

Submittal Summary



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

Submittal Summary Data Form – UL/NEMA 3R 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
- Mechanically & electrically interlocked drive output and bypass contactors
- Class 20 overload relay for motor thermal protection in bypass mode
- Drive isolation contactor included in 3 Contactor Bypass configuration
- Control terminal strip for easy input and output control wiring
- Door mounted operator controls and indication for “Power On”, “Bypass Run” and “Motor Overload” (during bypass mode)
- Bypass Run Status Output
- UL/cUL Listed

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	Class 20 Protection (electromechanical/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 4: N.O. dry contacts rated 5A @ 230V max, functionality: Drive Run, Drive Fault, Bypass Run, & Damper Control Qty 1: 0 to 10VDC or 4 to 20mA, user selectable programmable analog signal

Drawing Number Selection Matrix
UL/NEMA Type 3R Bypass

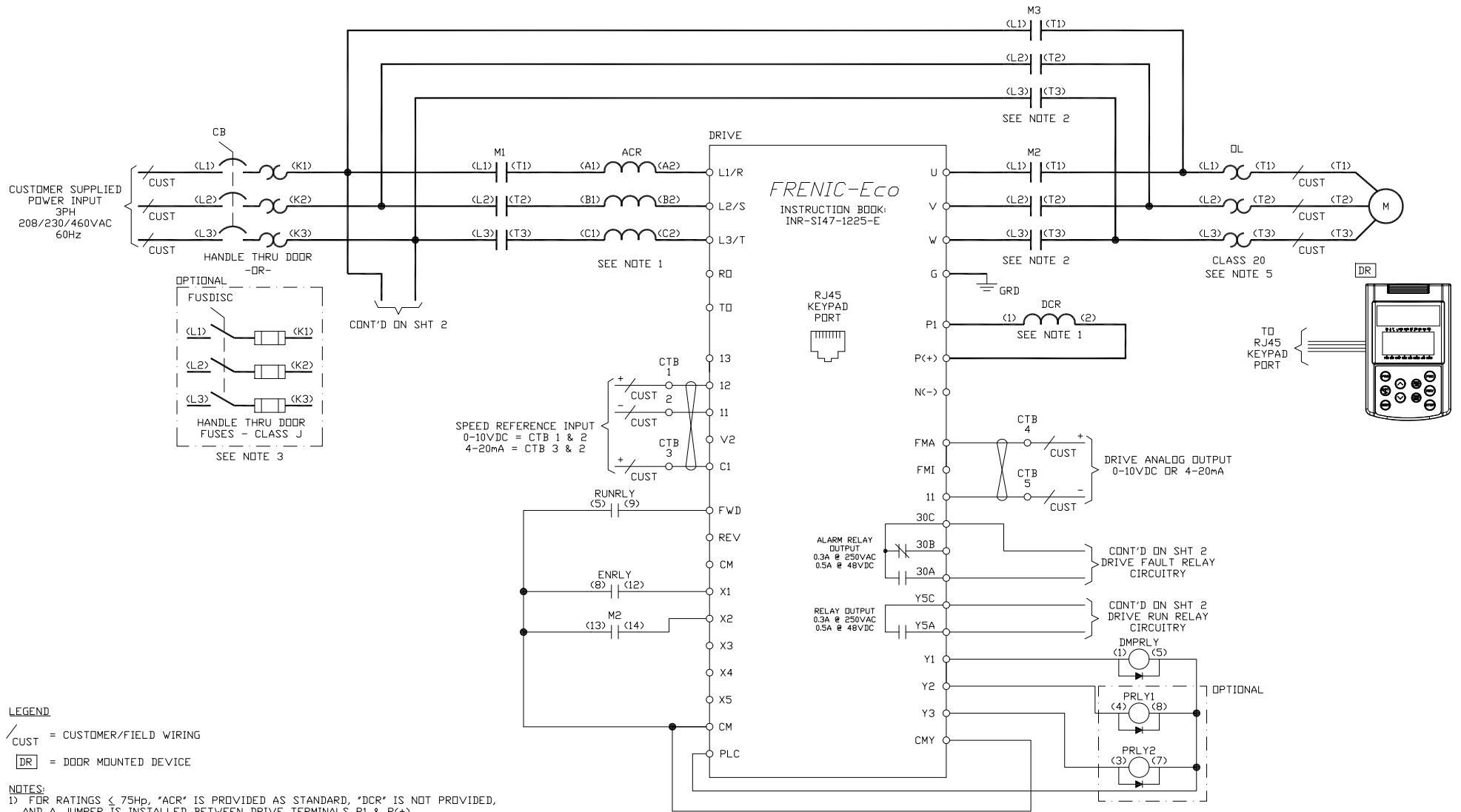
208/230V

HP	Current (A)	Electrical Drawing	Outline Drawing
2	7.5	ROA700059	ROA700051
3	10.6	ROA700059	ROA700051
5	16.7	ROA700059	ROA700051
7.5	25	ROA700059	ROA700052
10	31	ROA700059	ROA700052
15	47	ROA700059	ROA700052
20	60	ROA700059	ROA700053
25	75	ROA700059	ROA700053
30	88	ROA700059	ROA700054

