

Submittal Summary

Fuji Electric Corp. of America (FECO) Variable Frequency Drives – HVAC Systems

Submittal Summary Data Form – UL/NEMA 3R Non-Bypass Systems

Project: _____

Architect: _____ Engineer: _____

Contractor: _____

Submitted By: _____ Date: _____

Tag #	Model #	Unit Ratings (Voltage, HP, Rated Current)

Standard Features

- UL/NEMA 3R enclosure
- Metallic enclosures to reduce radio frequency interference (RFI)
- Integral main disconnect with branch circuit protection, including a padlockable through-the-door operator handle mechanically interlocked with the enclosure door
- 3% AC line reactor provided as standard below 100HP to minimize harmonics and provide transient voltage protection for the drive, with the option of a 5% AC line reactor. At 100HP and above, a DC link reactor is provided, with the option for adding a 3% or 5% AC line reactor
- Control power transformer with primary & secondary fusing
- Door mounted drive keypad with backlit LCD and LED displays for drive set-up, troubleshooting, local operation control, maintenance indication, and operational indication
- 0-10Vdc or 4-20mA customer supplied analog input for remote speed reference
- 0-10Vdc or 4-20mA analog output for indication (programmable)
- Safety Interlock, Run, Enable, and Fireman Override Inputs
- Damper Control Output Contacts
- Drive Run and Fault Status Outputs
- Built-in communications, user selectable between Modbus RTU, Metasys[®] N2, or APOGEE[®] FLN (P1), with additional communication drive options including; LonWorks[®], BACnet, DeviceNet, Profibus DP, and EtherNet
- UL/cUL Listed
- Enhanced Automatic Energy Savings, Reduces Power Consumption of Both the Motor *and* Drive
- LCD and LED Keypad, also Functions as a Copy Unit
- Quick-Start Programming Menu for Ease of Start-Up
- Power Monitoring from the Drive’s Keypad
- Built-in PID Control with Sleep Function

Non-Bypass General Specifications

Environmental

Enclosure	Type 3R
Ambient Temperature	+14 to +104° F (-10 to +40° C)
- High Ambient with Optional Fan Package	+113°F (+45°C)
- Low Ambient with Optional Heater Package	-4°F (-20°C)
Storage Temperature	+5 to +140° F (-15 to +60° C)
Humidity	5% to 95% with no condensation
Altitude	0 to 3,300 ft. (1,000 m) without derating, derate output current by 1% for each additional 330 ft (100m)

Codes and Standards

UL, cUL Listed per UL508A
Conforms to applicable NEMA ICS, NFPA, & IEC standards

Electrical

Input Voltage; Nominal - Phase	208VAC, 230VAC, 460VAC - 3 Phase
Input Voltage; Tolerance, Unbalance	+/-10%, ≤3%
Input Frequency	60Hz +/-5%
Displacement Power Factor	≥0.97
Output Voltage; Range - Phase	0 to maximum input voltage - 3 Phase
Output Frequency	0.1 to 120Hz
Motor Control Method	PWM drive output with V/F control, includes programmable "catch-a-spinning motor" function
PWM Switch Frequency	0.75 to 15kHz (2 to 25Hp for 208/230V and 2 to 30Hp for 460V) 0.75 to 10kHz (30 to 60Hp for 208/230V and 40 to 100Hp for 460V) 0.75 to 6kHz (125 to 200Hp for 460V)
Drive Overload Capacity	120% rated current for 1 min.
Motor Overload	Programmable (electronic)
Torque Boost	Programmable to provide additional starting torque if required
Speed Reference	0 to +10VDC, 4 to 20mA, or Keypad (programmable inverse operation for analog signals)
Speed Reference Resolution	Analog setting: 1/1000 of maximum frequency Keypad setting: 0.01Hz (99.99Hz or less)
Acceleration/Deceleration Time	0 to 3600 seconds, with four user selectable patterns
Jump Frequencies	Qty 3 programmable frequency set points with adjustable jump bandwidth of 0 to 30Hz
Output Signals	Qty 1: N.O. dry contacts rated 0.3A @ 230V max, functionality: Drive Run Qty 1: Form C dry contacts rated 0.3A @ 230V max, functionality: Drive Fault Qty 1: N.O. dry contacts rated 5A @ 230V max, functionality: Damper Control Qty 1: 0 to 10VDC or 4 to 20mA, user selectable programmable analog signal

