	1725	5.0
HK30WA354	HK30WA305	HK30WB306	5.3 HP 230V	HD60FK658	230	13.0	60 Hz	1740	5.3
HK30WA358	HK30WA320	HK30WB321	5.3 HP 460V	HD60FK658	460	6.4	60 Hz	1740	5.3
HK30WA362	HK30WA335	HK30WB341	5.3 HP 575V	HD60FE576	575	5.4	60 Hz	1725	5.3
HK30WA354	HK30WA305	HK30WB307	7.5 HP 230V	HD62FL650	230	22.9	60 Hz	1745	7.5
HK30WA358	HK30WA320	HK30WB323	7.5 HP 460V	HD62FL650	460	11.5	60 Hz	1745	7.5
HK30WA362	HK30WA335	HK30WB343	7.5 HP 575V	HD62FL575	575	8.1	60 Hz	1745	7.5
HK30WA355	HK30WA306	HK30WB308	10.0 HP 230V	HD64FK654	230	30.4	60 Hz	1755	10.0
HK30WA359	HK30WA321	HK30WB324	10.0 HP 460V	HD64FK654	460	15.2	60 Hz	1755	10.0
HK30WA363	HK30WA336	HK30WB344	10.0 HP 575V	HD64FL576	575	11.0	60 Hz	1755	10.0
HK30WA355	HK30WA306	HK30WB307	10.0 HP 230V	HD64FL650	230	30.8	60 Hz	1745	10.0
HK30WA359	HK30WA321	HK30WB324	10.0 HP 460V	HD64FL650	460	15.4	60 Hz	1745	10.0
HK30WA363	HK30WA336	HK30WB343	10.0 HP 575V	HD64FL575	575	11.0	60 Hz	1740	10.0

**Table C — ACH550/580 VFD Parameters —
48/50TC17-30, 50TCQ 17-24 and 48/50HC 17-28
580J/558J*17-30, 548J*17-24 and 581J/551J*17-28
RGS210/240/300/336, RAS210/240/300/336, RHS181/183/240/243
and RGH181/183/210/213/240/243/300/303, RAH181/183/210/213/240/243/300/303 (cont)**

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	550 / 580 CONST SPEED SEL 1201 / 28.22	550 / 580 CONST SPEED SEL 1201 / 28.23	CONST SPEED 1 1202 / 28.26	CONST SPEED 2 1203 / 28.27	CONST SPEED 3 1204 / 28.28	RELAY OUT 3 1403 / 10.30
HK30WA352	HK30WA303	HK30WB304	2.9 HP 230V	HD58FE654	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA356	HK30WA318	HK30WB320	2.9 HP 460V	HD58FE654	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA353	HK30WA304	HK30WB305	3.7 HP 230V	HD60FE656	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA357	HK30WA319	HK30WB321	3.7 HP 460V	HD60FE656	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA361	HK30WA334	HK30WB341	3.7 HP 575V	HD58FE577	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA354	HK30WA305	HK30WB305	5.0 HP 230V	HD60FK657	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA358	HK30WA320	HK30WB322	5.0 HP 460V	HD60FK657	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA362	HK30WA335	HK30WB342	5.0 HP 575V	HD60FL576	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA354	HK30WA305	HK30WB306	7.5 HP 230V	HD62FK654	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA358	HK30WA320	HK30WB321	7.5 HP 460V	HD62FK654	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA362	HK30WA335	HK30WB342	7.5 HP 575V	HD62FL576	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA354	HK30WA305	HK30WB306	5.0 HP 230V	HD60FL650	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA358	HK30WA320	HK30WB322	5.0 HP 460V	HD60FL650	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA362	HK30WA335	HK30WB342	5.0 HP 575V	HD60FL575	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA354	HK30WA305	HK30WB306	5.3 HP 230V	HD60FK658	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA358	HK30WA320	HK30WB321	5.3 HP 460V	HD60FK658	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA362	HK30WA335	HK30WB341	5.3 HP 575V	HD60FE576	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA354	HK30WA305	HK30WB307	7.5 HP 230V	HD62FL650	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA358	HK30WA320	HK30WB323	7.5 HP 460V	HD62FL650	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA362	HK30WA335	HK30WB343	7.5 HP 575V	HD62FL575	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA355	HK30WA306	HK30WB308	10.0 HP 230V	HD64FK654	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA359	HK30WA321	HK30WB324	10.0 HP 460V	HD64FK654	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA363	HK30WA336	HK30WB344	10.0 HP 575V	HD64FL576	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA355	HK30WA306	HK30WB307	10.0 HP 230V	HD64FL650	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA359	HK30WA321	HK30WB324	10.0 HP 460V	HD64FL650	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA363	HK30WA336	HK30WB343	10.0 HP 575V	HD64FL575	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

**Table C — ACH550/580 VFD Parameters —
48/50TC17-30, 50TCQ 17-24 and 48/50HC 17-28
580J/558J*17-30, 548J*17-24 and 581J/551J*17-28
RGS210/240/300/336, RAS210/240/300/336, RHS181/183/240/243
and RGH181/183/210/213/240/243/300/303, RAH181/183/210/213/240/243/300/303 (cont)**