460V

HP	Current (A)	Electrical Drawing	Outline Drawing
2	3.7	ROA700059	ROA700051
3	5	ROA700059	ROA700051
5	7.6	ROA700059	ROA700051
7.5	11	ROA700059	ROA700051
10	14	ROA700059	ROA700052
15	23	ROA700059	ROA700052
20	28	ROA700059	ROA700052
25	34	ROA700059	ROA700053
30	40	ROA700059	ROA700053
40	54	ROA700059	ROA700053
50	65	ROA700059	ROA700054
60	80	ROA700059	ROA700054
75	105	ROA700059	ROA700054

Note: The electrical drawing contains two sheets, be sure to include both sheets for submittal.



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

NOTES:
 1) FOR RATINGS < 75Hp, "ACR" IS PROVIDED AS STANDARD, "DCR" IS NOT PROVIDED, AND A JUMPER IS INSTALLED BETWEEN DRIVE TERMINALS P1 & P(+).
 2) "M2" & "M3" ARE ELECTRICALLY AND MECHANICALLY INTERLOCKED.
 3) FUSIBLE DISCONNECT "FUSDISC" IS PROVIDED AS STANDARD FOR RATINGS 2-5HP @ 208/230VAC & 2-10HP @ 460VAC.
 4) QTY OF FANS PROVIDED AS REQUIRED, MULTIPLE FANS WIRED IN PARALLEL.
 5) "DL" LOCATIONS:
 2-25Hp @ 208/230V & 2-40HP @ 460V - LOAD SIDE OF "M2" (AS SHOWN)
 30Hp @ 208/230V & 50-75Hp @ 460V - LOAD SIDE OF "M3"
 MOTOR OVERLOAD PROTECTION PROVIDED BY THE DRIVE WHILE OPERATING IN DRIVE MODE FOR ALL RATINGS.