Drawing Number Selection Matrix
UL/NEMA Type 3R Non-Bypass

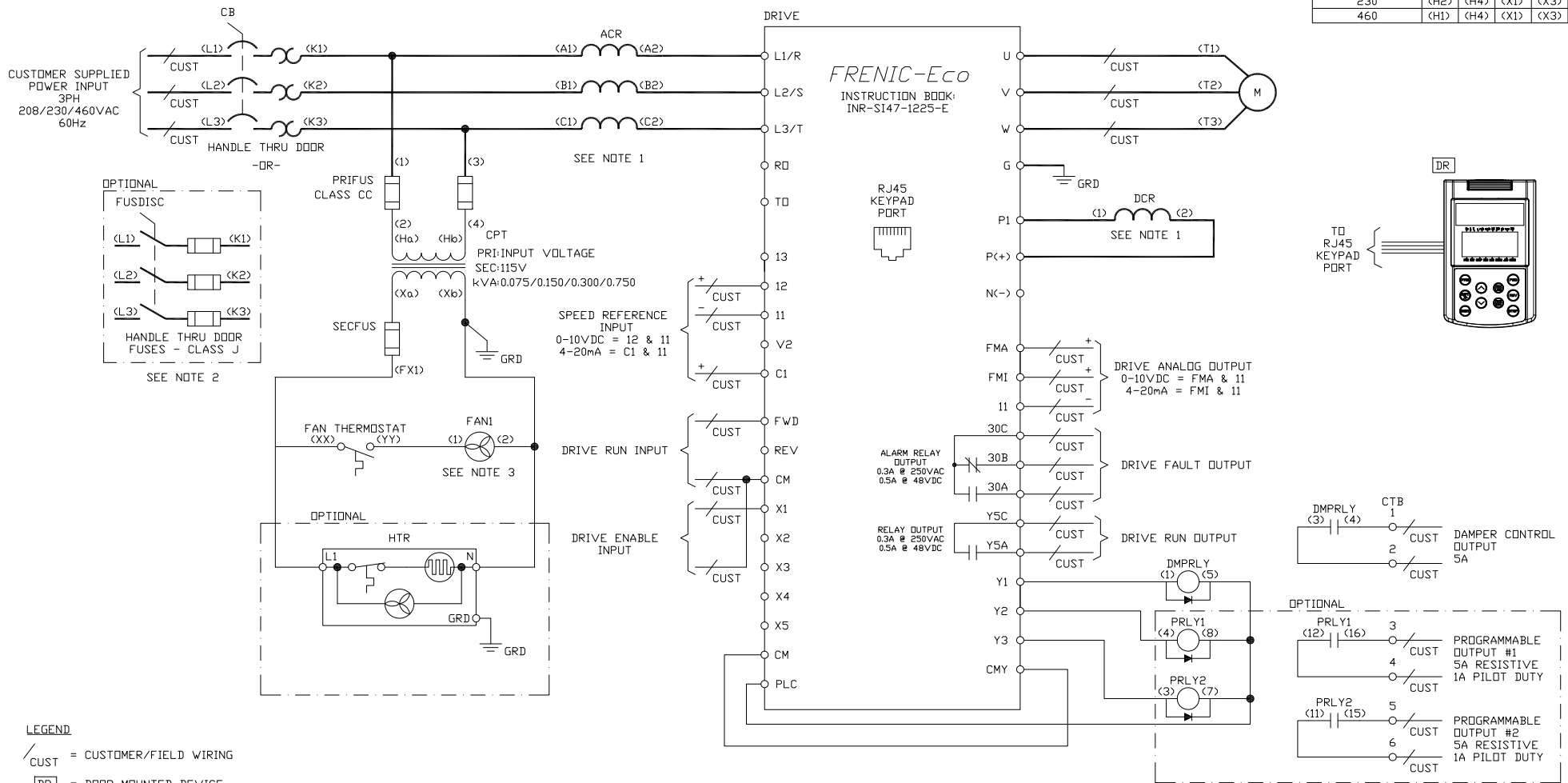
208/230V

HP	Current (A)	Electrical Drawing	Outline Drawing
2	7.5	ROA700061	ROA700055
3	10.6	ROA700061	ROA700055
5	16.7	ROA700061	ROA700055
7.5	25	ROA700061	ROA700056
10	31	ROA700061	ROA700056
15	47	ROA700061	ROA700056
20	60	ROA700061	ROA700057
25	75	ROA700061	ROA700057
30	88	ROA700061	ROA700058