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	MAX AMPS 2003 / 30.17	MIN FREQ 2007 / 30.13	MAX Freq 2008 / 30.14	SWITCH FREQ 2606 / 97.01
HK30WA352	HK30WA303	HK30WB304	2.9 HP 230V	HD58FE654	10.6	0 Hz	60 Hz	4kHz
HK30WA356	HK30WA318	HK30WB320	2.9 HP 460V	HD58FE654	5.3	0 Hz	60 Hz	4kHz
HK30WA353	HK30WA304	HK30WB305	3.7 HP 230V	HD60FE656	12.9	0 Hz	60 Hz	4kHz
HK30WA357	HK30WA319	HK30WB321	3.7 HP 460V	HD60FE656	6.4	0 Hz	60 Hz	4kHz
HK30WA361	HK30WA334	HK30WB341	3.7 HP 575V	HD58FE577	4.8	0 Hz	60 Hz	4kHz
HK30WA354	HK30WA305	HK30WB305	5.0 HP 230V	HD60FK657	16.9	0 Hz	60 Hz	4kHz
HK30WA358	HK30WA320	HK30WB322	5.0 HP 460V	HD60FK657	7.8	0 Hz	60 Hz	4kHz
HK30WA362	HK30WA335	HK30WB342	5.0 HP 575V	HD60FL576	6.2	0 Hz	60 Hz	4kHz
HK30WA354	HK30WA305	HK30WB306	7.5 HP 230V	HD62FK654	19.7	0 Hz	60 Hz	4kHz
HK30WA358	HK30WA320	HK30WB321	7.5 HP 460V	HD62FK654	9.9	0 Hz	60 Hz	4kHz
HK30WA362	HK30WA335	HK30WB342	7.5 HP 575V	HD62FL576	10.4	0 Hz	60 Hz	4kHz
HK30WA354	HK30WA305	HK30WB306	5.0 HP 230V	HD60FL650	19.2	0 Hz	60 Hz	4kHz
HK30WA358	HK30WA320	HK30WB322	5.0 HP 460V	HD60FL650	9.7	0 Hz	60 Hz	4kHz
HK30WA362	HK30WA335	HK30WB342	5.0 HP 575V	HD60FL575	5.9	0 Hz	60 Hz	4kHz
HK30WA354	HK30WA305	HK30WB306	5.3 HP 230V	HD60FK658	15.0	0 Hz	60 Hz	4kHz
HK30WA358	HK30WA320	HK30WB321	5.3 HP 460V	HD60FK658	7.4	0 Hz	60 Hz	4kHz
HK30WA362	HK30WA335	HK30WB341	5.3 HP 575V	HD60FE576	10.4	0 Hz	60 Hz	4kHz
HK30WA354	HK30WA305	HK30WB307	7.5 HP 230V	HD62FL650	25.8	0 Hz	60 Hz	4kHz
HK30WA358	HK30WA320	HK30WB323	7.5 HP 460V	HD62FL650	11.2	0 Hz	60 Hz	4kHz
HK30WA362	HK30WA335	HK30WB343	7.5 HP 575V	HD62FL575	9.3	0 Hz	60 Hz	4kHz
HK30WA355	HK30WA306	HK30WB308	10.0 HP 230V	HD64FK654	35.4	0 Hz	60 Hz	4kHz
HK30WA359	HK30WA321	HK30WB324	10.0 HP 460V	HD64FK654	17.7	0 Hz	60 Hz	4kHz
HK30WA363	HK30WA336	HK30WB344	10.0 HP 575V	HD64FL576	12.7	0 Hz	60 Hz	4kHz
HK30WA355	HK30WA306	HK30WB307	10.0 HP 230V	HD64FL650	35.4	0 Hz	60 Hz	4kHz
HK30WA359	HK30WA321	HK30WB324	10.0 HP 460V	HD64FL650	17.7	0 Hz	60 Hz	4kHz
HK30WA363	HK30WA336	HK30WB343	10.0 HP 575V	HD64FL575	12.7	0 Hz	60 Hz	4kHz

**Table C — ACH550/580 VFD Parameters —
48/50TC17-30, 50TCQ 17-24 and 48/50HC 17-28
580J/558J*17-30, 548J*17-24 and 581J/551J*17-28
RGS210/240/300/336, RAS210/240/300/336, RHS181/183/240/243
and RGH181/183/210/213/240/243/300/303, RAH181/183/210/213/240/243/300/303 (cont)**

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	START FCN 2101 / 21.19	STOP FCN 2102 / 21.03	ACCEL/DECEL 2201 / 21.19	ACCEL 2202 / 28.72	DECEL 2203 / 28.73
HK30WA352	HK30WA303	HK30WB304	2.9 HP 230V	HD58FE654	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA356	HK30WA318	HK30WB320	2.9 HP 460V	HD58FE654	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA353	HK30WA304	HK30WB305	3.7 HP 230V	HD60FE656	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA357	HK30WA319	HK30WB321	3.7 HP 460V	HD60FE656	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA361	HK30WA334	HK30WB341	3.7 HP 575V	HD58FE577	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA354	HK30WA305	HK30WB305	5.0 HP 230V	HD60FK657	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA358	HK30WA320	HK30WB322	5.0 HP 460V	HD60FK657	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA362	HK30WA335	HK30WB342	5.0 HP 575V	HD60FL576	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA354	HK30WA305	HK30WB306	7.5 HP 230V	HD62FK654	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA358	HK30WA320	HK30WB321	7.5 HP 460V	HD62FK654	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA362	HK30WA335	HK30WB342	7.5 HP 575V	HD62FL576	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA354	HK30WA305	HK30WB306	5.0 HP 230V	HD60FL650	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA358	HK30WA320	HK30WB322	5.0 HP 460V	HD60FL650	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA362	HK30WA335	HK30WB342	5.0 HP 575V	HD60FL575	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA354	HK30WA305	HK30WB306	5.3 HP 230V	HD60FK658	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA358	HK30WA320	HK30WB321	5.3 HP 460V	HD60FK658	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA362	HK30WA335	HK30WB341	5.3 HP 575V	HD60FE576	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA354	HK30WA305	HK30WB307	7.5 HP 230V	HD62FL650	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA358	HK30WA320	HK30WB323	7.5 HP 460V	HD62FL650	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA362	HK30WA335	HK30WB343	7.5 HP 575V	HD62FL575	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA355	HK30WA306	HK30WB308	10.0 HP 230V	HD64FK654	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA359	HK30WA321	HK30WB324	10.0 HP 460V	HD64FK654	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA363	HK30WA336	HK30WB344	10.0 HP 575V	HD64FL576	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA355	HK30WA306	HK30WB307	10.0 HP 230V	HD64FL650	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA359	HK30WA321	HK30WB324	10.0 HP 460V	HD64FL650	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA363	HK30WA336	HK30WB343	10.0 HP 575V	HD64FL575	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

**Table D — ACH550/580 VFD Parameters —
40RUA 07-30, 40RUS 08-30 and 40RUQ 07-25
524J*A07A-30A and 524J*H07H-25H
FAS072/091/120/150/180/240/300 and FHS072/091/120/180/240**

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	VOLTAGE 9905 / 99.07	NOM. AMPS 9906 / 99.06	MOTOR NOM. FREQ 9907 / 99.08	NOM. RPM 9908 / 99.09	NOM. HP 9909 / 99.09
HK30WA360	HK30WA360	HK30WB340	1.7 HP 575V	HD56FR579	575	2.8	60 Hz	1725	1.7
HK30WA360	HK30WA360	HK30WB340	2.4 HP 575V	HD56FE577	575	3.8	60 Hz	1725	2.4
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	575	4.9	60 Hz	1725	3.7
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	575	4.5	60 Hz	1725	3.7
HK30WA362	HK30WA362	HK30WB342	5.0 HP 575V	HD60FK577	575	8.0	60 Hz	1725	5.0
HK30WA362	HK30WA362	HK30WB342	7.5 HP 575V	HD62FL576	575	9.0	60 Hz	1725	7.5
HK30WA363	HK30WA363	HK30WB343	10 HP 575V	HD64FL576	575	11.0	60 Hz	1725	10.0
HK30WA360	HK30WA360	HK30WB340	1.7 HP 575V	HD56FR579	575	2.8	60 Hz	1725	1.7
HK30WA360	HK30WA360	HK30WB340	2.4 HP 575V	HD56FE577	575	3.8	60 Hz	1725	2.4
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	575	4.9	60 Hz	1725	3.7
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	575	4.5	60 Hz	1725	3.7

