

Low Voltage AC Drives for HVAC Applications

# **FRENIC-HVAC** Inverter



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## Performance

Fuji Electric's FRENIC-HVAC Drive has been designed with features and functions specifically targeted to HVAC Motor Control Applications. The result is a low voltage drive controller that provides the optimal environmental control to maintain comfortable conditions in commercial spaces and industrial facilities while generating efficiency beyond typical motor starters.

Developed with unyielding standards of quality and flexibility to meet the demands of various applications within HVAC motor control requirements the FRENIC-HVAC Drive is the right choice for a full range of HVAC installations.

Ease of Commissioning coupled with Fuji Electric's robust design standards make the FRENIC-HVAC Drive a Service Providers favorite choice for quick and sustainable results.

## Features

### ■ Control Inputs/Outputs

Qty 9 Digital Inputs: X1 – X7, FWD, & REV  
Programmable, 67 Selectable Functions

Qty 2 Safety Input (dedicated): EN1, EN2

Qty 3 Analog Inputs: Qty 2 – 0 to +10Vdc & Qty 1 – 4 to 20mA

Qty 6 Digital Outputs: Qty 2 Relays (1 Form C & 1 Form A) & Qty 4 Transistor, 77 Selectable Functions

Qty 2 Analog Output: Selectable Type: 0 to 10Vdc or 4 to 20mA, 43 Selectable Functions

Qty 2 RS-485 Connections: RJ45 Keypad Port & RS485 Control Terminal Block Connections

24Vdc Output Terminal: Rated 200mA

KEYPAD with large LCD Display Indicating HVAC System Operation and Associated Unit Conversion Displayed