460V

HP	Current (A)	Electrical Drawing	Outline Drawing
2	3.7	ROA700061	ROA700055
3	5.5	ROA700061	ROA700055
5	9	ROA700061	ROA700055
7.5	11	ROA700061	ROA700055
10	16.5	ROA700061	ROA700056
15	23	ROA700061	ROA700056
20	28	ROA700061	ROA700056
25	34	ROA700061	ROA700057
30	40	ROA700061	ROA700057
40	54	ROA700061	ROA700057
50	65	ROA700061	ROA700058
60	80	ROA700061	ROA700058
75	105	ROA700061	ROA700058

CONTROL POWER TRANSFORMER (CPT) CONNECTIONS				
NOMINAL INPUT VOLTAGE	TERMINALS			
208	(H3)	(H4)	(X1)	(X3)
230	(H2)	(H4)	(X1)	(X3)
460	(H1)	(H4)	(X1)	(X3)



LEGEND
 /CUST = CUSTOMER/FIELD WIRING
 [DR] = DOOR MOUNTED DEVICE

NOTES:
 1) FOR RATINGS <75hp, 'ACR' IAS PROVIDED AS STANDARD, 'DCR' IS NOT PROVIDED, AND A JUMPER IS INSTALLED BETWEEN DRIVE TERMINALS P1 & P(+).
 2) FUSIBLE DISCONNECT 'FUSDISC' IS PROVIDED AS STANDARD FOR RATINGS 2-7.5hp @ 208/230VAC & 2-15hp @ 460VAC
 3) QTY OF FANS PROVIDED AS REQUIRED, MULTIPLE FANS WIRED IN PARALLEL



DESCRIPTION: FRENIC-EcoPAK TYPE 3R, NON-BYPASS
 2 - 30hp @ 208/230VAC
 2 - 75hp @ 460VAC
 INSTRUCTION BOOK: FECA-IN-110

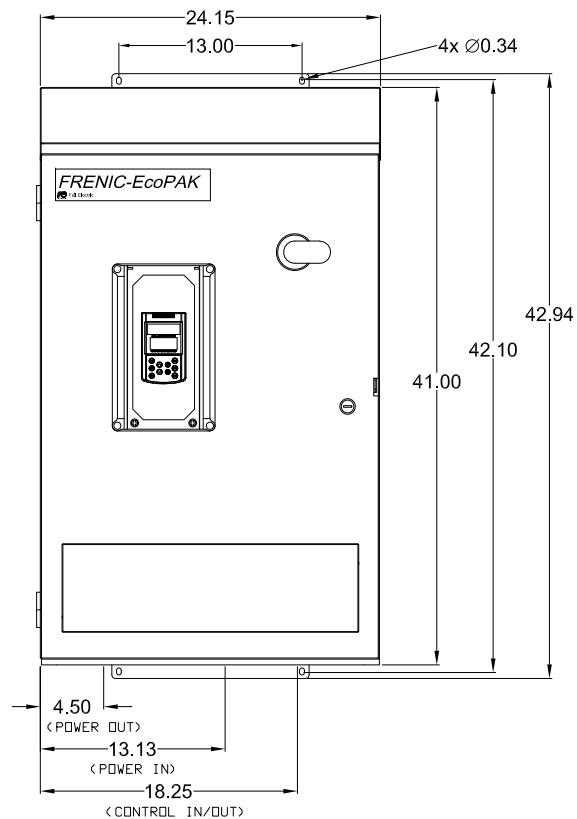
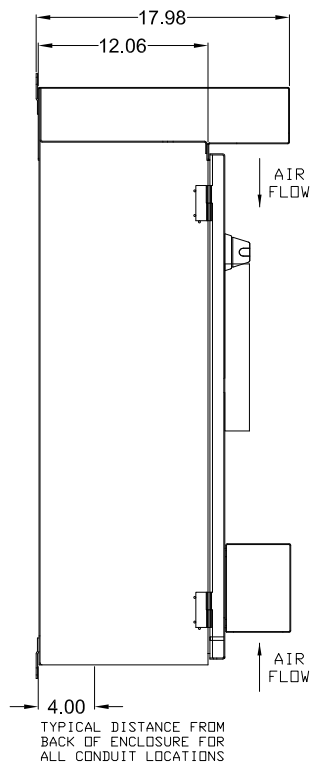
DRN. BY: B. GAYLE
 DATE: 04/18/2011
 REV. 1
 REV. DATE: 05/08/12
 REV. BY: B. GAYLE