**Table D — ACH550/580 VFD Parameters —
40RUA 07-30, 40RUS 08-30 and 40RUQ 07-25
524J*A07A-30A and 524J*H07H-25H
FAS072/091/120/150/180/240/300 and FHS072/091/120/180/240 (cont)**

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	550 / 580 CONST SPEED SEL 1201 / 28.22	550 / 580 CONST SPEED SEL 1201 / 28.23	CONST SPEED 1 1202 / 28.26	CONST SPEED 2 1203 / 28.27	CONST SPEED 3 1204 / 28.28	RELAY OUT 3 1403 / 10.30
HK30WA360	HK30WA360	HK30WB340	1.7 HP 575V	HD56FR579	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA360	HK30WA360	HK30WB340	2.4 HP 575V	HD56FE577	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA362	HK30WA362	HK30WB342	5.0 HP 575V	HD60FK577	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA362	HK30WA362	HK30WB342	7.5 HP 575V	HD62FL576	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA363	HK30WA363	HK30WB343	10 HP 575V	HD64FL576	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA360	HK30WA360	HK30WB340	1.7 HP 575V	HD56FR579	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA360	HK30WA360	HK30WB340	2.4 HP 575V	HD56FE577	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	DI 2,3 / DI2	DI 2,3 / DI3	40 Hz	60 Hz	60 Hz	FLT/ (14) Fault

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

**Table D — ACH550/580 VFD Parameters —
40RUA 07-30, 40RUS 08-30 and 40RUQ 07-25
524J*A07A-30A and 524J*H07H-25H
FAS072/091/120/150/180/240/300 and FHS072/091/120/180/240 (cont)**

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	MAX AMPS 2003 / 30.17	MIN FREQ 2007 / 30.13	MAX Freq 2008 / 30.14	SWITCH FREQ 2606 / 97.01
HK30WA360	HK30WA360	HK30WB340	1.7 HP 575V	HD56FR579	3.2	0 Hz	60 Hz	4 kHz
HK30WA360	HK30WA360	HK30WB340	2.4 HP 575V	HD56FE577	4.4	0 Hz	60 Hz	4 kHz
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	5.6	0 Hz	60 Hz	4 kHz
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	5.2	0 Hz	60 Hz	4 kHz
HK30WA362	HK30WA362	HK30WB342	5.0 HP 575V	HD60FK577	9.2	0 Hz	60 Hz	4 kHz
HK30WA362	HK30WA362	HK30WB342	7.5 HP 575V	HD62FL576	10.4	0 Hz	60 Hz	4 kHz
HK30WA363	HK30WA363	HK30WB343	10 HP 575V	HD64FL576	12.7	0 Hz	60 Hz	4 kHz
HK30WA360	HK30WA360	HK30WB340	1.7 HP 575V	HD56FR579	3.2	0 Hz	60 Hz	4 kHz
HK30WA360	HK30WA360	HK30WB340	2.4 HP 575V	HD56FE577	4.4	0 Hz	60 Hz	4 kHz
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	5.6	0 Hz	60 Hz	4 kHz
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	5.2	0 Hz	60 Hz	4 kHz

**Table D — ACH550/580 VFD Parameters —
40RUA 07-30, 40RUS 08-30 and 40RUQ 07-25
524J*A07A-30A and 524J*H07H-25H
FAS072/091/120/150/180/240/300 and FHS072/091/120/180/240 (cont)**

VFD PART NUMBER	ACH550 REPLACEMENT COMPONENT PART NUMBER	ACH580 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	START FCN 2101 / 21.19	STOP FCN 2102 / 21.03	ACCEL/DECEL 2201 / 28.71	ACCEL 2202 / 28.72	DECEL 2203 / 28.73
HK30WA360	HK30WA360	HK30WB340	1.7 HP 575V	HD56FR579	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA360	HK30WA360	HK30WB340	2.4 HP 575V	HD56FE577	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA362	HK30WA362	HK30WB342	5.0 HP 575V	HD60FK577	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA362	HK30WA362	HK30WB342	7.5 HP 575V	HD62FL576	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA363	HK30WA363	HK30WB343	10 HP 575V	HD64FL576	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA360	HK30WA360	HK30WB340	1.7 HP 575V	HD56FR579	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA360	HK30WA360	HK30WB340	2.4 HP 575V	HD56FE577	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec
HK30WA361	HK30WA361	HK30WB341	3.7 HP 575V	HD58FE577	Auto / Automatic	Ramp	Not Sel / 0	30 sec	30 sec

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

Table E — ACS320/ACH180 VFD Parameters — (208/230V and 460V units only)
48/50TC07-16 and 50TCQ07-14
580J/558J*07-16 and 548J*07-14

RGS072/089/090/100/102/119/120/150, RAS072/089/090/100/102/119/120/150 and RHS090/102/120/150

VFD PART NUMBER	ACS320 REPLACEMENT COMPONENT PART NUMBER	ACH180 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	VOLTAGE 9905 / 99.07	NOM. AMPS 9906 / 99.06	MOTOR NOM. FREQ 9907 / 99.08	NOM. RPM 9908 / 99.09	NOM. HP 9909 / 99.10
HK30WA523	HK30WA506	HK30WB505	SRT 1.7 HP 230V	HD56FR233	230	5.6	60 Hz	1,725	1.7
HK30WA530	HK30WA512	HK30WB510	SRT 1.7 HP 460V	HD56FR463	460	2.9	60 Hz	1,725	1.7
HK30WA523	HK30WA506	HK30WB505	SRT 2.4 HP 230V	HD56FE653	230	6.8	60 Hz	1,725	2.4
HK30WA530	HK30WA512	HK30WB510	SRT 2.4 HP 460V	HD56FE653	460	3.4	60 Hz	1,725	2.4
HK30WA523	HK30WA506	HK30WB505	SRT 2.9 HP 230V	HD58FE654	230	7.8	60 Hz	1,725	2.9
HK30WA530	HK30WA512	HK30WB510	SRT 2.9 HP 460V	HD58FE654	460	3.8	60 Hz	1,725	2.9
HK30WA523	HK30WA506	HK30WB505	SRT 3.7 HP 230V	HD60FE656	230	9.8	60 Hz	1,725	3.7
HK30WA534	HK30WA517	HK30WB511	SRT 3.7 HP 460V	HD60FE656	460	4.9	60 Hz	1,725	3.7
HK30WA524	HK30WA507	HK30WB505	SRT 5.3 HP 230V	HD60FK658	230	12.7	60 Hz	1,740	5.3
HK30WA532	HK30WA514	HK30WB512	SRT 5.3 HP 460V	HD60FK658	460	6.4	60 Hz	1,740	5.3
HK30WA523	HK30WA506	HK30WB505	SRT 2.9 HP 230V	HD58FE654	230	7.8	60 Hz	1,725	2.9
HK30WA530	HK30WA512	HK30WB510	SRT 2.9 HP 460V	HD58FE654	460	3.8	60 Hz	1,725	2.9
HK30WA523	HK30WA506	HK30WB505	SRT 3.7 HP 230V	HD60FE656	230	9.8	60 Hz	1,725	3.7
HK30WA534	HK30WA517	HK30WB511	SRT 3.7 HP 460V	HD60FE656	460	4.9	60 Hz	1,725	3.7
HK30WA524	HK30WA507	HK30WB506	SRT 5.0 HP 230V	HD60FK657	230	17.1	60 Hz	1,760	5.0
HK30WA532	HK30WA514	HK30WB512	SRT 5.0 HP 460V	HD60FK657	460	8.6	60 Hz	1,760	5.0