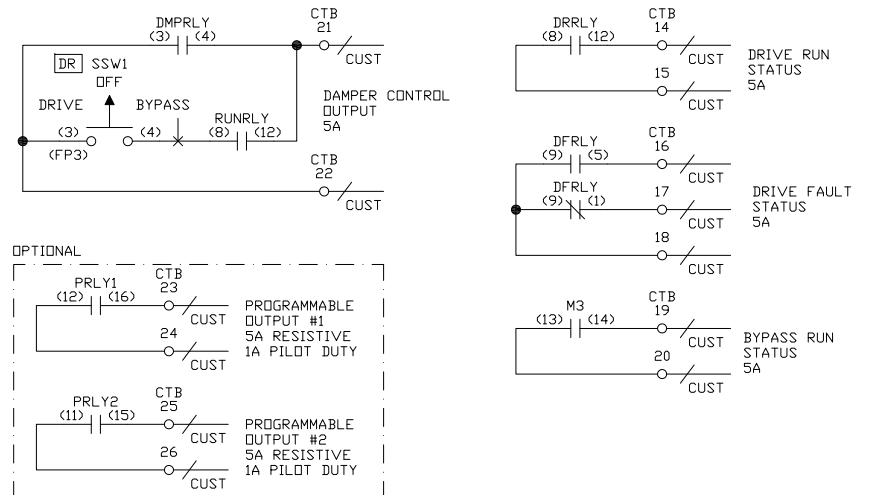
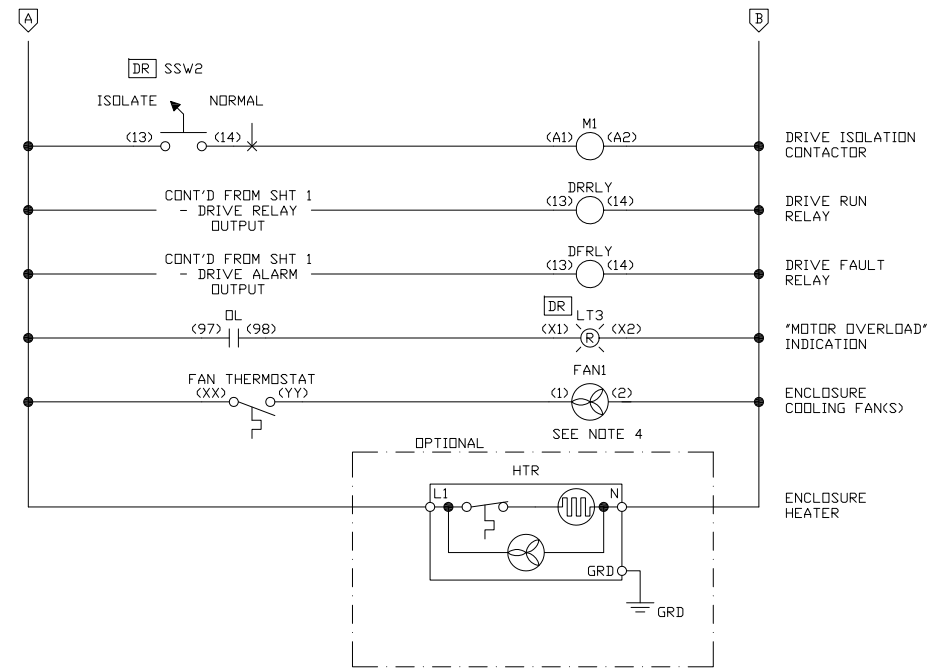
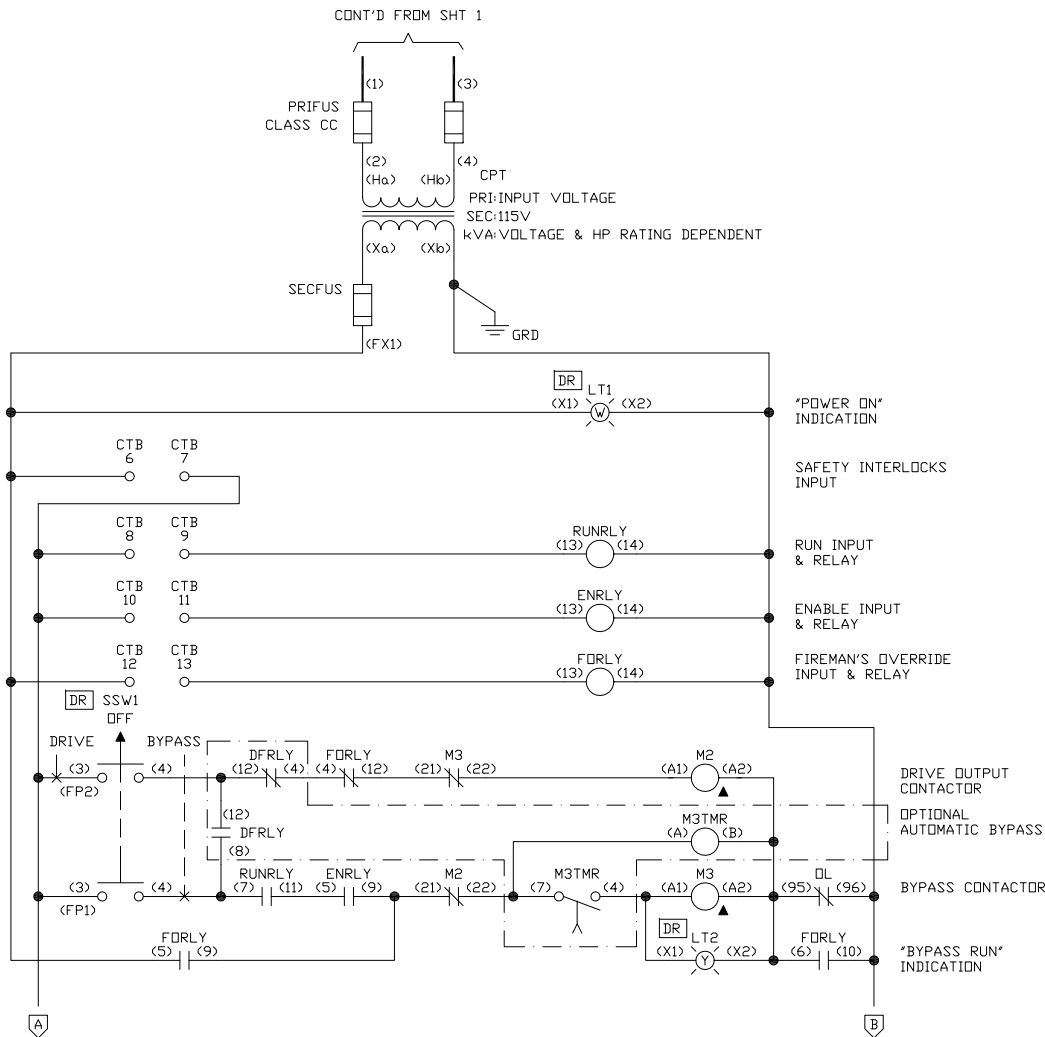


DESCRIPTION: FRENIC-EcoPAK, BYPASS TYPE 3R (TYPICAL)
 2 - 30Hp @ 208/230VAC
 2 - 75Hp @ 460VAC
 INSTRUCTION BOOK: FECA-IN-109