DWG. NO.: RDA700061
 SHT. 1 OF 1

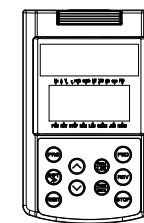
FRENIC-EcoPAK, UL/NEMA Type 3R Non-Bypass - Electrical Data

Hp Rating	Rated Output Current	Rated Input Current	Circuit Breaker (CB)			Fusible Disconnect Amp Rating	Input Fuses Amp Rating	Fusible Disc. w/ Fuses AIC Rating	Complete Assembly AIC Rating w/ Fusible Disc.	DC Reactor		3% AC Line Reactor		5% AC Line Reactor	
			Breaker (CB) Amp Rating	Breaker (CB) AIC Rating	Complete Assembly AIC Rating w/ CB					Part Number	Ratings Amps / Inductance	Part Number	Ratings Amps / Inductance	Part Number	Ratings Amps / Inductance
208/230VAC, 60Hz, 3PH															
2	7.5	9.5	See Fusible Disconnect			30	10	200k	100k	See 3% AC Reactor	KDRA27L	10A / 1350uH	KDRA26H	10A / 2310uH	
3	10.6	12.6	See Fusible Disconnect			30	15	200k	100k	See 3% AC Reactor	KDRA28L	12A / 971uH	KDRA28H	11A / 1570uH	
5	16.7	18.7	See Fusible Disconnect			30	25	200k	100k	See 3% AC Reactor	KDRB22L	19A / 626uH	KDRB25H	17A / 1030uH	
7.5	25	27	See Fusible Disconnect			30	30	200k	100k	See 3% AC Reactor	KDRB23L	25A / 434uH	KDRB26H	26A / 699uH	
10	31	33	40	22k	22k	60	45	200k	100k	See 3% AC Reactor	KDRD25L	34A / 342uH	KDRD21H	31A / 554uH	
15	47	49	70	22k	22k	60	60	200k	100k	See 3% AC Reactor	KDRD24L	48A / 220uH	KDRD22H	47A / 375uH	
20	60	62	90	22k	22k	100	80	200k	100k	See 3% AC Reactor	KDRD26L	62A / 172uH	KDRC22H	62A / 278uH	
25	75	78	100	22k	22k	100	100	200k	100k	See 3% AC Reactor	KDRC22L	80A / 138uH	KDRF28H	75A / 226uH	
30	88	91	125	35k	35k	200	125	100k	100k	See 3% AC Reactor	KDRF24L	100A / 116uH	KDRF25H	92A / 189uH	
460VAC, 60Hz, 3PH															
2	3.7	4.7	See Fusible Disconnect			30	6	200k	100k	See 3% AC Reactor	KDRA1L	6.4A / 5790uH	KDRA1H	4A / 10300uH	
3	5.5	6	See Fusible Disconnect			30	8	200k	100k	See 3% AC Reactor	KDRA2L	6A / 4270uH	KDRA2H	6A / 7290uH	
5	9	9.5	See Fusible Disconnect			30	12	200k	100k	See 3% AC Reactor	KDRA3L	9.6A / 2770uH	KDRA3H	8A / 3980uH	
7.5	11	12	See Fusible Disconnect			30	15	200k	100k	See 3% AC Reactor	KDRA4L	14A / 1680uH	KDRA4H	12A / 3000uH	
10	16.5	17.5	See Fusible Disconnect			30	25	200k	100k	See 3% AC Reactor	KDRA5L	14A / 1290uH	KDRA5H	14A / 2232uH	
15	23	24	See Fusible Disconnect			30	30	200k	100k	See 3% AC Reactor	KDRB2L	30A / 912uH	KDRB2H	27A / 1690uH	
20	28	29	40	22k	22k	60	40	200k	100k	See 3% AC Reactor	KDRB1L	30A / 694uH	KDRC3H	27A / 1210uH	
25	34	35	50	22k	22k	60	50	200k	100k	See 3% AC Reactor	KDRD1L	50A / 569uH	KDRC1H	35A / 980uH	
30	40	41	60	22k	22k	60	60	200k	100k	See 3% AC Reactor	KDRD2L	45A / 469uH	KDRE2H	45A / 850uH	
40	54	55	70	22k	22k	100	70	200k	100k	See 3% AC Reactor	KDRC1L	55A / 387uH	KDRF4H	60A / 581uH	
50	65	68	90	22k	22k	100	90	200k	100k	See 3% AC Reactor	KDRF2L	65A / 295uH	KDRF1H	85A / 465uH	
60	80	82	100	22k	22k	100	100	200k	100k	See 3% AC Reactor	KDRF4L	77A / 227uH	KDRF2H	77A / 408uH	
75	105	107	150	35k	35k	200	150	100k	100k	See 3% AC Reactor	KDRF3L	110A / 196uH	KDRH2H	100A / 315uH	