Table E — ACS320/ACH180 VFD Parameters — (208/230V and 460V units only)
48/50TC07-16 and 50TCQ07-14
580J/558J*07-16 and 548J*07-14

RGS072/089/090/100/102/119/120/150, RAS072/089/090/100/102/119/120/150 and RHS090/102/120/150 (cont)

VFD PART NUMBER	ACS320 REPLACEMENT COMPONENT PART NUMBER	ACH180 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	320 / 180 CONST SPEED SEL 1201 / 28.22	320 / 180 CONST SPEED SEL 1201 / 28.23	CONST SPEED 1 1202 / 28.26	CONST SPEED 2 1203 / 28.27	CONST SPEED 3 1204 / 28.28	RELAY OUT 1 1401 / 10.24
HK30WA523	HK30WA506	HK30WB505	SRT 1.7 HP 230V	HD56FR233	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA530	HK30WA512	HK30WB510	SRT 1.7 HP 460V	HD56FR463	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA523	HK30WA506	HK30WB505	SRT 2.4 HP 230V	HD56FE653	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA530	HK30WA512	HK30WB510	SRT 2.4 HP 460V	HD56FE653	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA523	HK30WA506	HK30WB505	SRT 2.9 HP 230V	HD58FE654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA530	HK30WA512	HK30WB510	SRT 2.9 HP 460V	HD58FE654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA523	HK30WA506	HK30WB505	SRT 3.7 HP 230V	HD60FE656	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA534	HK30WA517	HK30WB511	SRT 3.7 HP 460V	HD60FE656	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA524	HK30WA507	HK30WB506	SRT 5.3 HP 230V	HD60FK658	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA532	HK30WA514	HK30WB512	SRT 5.3 HP 460V	HD60FK658	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA523	HK30WA506	HK30WB505	SRT 2.9 HP 230V	HD58FE654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA530	HK30WA512	HK30WB510	SRT 2.9 HP 460V	HD58FE654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA523	HK30WA506	HK30WB505	SRT 3.7 HP 230V	HD60FE656	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA534	HK30WA517	HK30WB511	SRT 3.7 HP 460V	HD60FE656	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA524	HK30WA507	HK30WB506	SRT 5.0 HP 230V	HD60FK657	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA532	HK30WA514	HK30WB512	SRT 5.0 HP 460V	HD60FK657	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

Table E — ACS320/ACH180 VFD Parameters — (208/230V and 460V units only)
48/50TC07-16 and 50TCQ07-14
580J/558J*07-16 and 548J*07-14

RGS072/089/090/100/102/119/120/150, RAS072/089/090/100/102/119/120/150 and RHS090/102/120/150 (cont)

VFD PART NUMBER	ACS320 REPLACEMENT COMPONENT PART NUMBER	ACH180 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	MAX AMPS 2003 / 30.17	MIN FREQ 2007 / 30.13	MAX FREQ 2008 / 30.14	SWITCH FREQ 2606 / 97.01
HK30WA523	HK30WA506	HK30WB505	SRT 1.7 HP 230V	HD56FR233	5.6	0 Hz	60 Hz	4 kHz
HK30WA530	HK30WA512	HK30WB510	SRT 1.7 HP 460V	HD56FR463	2.9	0 Hz	60 Hz	4 kHz
HK30WA523	HK30WA506	HK30WB505	SRT 2.4 HP 230V	HD56FE653	6.8	0 Hz	60 Hz	4 kHz
HK30WA530	HK30WA512	HK30WB510	SRT 2.4 HP 460V	HD56FE653	3.4	0 Hz	60 Hz	4 kHz
HK30WA523	HK30WA506	HK30WB505	SRT 2.9 HP 230V	HD58FE654	7.8	0 Hz	60 Hz	4 kHz
HK30WA530	HK30WA512	HK30WB510	SRT 2.9 HP 460V	HD58FE654	3.8	0 Hz	60 Hz	4 kHz
HK30WA523	HK30WA506	HK30WB505	SRT 3.7 HP 230V	HD60FE656	9.8	0 Hz	60 Hz	4 kHz
HK30WA534	HK30WA517	HK30WB511	SRT 3.7 HP 460V	HD60FE656	4.9	0 Hz	60 Hz	4 kHz
HK30WA524	HK30WA507	HK30WB505	SRT 5.3 HP 230V	HD60FK658	12.7	0 Hz	60 Hz	4 kHz
HK30WA532	HK30WA514	HK30WB512	SRT 5.3 HP 460V	HD60FK658	6.4	0 Hz	60 Hz	4 kHz
HK30WA523	HK30WA506	HK30WB505	SRT 2.9 HP 230V	HD58FE654	7.8	0 Hz	60 Hz	4 kHz
HK30WA530	HK30WA512	HK30WB510	SRT 2.9 HP 460V	HD58FE654	3.8	0 Hz	60 Hz	4 kHz
HK30WA523	HK30WA506	HK30WB505	SRT 3.7 HP 230V	HD60FE656	9.8	0 Hz	60 Hz	4 kHz
HK30WA534	HK30WA517	HK30WB511	SRT 3.7 HP 460V	HD60FE656	4.9	0 Hz	60 Hz	4 kHz
HK30WA524	HK30WA507	HK30WB506	SRT 5.0 HP 230V	HD60FK657	17.1	0 Hz	60 Hz	4 kHz
HK30WA532	HK30WA514	HK30WB512	SRT 5.0 HP 460V	HD60FK657	8.6	0 Hz	60 Hz	4 kHz

Table E — ACS320/ACH180 VFD Parameters — (208/230V and 460V units only)
48/50TC07-16 and 50TCQ07-14
580J/558J*07-16 and 548J*07-14

RGS072/089/090/100/102/119/120/150, RAS072/089/090/100/102/119/120/150 and RHS090/102/120/150 (cont)