DRN. BY:
 B. GAYLE
 REV. 1

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

DWG. NO.:
 ROA700059
 SHT. 1 OF 2



DESCRIPTION: FRENIC-EcoPAK, BYPASS TYPE 3R (TYPICAL)
 2 - 30Hp @ 208/230VAC
 2 - 75Hp @ 460VAC
 INSTRUCTION BOOK: FECA-IN-109

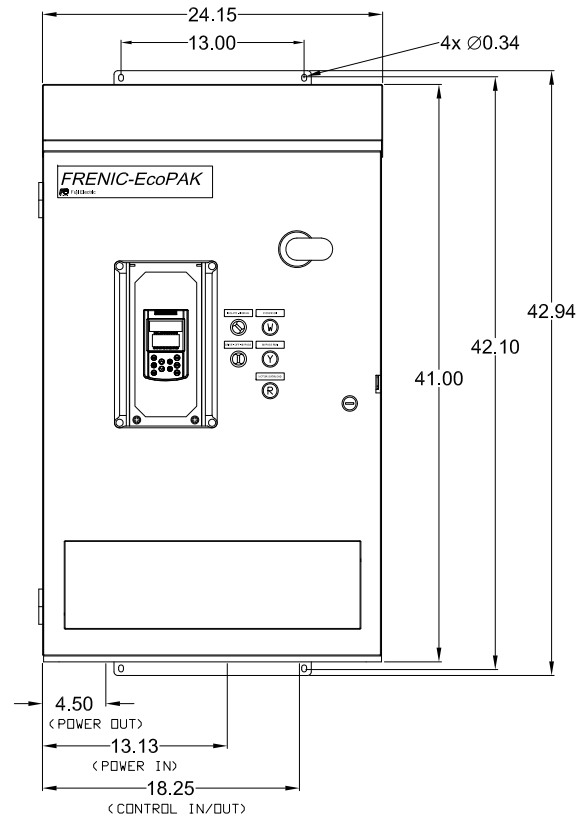
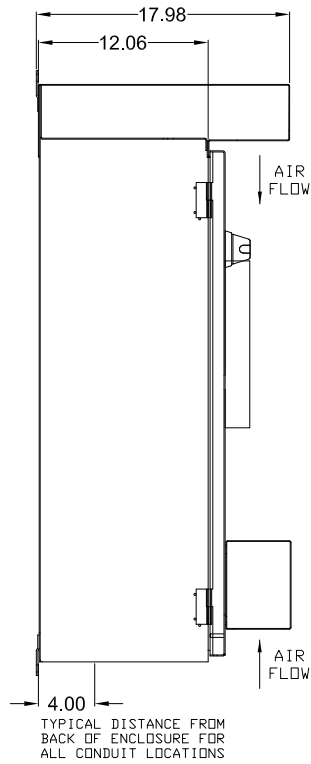
DRN. BY: B. GAYLE
 DATE: 04/18/11
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DWG. NO.: RDA700059
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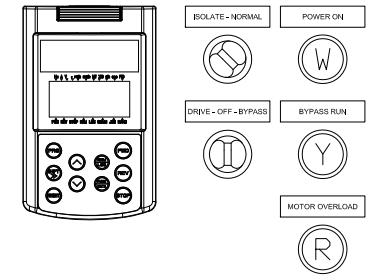
FRENIC-EcoPAK, UL/NEMA Type 3R Bypass - Electrical Data