DIMENSIONS PROVIDED FOR ESTIMATING PURPOSES ONLY



ENLARGED VIEW OF DRIVE KEYPAD



DIMENSIONS ARE IN INCHES

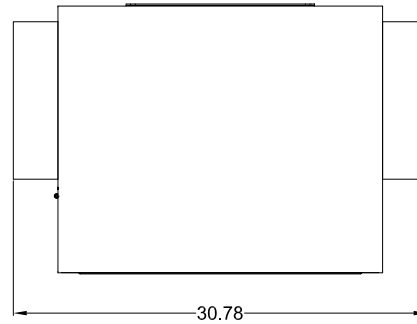


DESCRIPTION: FRENIC-EcoPAK NON-BYPASS TYPE 3R
 2 - 5 HP @ 208/230V
 2 - 7.5 HP @ 460V
 INSTRUCTION BOOK: FECA-IN-110

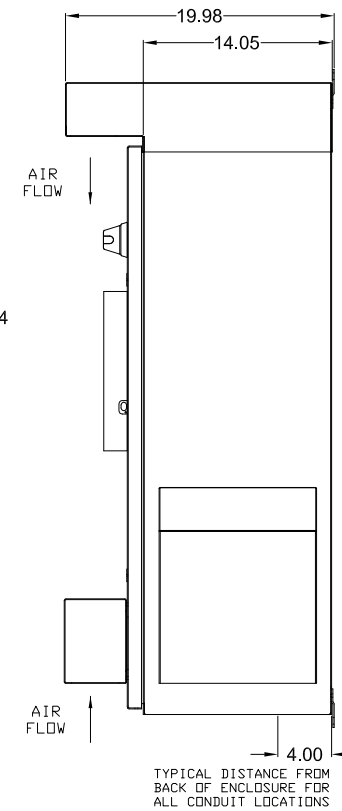
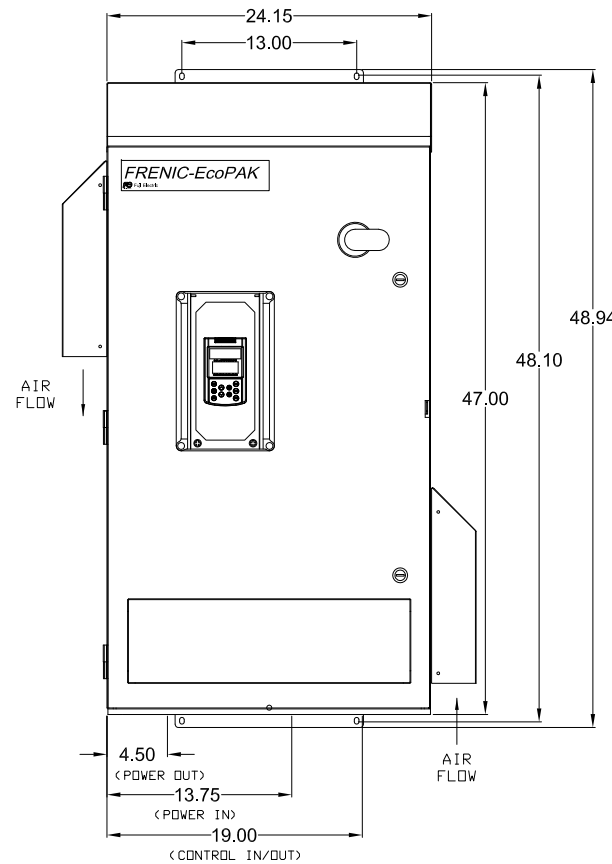
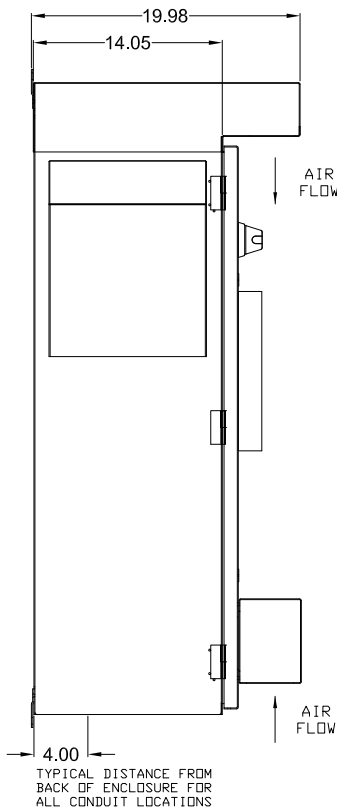
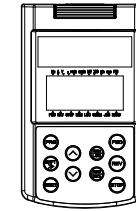
DRN. BY: B. GAYLE
 DATE: 04/14/11
 REV. REV. DATE: REV. BY:

DWG. NO.: R0A700055
 SHT. 1 OF 1

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ENLARGED VIEW OF DRIVE KEYPAD



NOTES:

- 1) DIMENSIONS ARE IN INCHES.
- 2) SIDE-MOUNTED RAIN HOODS ARE FOR OPTIONAL 45°C AMBIENT PACKAGE.

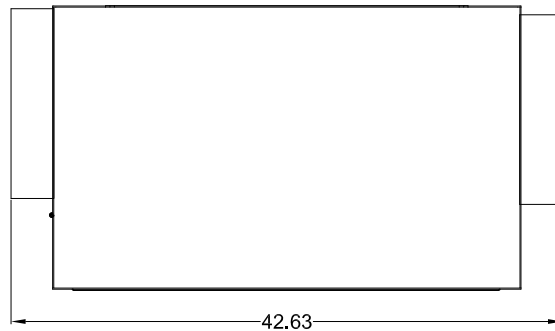


DESCRIPTION: FRENIC-EcoPAK NON-BYPASS TYPE 3R
 7.5 - 15 HP @ 208/230V
 10 - 20 HP @ 460V
 INSTRUCTION BOOK: FECA-IN-110

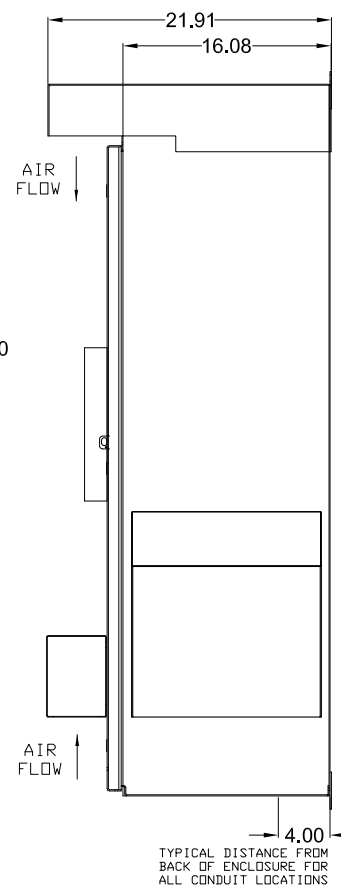
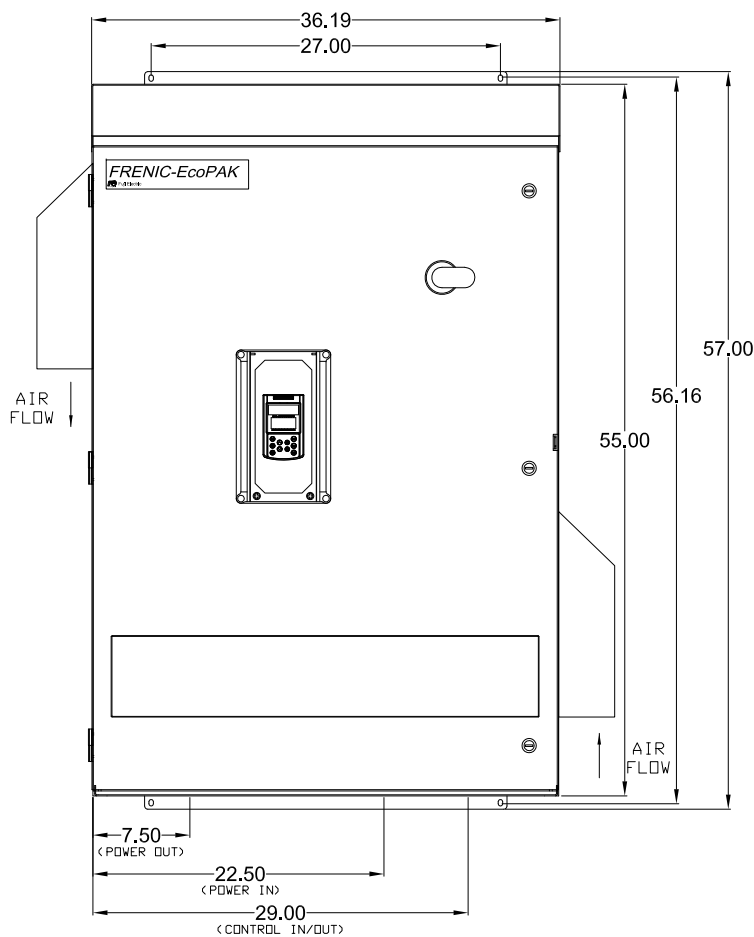
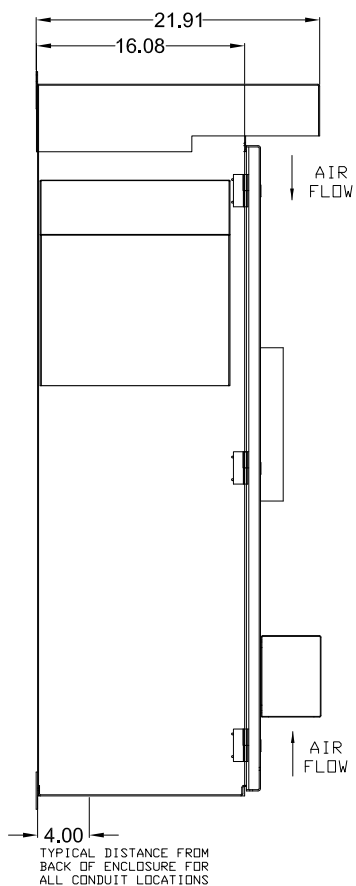
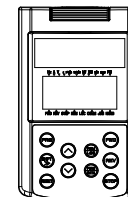
DRN. BY: B. GAYLE
 DATE: 04/14/11
 REV. REV. DATE: REV. BY:

DWG. NO.: R0A700056
 SHT. 1 OF 1

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ENLARGED VIEW
OF DRIVE KEYPAD



NOTES:

- 1) DIMENSIONS ARE IN INCHES.
- 2) SIDE-MOUNTED RAIN HOODS ARE FOR OPTIONAL 45°C AMBIENT PACKAGE.



DESCRIPTION: FRENIC-EcoPAK NON-BYPASS TYPE 3R
 20 - 25 HP @ 208/230V
 25 - 40 HP @ 460V
 INSTRUCTION BOOK: FECA-IN-110

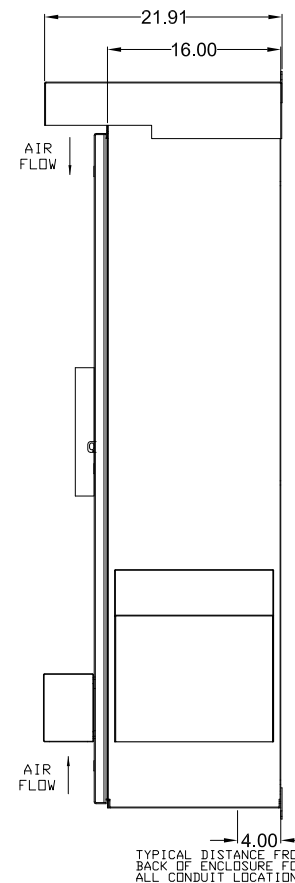
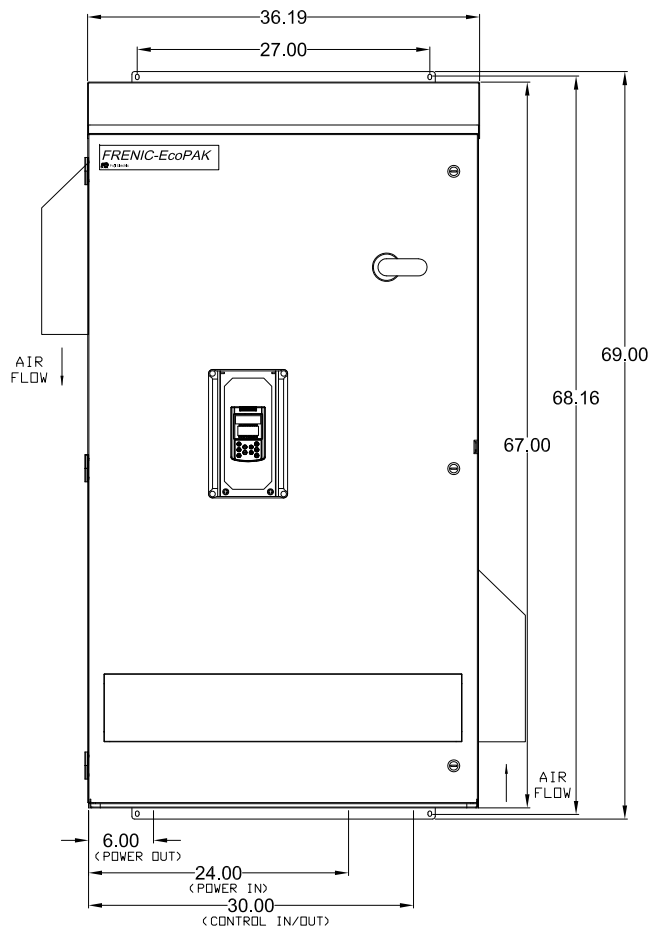
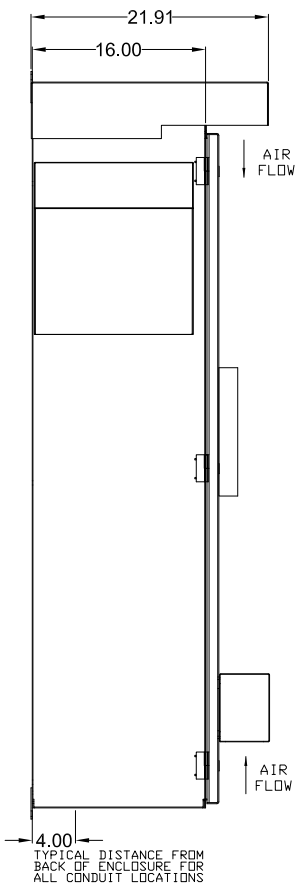
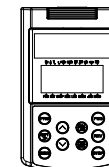
DRN. BY: B. GAYLE
 DATE: 04/18/11
 REV. REV. DATE: REV. BY:

DWG. NO.: R0A700057
 SHT. 1 OF 1

DIMENSIONS PROVIDED FOR ESTIMATING PURPOSES ONLY



ENLARGED VIEW OF DRIVE KEYPAD



NOTES:

- 1) DIMENSIONS ARE IN INCHES.
- 2) SIDE-MOUNTED RAIN HOODS ARE FOR OPTIONAL 45°C AMBIENT PACKAGE.



DESCRIPTION: FRENIC-EcoPAK NON-BYPASS TYPE 3R
 30 HP @ 208/230V
 50 - 75 HP @ 460V
 INSTRUCTION BOOK: FECA-IN-110

DRN. BY: B. GAYLE
 DATE: 04/18/11
 REV. REV. DATE: REV. BY:

DWG. NO.: R0A700058