VFD PART NUMBER	ACS320 REPLACEMENT COMPONENT PART NUMBER	ACH180 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	START FCN 2101 / 21.19	STOP FCN 2102 / 21.03	ACCEL/DECEL 2201 / 28.71	ACCEL 2202 / 28.72	DECEL 2203 / 28.73
HK30WA523	HK30WA506	HK30WB505	SRT 1.7 HP 230V	HD56FR233	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA530	HK30WA512	HK30WB510	SRT 1.7 HP 460V	HD56FR463	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA523	HK30WA506	HK30WB505	SRT 2.4 HP 230V	HD56FE653	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA530	HK30WA512	HK30WB510	SRT 2.4 HP 460V	HD56FE653	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA523	HK30WA506	HK30WB505	SRT 2.9 HP 230V	HD58FE654	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA530	HK30WA512	HK30WB510	SRT 2.9 HP 460V	HD58FE654	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA523	HK30WA506	HK30WB505	SRT 3.7 HP 230V	HD60FE656	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA534	HK30WA517	HK30WB511	SRT 3.7 HP 460V	HD60FE656	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA524	HK30WA507	HK30WB506	SRT 5.3 HP 230V	HD60FK658	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA532	HK30WA514	HK30WB512	SRT 5.3 HP 460V	HD60FK658	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA523	HK30WA506	HK30WB505	SRT 2.9 HP 230V	HD58FE654	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA530	HK30WA512	HK30WB510	SRT 2.9 HP 460V	HD58FE654	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA523	HK30WA506	HK30WB505	SRT 3.7 HP 230V	HD60FE656	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA534	HK30WA517	HK30WB511	SRT 3.7 HP 460V	HD60FE656	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA524	HK30WA507	HK30WB506	SRT 5.0 HP 230V	HD60FK657	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA532	HK30WA514	HK30WB512	SRT 5.0 HP 460V	HD60FK657	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

Table F — ACS320/ACH180 VFD Parameters — (208/230V and 460V units only)
48/50TC17-30 and 50TCQ17-24
580J/558J*17-30 and 548J*17-24
RGS210/240/300/336, RAS210/240/300/336 and RHS181/183/240/243

VFD PART NUMBER	ACS320 REPLACEMENT COMPONENT PART NUMBER	ACH180 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	VOLTAGE 9905 / 99.07	NOM. AMPS 9906 / 99.06	MOTOR NOM. FREQ 9907 / 99.08	NOM. RPM 9908 / 99.09	NOM. HP 9909 / 99.10
HK30WA523	HK30WA506	HK30WB505	MRT 2.9 HP 230V	HD58FE654	230	7.8	60 Hz	1,725	2.9
HK30WA530	HK30WA512	HK30WB510	MRT 2.9 HP 460V	HD58FE654	460	3.8	60 Hz	1,725	2.9
HK30WA523	HK30WA506	HK30WB505	MRT 3.7 HP 230V	HD60FE656	230	9.8	60 Hz	1,725	3.7
HK30WA534	HK30WA517	HK30WB511	MRT 3.7 HP 460V	HD60FE656	460	4.9	60 Hz	1,725	3.7
HK30WA524	HK30WA507	HK30WB506	MRT 5.0 HP 230V	HD60FK657	230	20.4	60 Hz	1,760	5.0
HK30WA532	HK30WA514	HK30WB512	MRT 5.0 HP 460V	HD60FK657	460	10.2	60 Hz	1,760	5.0
HK30WA524	HK30WA507	HK30WB507	MRT 7.5 HP 230V	HD62FK654	230	28.5	60 Hz	1,760	7.5
HK30WA532	HK30WA514	HK30WB512	MRT 7.5 HP 460V	HD62FK654	460	13.7	60 Hz	1,760	7.5
HK30WA524	HK30WA507	HK30WB505	MRT 5.3 HP 230V	HD60FK658	230	12.7	60 Hz	1,740	5.3
HK30WA532	HK30WA514	HK30WB512	MRT 5.3 HP 460V	HD60FK658	460	6.4	60 Hz	1,740	5.3
HK30WA525	HK30WA508	HK30WB507	MRT 10.0 HP 230V	HD64FK654	230	30.4	60 Hz	1,755	10.0
HK30WA533	HK30WA515	HK30WB513	MRT 10.0 HP 460V	HD64FK654	460	15.2	60 Hz	1,755	10.0

Table F — ACS320/ACH180 VFD Parameters — (208/230V and 460V units only)
48/50TC17-30 and 50TCQ17-24
580J/558J*17-30 and 548J*17-24
RGS210/240/300/336, RAS210/240/300/336 and RHS181/183/240/243 (cont)

VFD PART NUMBER	ACS320 REPLACEMENT COMPONENT PART NUMBER	ACH180 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	320 / 180 CONST SPEED SEL 1201 / 28.22	320 / 180 CONST SPEED SEL 1201 / 28.23	CONST SPEED 1 1202 / 28.26	CONST SPEED 2 1203 / 28.27	CONST SPEED 3 1204 / 28.28	RELAY OUT 1 1401 / 10.24
HK30WA523	HK30WA506	HK30WB505	MRT 2.9 HP 230V	HD58FE654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA530	HK30WA512	HK30WB510	MRT 2.9 HP 460V	HD58FE654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA523	HK30WA506	HK30WB505	MRT 3.7 HP 230V	HD60FE656	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA534	HK30WA517	HK30WB511	MRT 3.7 HP 460V	HD60FE656	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA524	HK30WA507	HK30WB506	MRT 5.0 HP 230V	HD60FK657	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA532	HK30WA514	HK30WB512	MRT 5.0 HP 460V	HD60FK657	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA524	HK30WA507	HK30WB506	MRT 7.5 HP 230V	HD62FK654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA532	HK30WA514	HK30WB512	MRT 7.5 HP 460V	HD62FK654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA524	HK30WA507	HK30WB507	MRT 5.3 HP 230V	HD60FK658	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA532	HK30WA514	HK30WB512	MRT 5.3 HP 460V	HD60FK658	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA525	HK30WA508	HK30WB506	MRT 10.0 HP 230V	HD64FK654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA533	HK30WA515	HK30WB513	MRT 10.0 HP 460V	HD64FK654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

Table F — ACS320/ACH180 VFD Parameters — (208/230V and 460V units only)
48/50TC17-30 and 50TCQ17-24
580J/558J*17-30 and 548J*17-24
RGS210/240/300/336, RAS210/240/300/336 and RHS181/183/240/243 (cont)