Hp Rating	Rated Output Current	Rated Input Current	Circuit Breaker (CB) Amp Rating	Circuit Breaker (CB) AIC Rating	Complete Assembly AIC Rating w/ 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	
										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	15	200k	100k	See 3% AC Reactor	KDRA27L	10A / 1350uH	KDRA26H	10A / 2310uH	
3	10.6	12.6	See Fusible Disconnect			30	20	200k	100k	See 3% AC Reactor	KDRA28L	12A / 971uH	KDRA28H	11A / 1570uH	
5	16.7	18.7	See Fusible Disconnect			30	30	200k	100k	See 3% AC Reactor	KDRB22L	19A / 626uH	KDRB25H	17A / 1030uH	
7.5	25	27	40	22k	5k	60	45	200k	100k	See 3% AC Reactor	KDRB23L	25A / 434uH	KDRB26H	26A / 699uH	
10	31	33	50	22k	5k	60	50	200k	100k	See 3% AC Reactor	KDRD25L	34A / 342uH	KDRD21H	31A / 554uH	
15	47	49	80	22k	5k	100	80	200k	100k	See 3% AC Reactor	KDRD24L	48A / 220uH	KDRD22H	47A / 375uH	
20	60	62	100	22k	5k	100	100	200k	100k	See 3% AC Reactor	KDRD26L	62A / 172uH	KDRC22H	62A / 278uH	
25	75	78	125	25k	5k	200	125	100k	100k	See 3% AC Reactor	KDRC22L	80A / 138uH	KDRF28H	75A / 226uH	
30	88	91	150	35k	10k	200	150	100k	100k	See 3% AC Reactor	KDRF24L	100A / 116uH	KDRF25H	92A / 189uH	
460VAC, 60Hz, 3PH															
2	3.7	4.7	See Fusible Disconnect			30	8	200k	100k	See 3% AC Reactor	KDRA1L	6.4A / 5790uH	KDRA1H	4A / 10300uH	
3	5	6	See Fusible Disconnect			30	10	200k	100k	See 3% AC Reactor	KDRA2L	6A / 4270uH	KDRA2H	6A / 7290uH	
5	7.6	8.8	See Fusible Disconnect			30	15	200k	100k	See 3% AC Reactor	KDRA3L	9.6A / 2770uH	KDRA3H	8A / 3980uH	
7.5	11	12	See Fusible Disconnect			30	20	200k	100k	See 3% AC Reactor	KDRA4L	14A / 1680uH	KDRA4H	12A / 3000uH	
10	14	15	See Fusible Disconnect			30	25	200k	100k	See 3% AC Reactor	KDRA5L	14A / 1290uH	KDRA5H	14A / 2232uH	
15	23	24	40	22k	5k	60	40	200k	100k	See 3% AC Reactor	KDRB2L	30A / 912uH	KDRB2H	27A / 1690uH	
20	28	29	50	22k	5k	60	50	200k	100k	See 3% AC Reactor	KDRB1L	30A / 694uH	KDRC3H	27A / 1210uH	
25	34	35	60	22k	5k	60	60	200k	100k	See 3% AC Reactor	KDRD1L	50A / 569uH	KDRC1H	35A / 980uH	
30	40	41	70	22k	5k	100	70	200k	100k	See 3% AC Reactor	KDRD2L	45A / 469uH	KDRE2H	45A / 850uH	
40	54	55	90	22k	5k	100	90	200k	100k	See 3% AC Reactor	KDRC1L	55A / 387uH	KDRF4H	60A / 581uH	
50	65	68	100	22k	5k	200	110	100k	100k	See 3% AC Reactor	KDRF2L	65A / 295uH	KDRF1H	85A / 465uH	
60	80	82	125	25k	5k	200	125	100k	100k	See 3% AC Reactor	KDRF4L	77A / 227uH	KDRF2H	77A / 408uH	
75	105	107	200	35k	10k	200	175	100k	100k	See 3% AC Reactor	KDRF3L	110A / 196uH	KDRH2H	100A / 315uH	

DIMENSIONS PROVIDED FOR ESTIMATING PURPOSES ONLY



ENLARGED VIEW OF DOOR DEVICES



NOTES:

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- 2) DIMENSIONS ARE IN INCHES.