### ■ Robust Design

Nickel (Ni) & Tin (Sn) Plated Bus Bars

Conformal Coated PCBs

Cooling Fan Board Coating + Anti-Rust Protection

10 Year Design Life of Cooling Fan and Capacitor with Maintenance Alarm Output Signal

### ■ Flexibility & Functionality

Removable Control Terminal Block

CE Filter Built-In for All Models

DCR for All Models

PC Programming & Troubleshooting Software

USB Port on Control Card

Real Time Clock

Customizable Logic

Automatic Energy Savings Control

4-PID Controllers

Fire Mode

Catch a Spinning Motor

Filter Clogging Prevention/Reversing Operation

Wet-Bulb Temperature Presumption Control

Selectable "Light" Alarms

PID Units of Measurement Display

Password

3 Option Card Ports Built-In

Single Phase Input

BACnet MS/TP, Metasys N2, Modbus RTUD Embedded

### ■ Safety and Standard

Safety Input

UL 508C, CE

UL Plenum Rating

NEMA/UL Open, Type 1 and Type 12

RoHS

SEMI F47-0706

**WARRANTY**  
3 years  
from date of  
shipment



## Dimensions

Rated Voltage	Nominal Applied Motor (HP)	Type	Outside Dimensions [mm(inch)]		
			W	H	D
3-Phase 208V	1	FRN001AR1□-2U	150 (5.91)	465 (18.3)	262 (10.3)
	2	FRN002AR1□-2U			
	3	FRN003AR1□-2U			
	5	FRN005AR1□-2U			
	7.5	FRN007AR1□-2U	203 (7.99)	585 (23)	
	10	FRN010AR1□-2U			
	15	FRN015AR1□-2U		645 (25.4)	
	20	FRN020AR1□-2U			
	25	FRN025AR1□-2U	265 (10.4)	736 (29)	284 (11.2)
	30	FRN030AR1□-2U			
	40	FRN040AR1□-2U			
	50	FRN050AR1□-2U			
	60	FRN060AR1□-2U	300 (11.8)	885 (34.8)	367.9 (14.5)
	75	FRN075AR1S-2U			
	100	FRN100AR1S-2U			
125	FRN125AR1S-2U				
3-Phase 460V	1	FRN001AR1□-4U	150 (5.91)	465 (18.3)	262 (10.3)
	2	FRN002AR1□-4U			
	3	FRN003AR1□-4U			
	5	FRN005AR1□-4U			
	7.5	FRN007AR1□-4U	203 (7.99)	585 (23)	262 (10.3)
	10	FRN010AR1□-4U			
	15	FRN015AR1□-4U			
	20	FRN020AR1□-4U			
	25	FRN025AR1□-4U	203 (7.99)	645 (25.4)	262 (10.3)
	30	FRN030AR1□-4U			
	40	FRN040AR1□-4U			
	50	FRN050AR1□-4U			
	60	FRN060AR1□-4U	265 (10.4)	736 (29)	284 (11.2)
	75	FRN075AR1□-4U			
	100	FRN100AR1□-4U			
	125	FRN125AR1□-4U			
	150	FRN150AR1S-4U	530 (20.9)	740 (29.1)	315 (12.4)
	200	FRN200AR1S-4U			
	250	FRN250AR1S-4U			
	300	FRN300AR1S-4U			
	350	FRN350AR1S-4U	680 (26.8)	1000 (39.4)	360 (14.2)
	450	FRN450AR1S-4U			
	500	FRN500AR1S-4U			
	600	FRN600AR1S-4U			
	800	FRN800AR1S-4U	880 (34.7)	1400 (55.1)	440 (17.3)
	900	FRN900AR1S-4U			
	1000	FRN1000AR1S-4U			
	1000	FRN1000AR1S-4U			
3-Phase 575V	1	FRN001AR1□-5U	150 (5.91)	465 (18.3)	262 (10.3)
	2	FRN002AR1□-5U			
	3	FRN003AR1□-5U			
	5	FRN005AR1□-5U			
	7.5	FRN007AR1□-5U	203 (7.99)	585 (23)	262 (10.3)
	10	FRN010AR1□-5U			
	15	FRN015AR1□-5U			
	20	FRN020AR1□-5U			
	25	FRN025AR1□-5U	203 (7.99)	645 (25.4)	262 (10.3)
	30	FRN030AR1□-5U			
	40	FRN040AR1□-5U			
	50	FRN050AR1□-5U			
	60	FRN060AR1□-5U	265 (10.4)	736 (29)	284 (11.2)
	75	FRN075AR1□-5U			
	100	FRN100AR1□-5U			
	125	FRN125AR1□-5U			
	150	FRN150AR1□-5U	300 (11.8)	885 (34.8)	367.9 (14.5)
	200	FRN200AR1S-5U			
	250	FRN250AR1S-5U			
	300	FRN300AR1S-5U			

□(enclosure) : M : UL TYPE1, L : UL TYPE12

## Options

### Fieldbus:

- EtherNet
- CC-Link
- LONWORKS
- DeviceNet
- Profibus DP
- CANopen

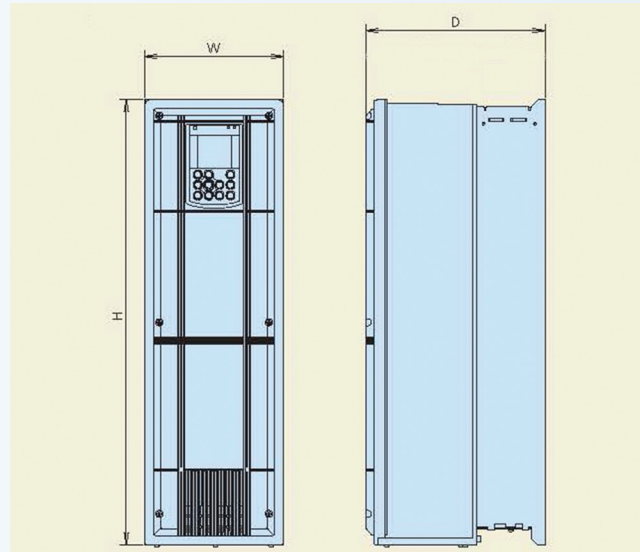
### I/O Expansion:

- Keypad with USB Port
- Relay Output
- Analog Inputs and Outputs
- Temperature Sensor Input