VFD PART NUMBER	ACS320 REPLACEMENT COMPONENT PART NUMBER	ACH180 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	MAX AMPS 2003 / 30.17	MIN FREQ 2007 / 30.13	MAX FREQ 2008 / 30.14	SWITCH FREQ 2606 / 97.01
HK30WA523	HK30WA506	HK30WB505	MRT 2.9 HP 230V	HD58FE654	7.8	0 Hz	60 Hz	4 kHz
HK30WA530	HK30WA512	HK30WB510	MRT 2.9 HP 460V	HD58FE654	3.8	0 Hz	60 Hz	4 kHz
HK30WA523	HK30WA506	HK30WB505	MRT 3.7 HP 230V	HD60FE656	9.8	0 Hz	60 Hz	4 kHz
HK30WA534	HK30WA517	HK30WB511	MRT 3.7 HP 460V	HD60FE656	4.9	0 Hz	60 Hz	4 kHz
HK30WA524	HK30WA507	HK30WB506	MRT 5.0 HP 230V	HD60FK657	20.4	0 Hz	60 Hz	4 kHz
HK30WA532	HK30WA514	HK30WB512	MRT 5.0 HP 460V	HD60FK657	10.2	0 Hz	60 Hz	4 kHz
HK30WA524	HK30WA507	HK30WB507	MRT 7.5 HP 230V	HD62FK654	28.5	0 Hz	60 Hz	4 kHz
HK30WA532	HK30WA514	HK30WB512	MRT 7.5 HP 460V	HD62FK654	13.7	0 Hz	60 Hz	4 kHz
HK30WA524	HK30WA507	HK30WB505	MRT 5.3 HP 230V	HD60FK658	12.7	0 Hz	60 Hz	4 kHz
HK30WA532	HK30WA514	HK30WB512	MRT 5.3 HP 460V	HD60FK658	6.4	0 Hz	60 Hz	4 kHz
HK30WA525	HK30WA508	HK30WB507	MRT 10.0 HP 230V	HD64FK654	30.4	0 Hz	60 Hz	4 kHz
HK30WA533	HK30WA515	HK30WB513	MRT 10.0 HP 460V	HD64FK654	15.2	0 Hz	60 Hz	4 kHz

Table F — ACS320/ACH180 VFD Parameters — (208/230V and 460V units only)
48/50TC17-30 and 50TCQ17-24
580J/558J*17-30 and 548J*17-24
RGS210/240/300/336, RAS210/240/300/336 and RHS181/183/240/243 (cont)

VFD PART NUMBER	ACS320 REPLACEMENT COMPONENT PART NUMBER	ACH180 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	START FCN 2101 / 21.19	STOP FCN 2102 / 21.03	ACCEL/DECEL 2201 / 28.71	ACCEL 2202 / 28.72	DECEL 2203 / 28.73
HK30WA523	HK30WA506	HK30WB505	MRT 2.9 HP 230V	HD58FE654	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA530	HK30WA512	HK30WB510	MRT 2.9 HP 460V	HD58FE654	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA523	HK30WA506	HK30WB505	MRT 3.7 HP 230V	HD60FE656	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA534	HK30WA517	HK30WB511	MRT 3.7 HP 460V	HD60FE656	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA524	HK30WA507	HK30WB506	MRT 5.0 HP 230V	HD60FK657	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA532	HK30WA514	HK30WB512	MRT 5.0 HP 460V	HD60FK657	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA524	HK30WA507	HK30WB506	MRT 7.5 HP 230V	HD62FK654	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA532	HK30WA514	HK30WB512	MRT 7.5 HP 460V	HD62FK654	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA524	HK30WA507	HK30WB507	MRT 5.3 HP 230V	HD60FK658	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA532	HK30WA514	HK30WB512	MRT 5.3 HP 460V	HD60FK658	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA525	HK30WA508	HK30WB506	MRT 10.0 HP 230V	HD64FK654	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA533	HK30WA515	HK30WB513	MRT 10.0 HP 460V	HD64FK654	(1) Auto / (2)	Ramp / (1)	(0) Not Sel / (0)	30 sec	30 sec

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

Table G — ACS320/ACH180 VFD Parameters — (208/230V and 460V units only)

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FAS**

VFD PART NUMBER	ACS320 REPLACEMENT COMPONENT PART NUMBER	ACH180 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	VOLTAGE 9905 / 99.07	NOM. AMPS 9906 / 99.06	MOTOR NOM. FREQ 9907 / 99.08	NOM. RPM 9908 / 99.09	NOM. HP 9909 / 99.10
HK30WA523	HK30WA506	HK30WB505	1.7 HP 230V	HD56FR233	230	5.8	60 Hz	1,725	1.7
HK30WA530	HK30WA512	HK30WB510	1.7 HP 460V	HD56FR463	460	2.9	60 Hz	1,725	1.7
HK30WA523	HK30WA506	HK30WB505	2.4 HP 230V	HD56FE653	230	7.1	60 Hz	1,725	2.4
HK30WA530	HK30WA512	HK30WB510	2.4 HP 460V	HD56FE653	460	3.4	60 Hz	1,725	2.4
HK30WA523	HK30WA506	HK30WB505	2.9 HP 230V	HD58FE654	230	8.6	60 Hz	1,725	2.9
HK30WA530	HK30WA512	HK30WB510	2.9 HP 460V	HD58FE654	460	3.8	60 Hz	1,725	2.9
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD60FE656	230	10.8	60 Hz	1,725	3.7
HK30WA534	HK30WA517	HK30WB511	3.7 HP 460V	HD60FE656	460	4.9	60 Hz	1,725	3.7
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD58FR236	230	10.2	60 Hz	1,725	3.7
HK30WA534	HK30WA517	HK30WB511	3.7 HP 460V	HD58FR236	460	4.8	60 Hz	1,725	3.7
HK30WA524	HK30WA507	HK30WB507	5.0 HP 230V	HD60FK657	230	17.0	60 Hz	1,760	5.0
HK30WA532	HK30WA514	HK30WB512	5.0 HP 460V	HD60FK657	460	7.6	60 Hz	1,760	5.0
HK30WA524	HK30WA507	HK30WB507	7.5 HP 230V	HD62FK654	230	21.5	60 Hz	1,760	7.5
HK30WA532	HK30WA514	HK30WB512	7.5 HP 460V	HD62FK654	460	14.3	60 Hz	1,760	7.5
HK30WA525	HK30WA508	HK30WB507	10.0 HP 230V	HD64FK654	230	28.6	60 Hz	1,755	10.0
HK30WA533	HK30WA515	HK30WB513	10.0 HP 460V	HD64FK654	460	15.2	60 Hz	1,755	10.0
HK30WA523	HK30WA506	HK30WB505	1.7 HP 230V	HD56FR233	230	5.8	60 Hz	1,725	1.7
HK30WA530	HK30WA512	HK30WB510	1.7 HP 460V	HD56FR463	460	2.9	60 Hz	1,725	1.7
HK30WA523	HK30WA506	HK30WB505	2.4 HP 230V	HD56FE653	230	7.1	60 Hz	1,725	2.4
HK30WA530	HK30WA512	HK30WB510	2.4 HP 460V	HD56FE653	460	3.4	60 Hz	1,725	2.4
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD60FE656	230	10.8	60 Hz	1,725	3.7
HK30WA534	HK30WA517	HK30WB511	3.7 HP 460V	HD60FE656	460	4.9	60 Hz	1,725	3.7
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD58FR236	230	10.2	60 Hz	1,725	3.7
HK30WA534	HK30WA517	HK30WB511	3.7 HP 460V	HD58FR236	460	4.8	60 Hz	1,725	3.7