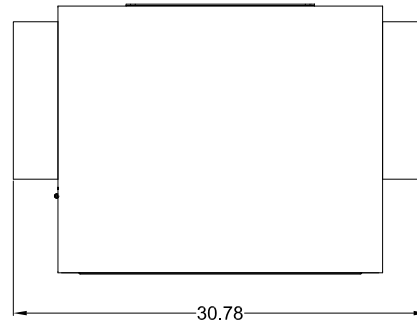


DESCRIPTION: FRENIC-EcoPAK BYPASS TYPE 3R
 2 - 5 HP @ 208/230V
 2 - 7.5 HP @ 460V
 INSTRUCTION BOOK: SEE NOTE 1

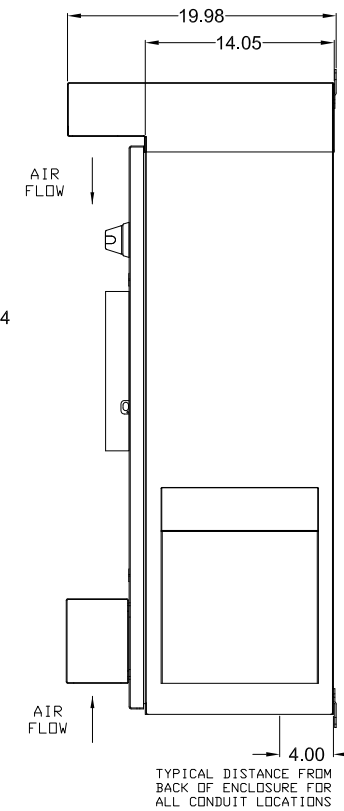
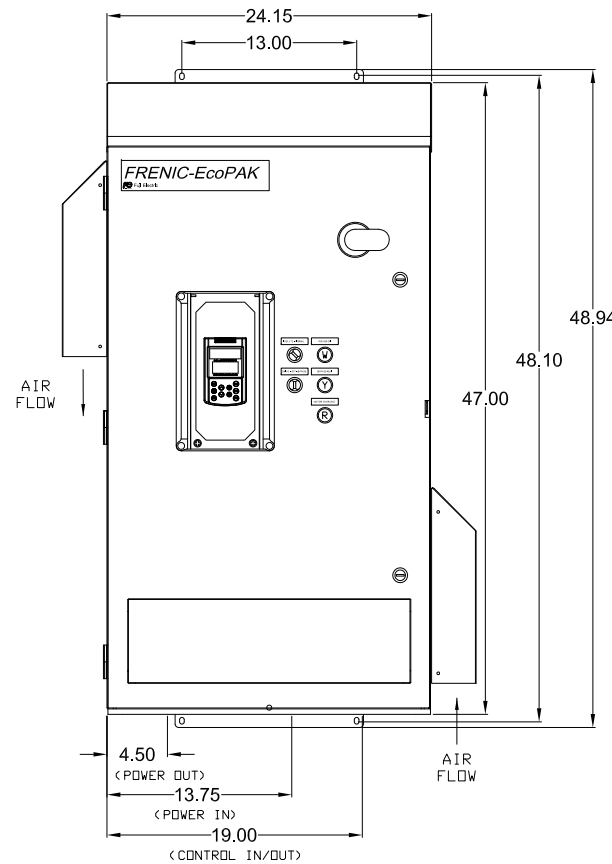
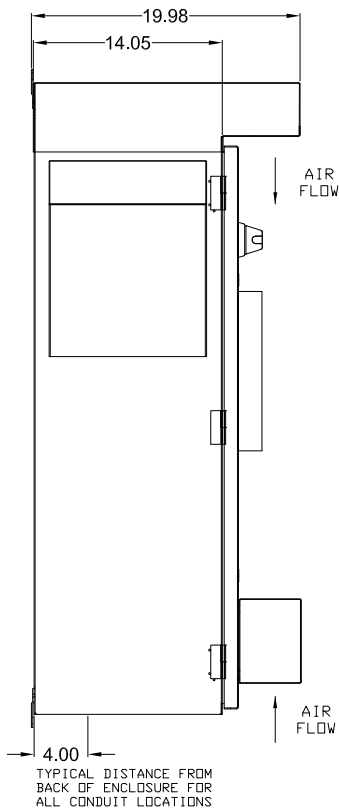
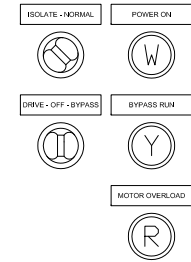
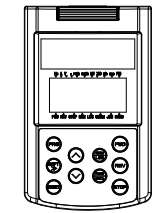
DRN. BY: B. GAYLE
 DATE: 04/14/11
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DWG. NO.: R0A700051
 SHT. 1 OF 1

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- 3) SIDE-MOUNTED RAIN HOODS ARE FOR OPTIONAL 45°C AMBIENT PACKAGE.