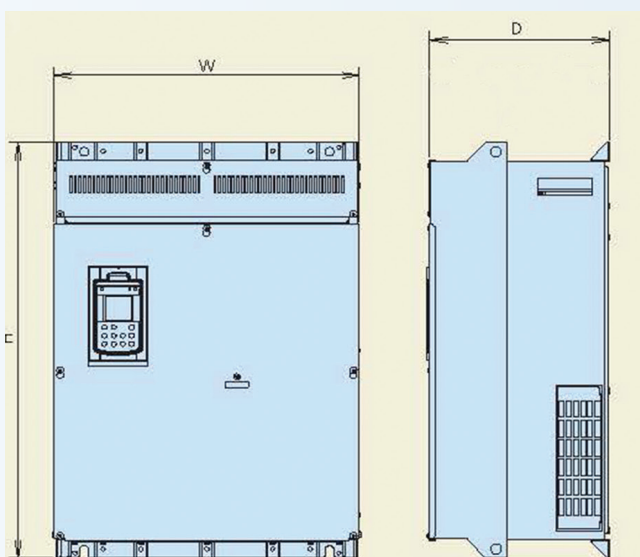
### Others:

- Battery for Clock
- NEMA/UL Type1 Kit

60HP AND BELOW 208V, 125HP AND BELOW 460V, 150HP AND BELOW 575V



75HP AND ABOVE 208V, 150HP AND ABOVE 460V, 200HP AND ABOVE 575V





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## Specifications

Capacity (HP)	208V Series: 1 - 125HP 460V Series: 1 - 1,000HP 575V Series: 1 - 300HP
Overload Capability	110% 1 Min
Input Power	208V Series: Single/Three Phase 200 to 240V, 50/60Hz 460V Series: Single/Three Phase 380 to 480V, 50/60Hz 575V Series: Single/Three Phase 575 to 600V, 50/60Hz Voltage: +10% to -15% (Unbalance 2% or Less) Frequency: +5% to -5%
Control	V/F Control, Torque Vector Control
Output Voltage	208V Series: Three Phase 200 to 240V (with AVR Function) 460V Series: Three Phase 380 to 480V (with AVR Function) 575V Series: Three Phase 575 to 600V (with AVR Function)
Output Frequency	120Hz Maximum
Output Stability	Analog Setting: $\pm 0.2\%$ of Maximum Frequency Digital Setting: $\pm 0.01\%$ of Maximum Frequency (By Keypad)
EMC Filter	Built-In
DC Reactor	$\leq 60\text{HP}$ 208V, 125HP 460V, 150HP 575V Built-In $\geq 75\text{HP}$ 208V, 150HP 460V, 200HP 575V Comes with Drive External; shipped along with drive
Displacement Power Factor	$> 0.98$ (At Rated Load)
True Power Factor	$\geq 0.90$ (At Rated Load)
Efficiency	$\geq 97\%$ (At Rated Load)
Ambient Temperature	NEMA/UL Open/Type 1: $-10$ to $50^{\circ}\text{C}$ ( $14$ to $122^{\circ}\text{F}$ ), NEMA/UL Type 12: $-10$ to $40^{\circ}\text{C}$ ( $14$ to $104^{\circ}\text{F}$ )
Storage Temperature	$-25$ to $70^{\circ}\text{C}$ ( $-13$ to $158^{\circ}\text{F}$ )
Relative Humidity	5 to 95% RH (Without Condensation)
Installation Location	IEC60664-1 Pollution Degree 2. (Free from Corrosive Gases, Flammable Gases, Oil Mist, Dust and Direct Sunlight) Indoor Use Only
Altitude	$\leq 3,300\text{ft}$ ( $1,000\text{m}$ ), $3,300\text{ft}$ ( $1,000\text{m}$ ) to $9,900\text{ft}$ ( $3,000\text{m}$ ) with Derating
Enclosure	NEMA/UL Type1 & 12: $\leq 60\text{HP}$ 208V, 125HP 460V/575V UL Open Type, NEMA/UL Type1 by option kit: $\geq 75\text{HP}$ 208V, 150HP 460V/575V
Safety	EN ISO13849-1, EN954-1, Category 3
Standard	UL, cUL: UL508C, C22.2 No. 14, EN61800-5:2007 CE: IEC/EN61800-5-1: 2007 (LV Directive); IEC/EN61800-3-12 (EMC Directive) SEMI F47-0706 RoHS: 2002/96/EC

Fuji Electric Corp. of America  
47520 Westinghouse Drive, Fremont, CA 94539  
Phone: 510-440-1060

[www.america.fujielectric.com](http://www.america.fujielectric.com)

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