Table G — ACS320/ACH180 VFD Parameters — (208/230V and 460V units only)

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FAS (cont)**

VFD PART NUMBER	ACS320 REPLACEMENT COMPONENT PART NUMBER	ACH180 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	320 / 180 CONST SPEED SEL 1201 / 28.22	320 / 180 CONST SPEED SEL 1201 / 28.23	CONST SPEED 1 1202 / 28.26	CONST SPEED 2 1203 / 28.27	CONST SPEED 3 1204 / 28.28	RELAY OUT 1 1401 / 10.24
HK30WA523	HK30WA506	HK30WB505	1.7 HP 230V	HD56FR233	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA530	HK30WA512	HK30WB509	1.7 HP 460V	HD56FR463	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA523	HK30WA506	HK30WB505	2.4 HP 230V	HD56FE653	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA530	HK30WA512	HK30WB509	2.4 HP 460V	HD56FE653	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA523	HK30WA506	HK30WB505	2.9 HP 230V	HD58FE654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA530	HK30WA512	HK30WB510	2.9 HP 460V	HD58FE654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD60FE656	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA534	HK30WA517	HK30WB510	3.7 HP 460V	HD60FE656	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD58FR236	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA534	HK30WA517	HK30WB510	3.7 HP 460V	HD58FR236	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA524	HK30WA507	HK30WB506	5.0 HP 230V	HD60FK657	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA532	HK30WA514	HK30WB512	5.0 HP 460V	HD60FK657	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA524	HK30WA507	HK30WB506	7.5 HP 230V	HD62FK654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA532	HK30WA514	HK30WB513	7.5 HP 460V	HD62FK654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA525	HK30WA508	HK30WB507	10 HP 230V	HD64FK654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA533	HK30WA515	HK30WB513	10 HP 460V	HD64FK654	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA523	HK30WA506	HK30WB505	1.7 HP 230V	HD56FR233	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA530	HK30WA512	HK30WB509	1.7 HP 460V	HD56FR463	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA523	HK30WA506	HK30WB505	2.4 HP 230V	HD56FE653	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA530	HK30WA512	HK30WB510	2.4 HP 460V	HD56FE653	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD60FE656	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA534	HK30WA517	HK30WB510	3.7 HP 460V	HD60FE656	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD58FR236	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)
HK30WA534	HK30WA517	HK30WB510	3.7 HP 460V	HD58FR236	DI 2,3 / (3)	DI 2,3 / (4)	40 Hz	60 Hz	60 Hz	16 FLT / (16)

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

Table G — ACS320/ACH180 VFD Parameters — (208/230V and 460V units only)
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FAS (cont)

VFD PART NUMBER	ACS320 REPLACEMENT COMPONENT PART NUMBER	ACH180 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	MAX AMPS 2003 / 30.17	MIN FREQ 2007 / 30.13	MAX FREQ 2008 / 30.14	SWITCH FREQ 2606 / 97.01
HK30WA523	HK30WA506	HK30WB505	1.7 HP 230V	HD56FR233	6.7	0 Hz	60 Hz	4 kHz
HK30WA530	HK30WA512	HK30WB510	1.7 HP 460V	HD56FR463	3.3	0 Hz	60 Hz	4 kHz
HK30WA523	HK30WA506	HK30WB505	2.4 HP 230V	HD56FE653	8.2	0 Hz	60 Hz	4 kHz
HK30WA530	HK30WA512	HK30WB510	2.4 HP 460V	HD56FE653	3.9	0 Hz	60 Hz	4 kHz
HK30WA523	HK30WA506	HK30WB505	2.9 HP 230V	HD58FE654	9.9	0 Hz	60 Hz	4 kHz
HK30WA530	HK30WA512	HK30WB510	2.9 HP 460V	HD58FE654	4.4	0 Hz	60 Hz	4 kHz
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD60FE656	12.4	0 Hz	60 Hz	4 kHz
HK30WA534	HK30WA517	HK30WB511	3.7 HP 460V	HD60FE656	5.6	0 Hz	60 Hz	4 kHz
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD58FR236	11.7	0 Hz	60 Hz	4 kHz
HK30WA534	HK30WA517	HK30WB511	3.7 HP 460V	HD58FR236	5.5	0 Hz	60 Hz	4 kHz
HK30WA524	HK30WA507	HK30WB507	5.0 HP 230V	HD60FK657	19.6	0 Hz	60 Hz	4 kHz
HK30WA532	HK30WA514	HK30WB512	5.0 HP 460V	HD60FK657	8.7	0 Hz	60 Hz	4 kHz
HK30WA524	HK30WA507	HK30WB507	7.5 HP 230V	HD62FK654	24.7	0 Hz	60 Hz	4 kHz
HK30WA532	HK30WA514	HK30WB512	7.5 HP 460V	HD62FK654	16.4	0 Hz	60 Hz	4 kHz
HK30WA525	HK30WA508	HK30WB507	10.0 HP 230V	HD64FK654	32.2	0 Hz	60 Hz	4 kHz
HK30WA533	HK30WA515	HK30WB513	10.0 HP 460V	HD64FK654	17.5	0 Hz	60 Hz	4 kHz
HK30WA523	HK30WA506	HK30WB505	1.7 HP 230V	HD56FR233	6.7	0 Hz	60 Hz	4 kHz
HK30WA530	HK30WA512	HK30WB510	1.7 HP 460V	HD56FR463	3.3	0 Hz	60 Hz	4 kHz
HK30WA523	HK30WA506	HK30WB505	2.4 HP 230V	HD56FE653	8.2	0 Hz	60 Hz	4 kHz
HK30WA530	HK30WA512	HK30WB510	2.4 HP 460V	HD56FE653	3.9	0 Hz	60 Hz	4 kHz
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD60FE656	12.4	0 Hz	60 Hz	4 kHz
HK30WA534	HK30WA517	HK30WB511	3.7 HP 460V	HD60FE656	5.6	0 Hz	60 Hz	4 kHz
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD58FR236	11.7	0 Hz	60 Hz	4 kHz
HK30WA534	HK30WA517	HK30WB511	3.7 HP 460V	HD58FR236	5.5	0 Hz	60 Hz	4 kHz

Table G — ACS320/ACH180 VFD Parameters — (208/230V and 460V units only)
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FAS (cont)