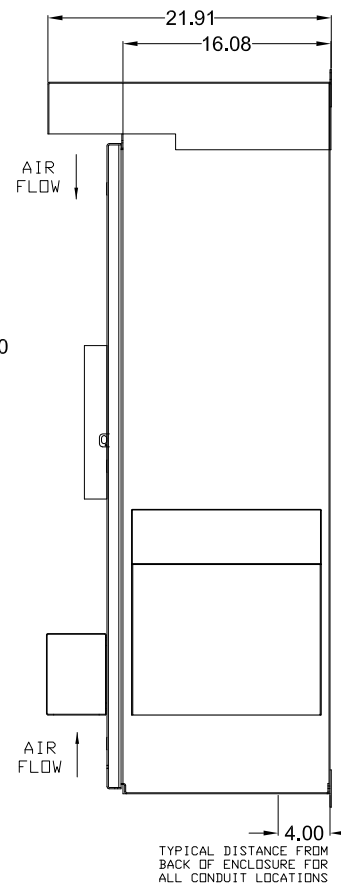
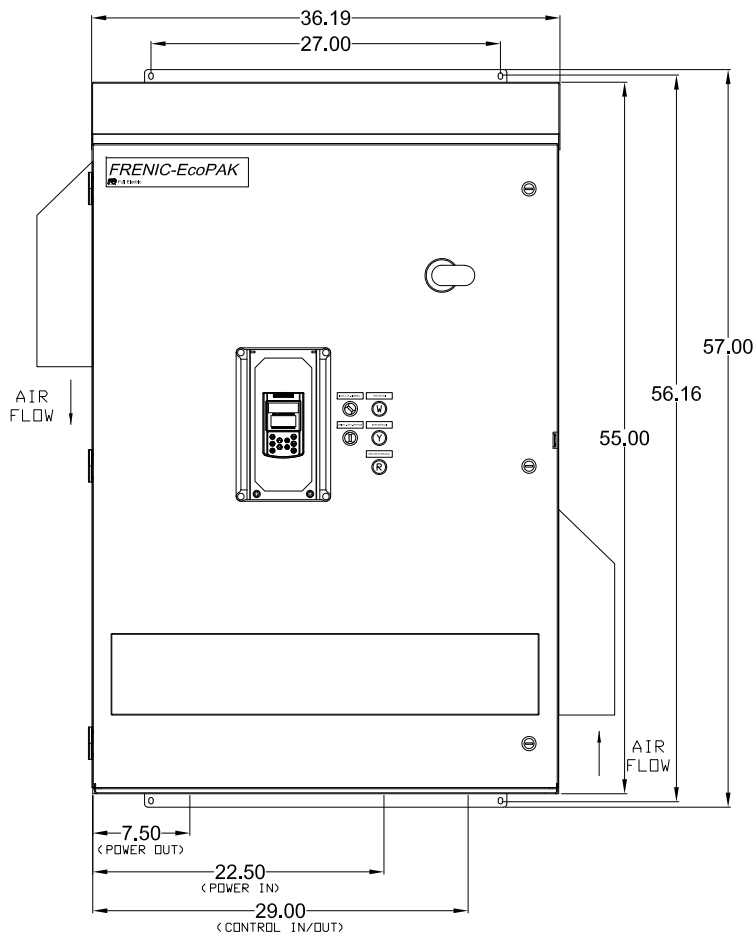
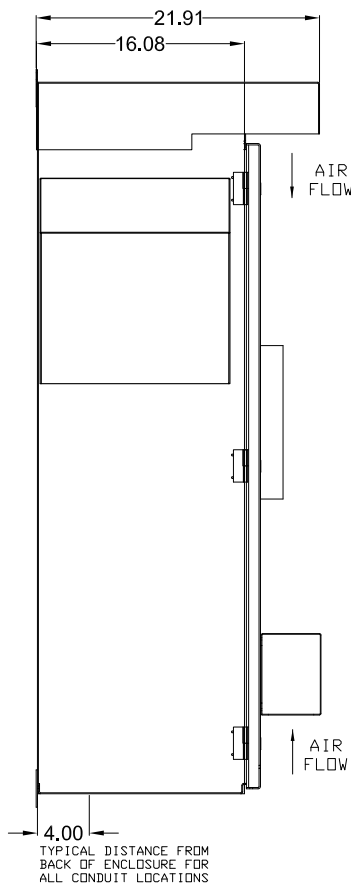
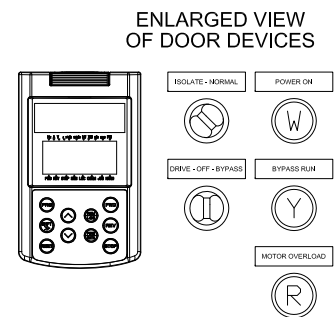
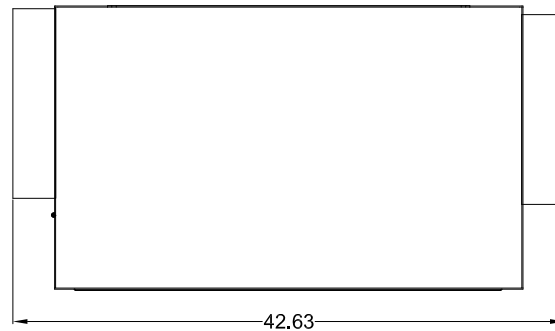


DESCRIPTION: FRENIC-EcoPAK BYPASS TYPE 3R
 7.5 - 15 HP @ 208/230V
 10 - 20 HP @ 460V
 INSTRUCTION BOOK: SEE NOTE 1

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 SHT. 1 OF 1

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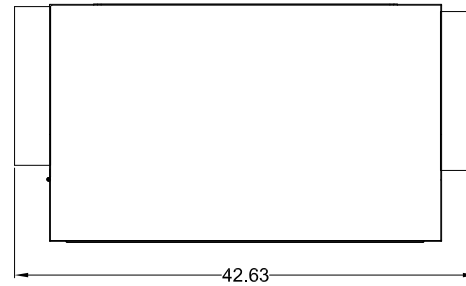