 SHT. 1 OF 1

FRENIC-EcoPAK, Non-Bypass - Mechanical Data

Hp Rating	Overall Dimensions - Height x Width x Depth [inches]	Estimated Max. Weight [lbs]	Estimated Max. Watts Loss
208/230VAC, 60Hz, 3PH, UL/NEMA Type 3R			
2	42.95 x 24.15 x 17.99	189	207
3	42.95 x 24.15 x 17.99	189	252
5	42.95 x 24.15 x 17.99	194	339
7.5	48.95 x 30.78 x 19.99	240	510
10	48.95 x 30.78 x 19.99	246	633
15	48.95 x 30.78 x 19.99	251	807
20	57.01 x 42.73 x 21.91	322	1100
25	57.01 x 42.73 x 21.91	338	1211
30	69.00 x 42.63 x 21.91	389	1439
460VAC, 60Hz, 3PH, UL/NEMA Type 3R			
2	42.95 x 24.15 x 17.99	189	178
3	42.95 x 24.15 x 17.99	189	236
5	42.95 x 24.15 x 17.99	189	375
7.5	42.95 x 24.15 x 17.99	196	403
10	48.95 x 30.78 x 19.99	240	609
15	48.95 x 30.78 x 19.99	240	727
20	48.95 x 30.78 x 19.99	254	887
25	57.01 x 42.73 x 21.91	294	1028
30	57.01 x 42.73 x 21.91	295	1160
40	57.01 x 42.73 x 21.91	310	1485
50	69.00 x 42.63 x 21.91	407	1763
60	69.00 x 42.63 x 21.91	416	2035
75	69.00 x 42.63 x 21.91	465	2109