VFD PART NUMBER	ACS320 REPLACEMENT COMPONENT PART NUMBER	ACH180 REPLACEMENT COMPONENT PART NUMBER	DESCRIPTION	MOTOR PART NUMBER	START FCN 2101 / 21.19	STOP FCN 2102 / 21.03	ACCEL/DECEL 2201 / 28.71	ACCEL 2202 / 28.72	DECEL 2203 / 28.73
HK30WA523	HK30WA506	HK30WB505	1.7 HP 230V	HD56FR233	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA530	HK30WA512	HK30WB509	1.7 HP 460V	HD56FR463	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA523	HK30WA506	HK30WB505	2.4 HP 230V	HD56FE653	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA530	HK30WA512	HK30WB509	2.4 HP 460V	HD56FE653	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA523	HK30WA506	HK30WB505	2.9 HP 230V	HD58FE654	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA530	HK30WA512	HK30WB510	2.9 HP 460V	HD58FE654	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD60FE656	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA534	HK30WA517	HK30WB510	3.7 HP 460V	HD60FE656	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD58FR236	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA534	HK30WA517	HK30WB510	3.7 HP 460V	HD58FR236	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA524	HK30WA507	HK30WB506	5.0 HP 230V	HD60FK657	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA532	HK30WA514	HK30WB512	5.0 HP 460V	HD60FK657	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA524	HK30WA507	HK30WB506	7.5 HP 230V	HD62FK654	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA532	HK30WA514	HK30WB513	7.5 HP 460V	HD62FK654	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA525	HK30WA508	HK30WB507	10 HP 230V	HD64FK654	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA533	HK30WA515	HK30WB513	10 HP 460V	HD64FK654	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	30 sec
HK30WA523	HK30WA506	HK30WB505	1.7 HP 230V	HD56FR233	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	10 sec
HK30WA530	HK30WA512	HK30WB509	1.7 HP 460V	HD56FR463	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	10 sec
HK30WA523	HK30WA506	HK30WB505	2.4 HP 230V	HD56FE653	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	10 sec
HK30WA530	HK30WA512	HK30WB510	2.4 HP 460V	HD56FE653	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	10 sec
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD60FE656	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	10 sec
HK30WA534	HK30WA517	HK30WB510	3.7 HP 460V	HD60FE656	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	10 sec
HK30WA523	HK30WA506	HK30WB505	3.7 HP 230V	HD58FR236	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	10 sec
HK30WA534	HK30WA517	HK30WB510	3.7 HP 460V	HD58FR236	(1) Auto / (2)	(1) Coast / (0)	(0) Not Sel / (0)	30 sec	10 sec

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

Table H — ACS320/ACH180 VFD Common Parameters for Units with Electromechanical Control
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PARAMETERS ACS320 / ACH180	DESCRIPTION	VFD FAN BOARD SETTING ACS320 / ACH180	UNIT CONTROL BOARD (UCB) SETTING ACS320 / ACH180
1001 / 20.01	EXT1 Commands	—	DI1 / (1)
1102 / 19.11	EXT1/EXT2 Sel	—	EXT1 / (0)
1103 / 28.11	REF 1 Select	—	AI1
1201 / 28.22	Const Speed Sel	DI2,3 / (3)	DI2,3 / (3)
1201 / 28.23	Const Speed Sel	DI2,3 / (4)	DI2,3 / (4)
1202 / 28.26	Const Speed 1	40 Hz	40 Hz
1203 / 28.27	Const Speed 2	60 Hz	60 Hz
1204 / 28.28	Const Speed 3	60 Hz	60 Hz
1205 / 28.29	Const Speed 4	—	—
1301 / 12.17	Minimum AI1	—	0.02
1401 / 10.24	Relay Output 1	(16) FLT / Fault/Warning (16)	FAULT (-1) / (15)
1403 / NA	Relay Output 3	—	—
1501 / 13.12	A01 Content Sel	—	—
1601 / 20.40	Run Enable	—	—
1608 / 20.41	Start Enable 1	—	(0) Not Sel / (0)
1611 / NA	Parameter View	3	3
2007 / 30.13	Minimum Frequency	0.0 HZ	0.0 HZ
2008 / 30.14	Maximum Frequency	60 HZ	60 HZ
2101 / 21.19	Start FCN	(1) Auto / (2)	(1) Auto / (2)
2102 / 21.03	Stop FCN	(1) Coast / (0)	(1) Coast / (0)
2201 / 28.71	ACCEL / DECEL	(0) Not Sel / (0)	(0) Not Sel / (0)
2202 / 28.72	ACCEL	30 sec.	30 sec.
2203 / 28.73	DECEL	30 sec.	30 sec.
2603 / 97.13	IR COMP Volt	0 volts	0 volts
2606 / 97.01	Switching Freq	4 kHz	4 kHz
3102 / 31.15	Trial Time	300.0s	300.0s
3103 / 31.16	Delay Time	6.0 sec.	6.0 sec.
3104 / 31.12	AR Overcurrent	(1) Enabled / Enabled/Bit0 (1)	(1) Enabled / Enabled/Bit0 (1)
5101 / NA	FBA Type	—	—
5201 / NA	Station ID	—	—
5202 / NA	Baud Rate	—	—
5203 / NA	Parity	—	—
5301 / 58.02	EFB Protocol ID	—	—
5302 / 58.03	EFB Station ID	—	—
5303 / 58.04	EFB Baud Rate	—	—
5304 / 58.05	EFB Parity	—	—
5305 / 58.25	EFB CTRL Profile	—	—
9802 / 58.01	COMM PROT Sel	—	—
9907 / 99.08	Motor Nominal Frequency	60 Hz	60 Hz

APPENDIX A — VFD REMOTE KEYPAD PARAMETERS (cont)

Table I — ACH580 VFD Common Parameters for Units with Electromechanical Control
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FAS

PARAMETERS	DESCRIPTION	SETTING ACH580
10.30	Relay out 3	(15) FAULT (–1)
12.17	Minimum AI1	0.2V
19.11	EXT1/EXT2 SEL	(0) EXT1
20.01	EXT1 COMMANDS	(1) IN1 Start
20.41	Start Enable 1	(0) Not used
21.03	STOP FCN	(1) Ramp
21.19	START FCN	(2) Automatic
28.11	REF1 SELECT	(1) AI1 scaled
28.22	CONST SPEED SEL	DI2
28.23	CONST SPEED SEL	DI3
28.26	Const Speed 1	40Hz
28.27	Const Speed 2	60Hz
28.28	Const Speed 3	60Hz
28.72	ACCEL	30 SEC
28.73	DECEL	30 SEC
30.13	Minimum Frequency	0.0 Hz
30.14	Maximum Frequency	60 Hz
97.01	Switching Frequency	4kHz
99.07	Voltage	575V
99.08	Motor Nom Frequency	60Hz