DESCRIPTION: FRENIC-EcoPAK BYPASS TYPE 3R
 20 - 25 HP @ 208/230V
 25 - 40 HP @ 460V
 INSTRUCTION BOOK: SEE NOTE 1

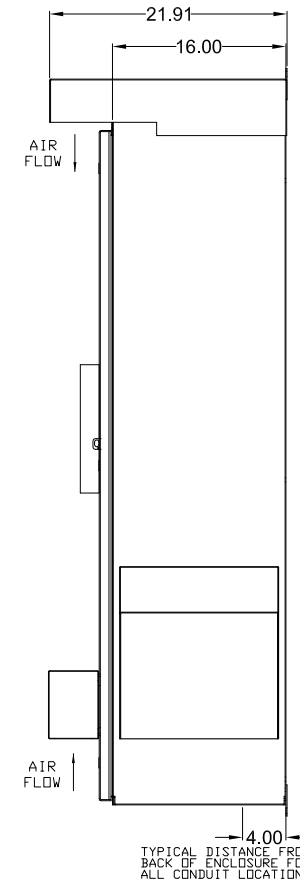
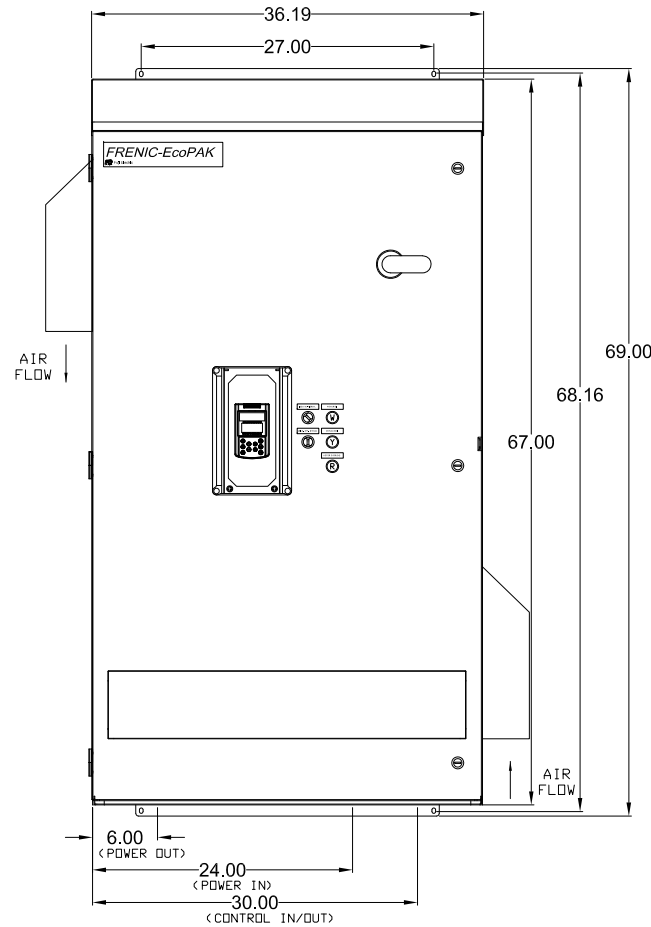
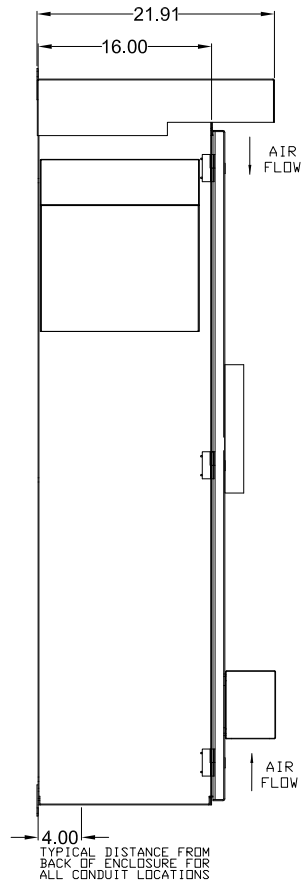
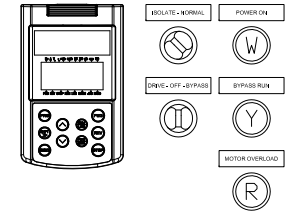
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45°C AMBIENT PACKAGE.



DESCRIPTION: FRENIC-EcoPAK BYPASS TYPE 3R
 30 HP @ 208/230V
 50 - 75 HP @ 460V
 INSTRUCTION BOOK: SEE NOTE 1

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FRENIC-EcoPAK, 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	197	229
3	42.95 x 24.15 x 17.99	197	276
5	42.95 x 24.15 x 17.99	201	361
7.5	48.95 x 30.78 x 19.99	250	548
10	48.95 x 30.78 x 19.99	255	660
15	48.95 x 30.78 x 19.99	266	877
20	57.01 x 42.73 x 21.91	335	1145
25	57.01 x 42.73 x 21.91	360	1275
30	69.00 x 42.63 x 21.91	410	1469
460VAC, 60Hz, 3PH, UL/NEMA Type 3R			
2	42.95 x 24.15 x 17.99	196	200
3	42.95 x 24.15 x 17.99	197	258
5	42.95 x 24.15 x 17.99	197	397
7.5	42.95 x 24.15 x 17.99	203	427
10	48.95 x 30.78 x 19.99	247	632
15	48.95 x 30.78 x 19.99	250	760
20	48.95 x 30.78 x 19.99	263	918
25	57.01 x 42.73 x 21.91	304	1074
30	57.01 x 42.73 x 21.91	310	1236
40	57.01 x 42.73 x 21.91	323	1519
50	69.00 x 42.63 x 21.91	426	1805
60	69.00 x 42.63 x 21.91	437	2090
75	69.00 x 42.63 x 21.91	491	2143