

FRENIC-EcoPAK

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Fuji Electric's FRENIC-EcoPAK series provides a compliant and competitive packaged drive solution.



Submittal Summary



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

Submittal Summary Data Form – UL/NEMA 3R Full Featured 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

Drawing Number Selection Matrix

UL/NEMA Type 3R Bypass

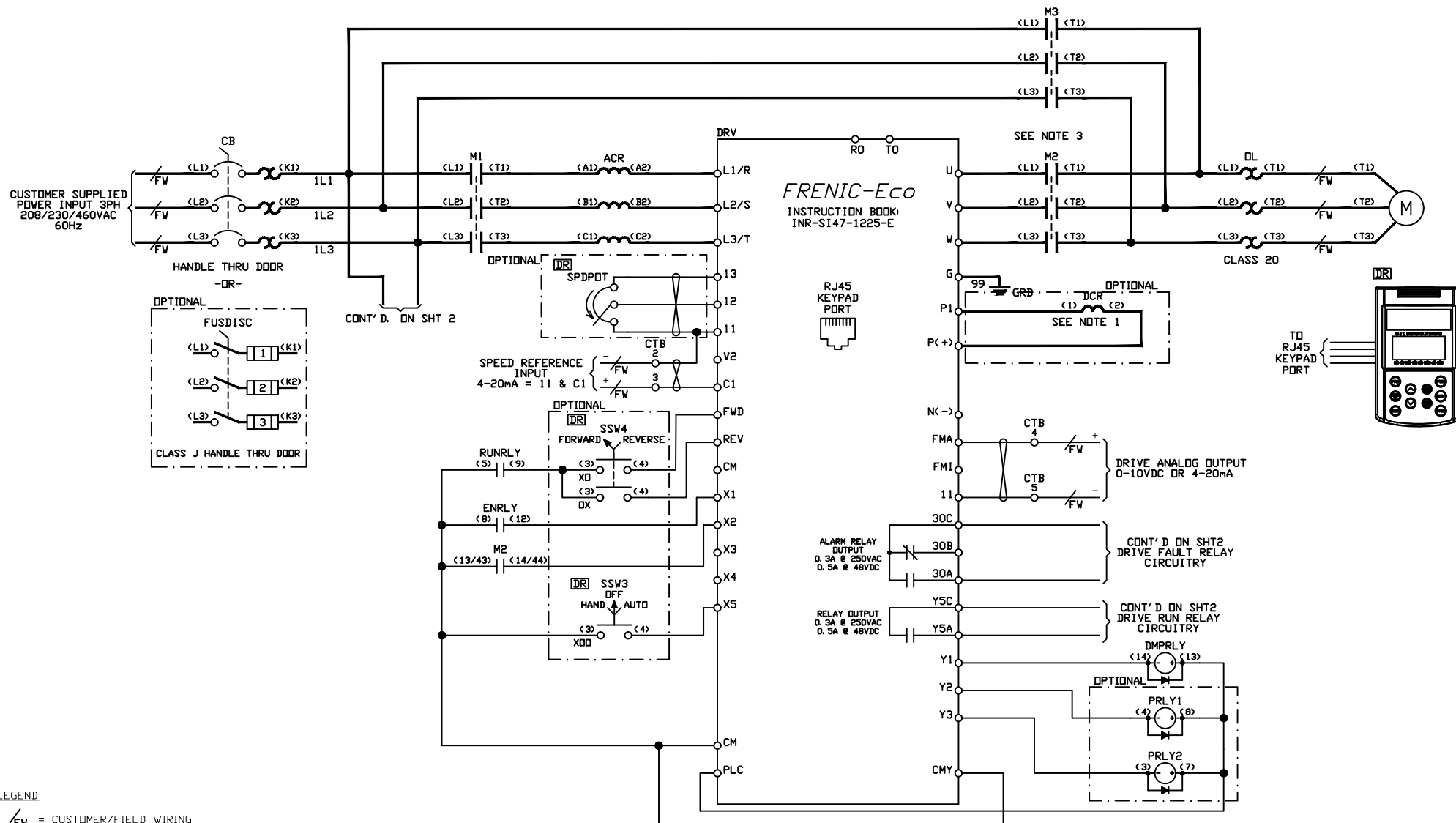
208/230V

HP	Current (A)	Electrical Drawing	Outline Drawing
2	7.5	ROA700281	ROA700273
3	10.6	ROA700281	ROA700273
5	16.7	ROA700281	ROA700273
7.5	24.2	ROA700281	ROA700274
10	30.8	ROA700281	ROA700274
15	46.2	ROA700281	ROA700274
20	59.4	ROA700281	ROA700275
25	74.8	ROA700281	ROA700275
30	88	ROA700281	ROA700276

460V

HP	Current (A)	Electrical Drawing	Outline Drawing
2	3.4	ROA700281	ROA700273
3	4.8	ROA700281	ROA700273
5	7.6	ROA700281	ROA700273
7.5	11	ROA700281	ROA700273
10	14	ROA700281	ROA700274
15	21	ROA700281	ROA700274
20	27	ROA700281	ROA700274
25	34	ROA700281	ROA700275
30	40	ROA700281	ROA700275
40	52	ROA700281	ROA700275
50	65	ROA700281	ROA700276
60	77	ROA700281	ROA700276
75	96	ROA700281	ROA700276

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



LEGEND

/FW = CUSTOMER/FIELD WIRING

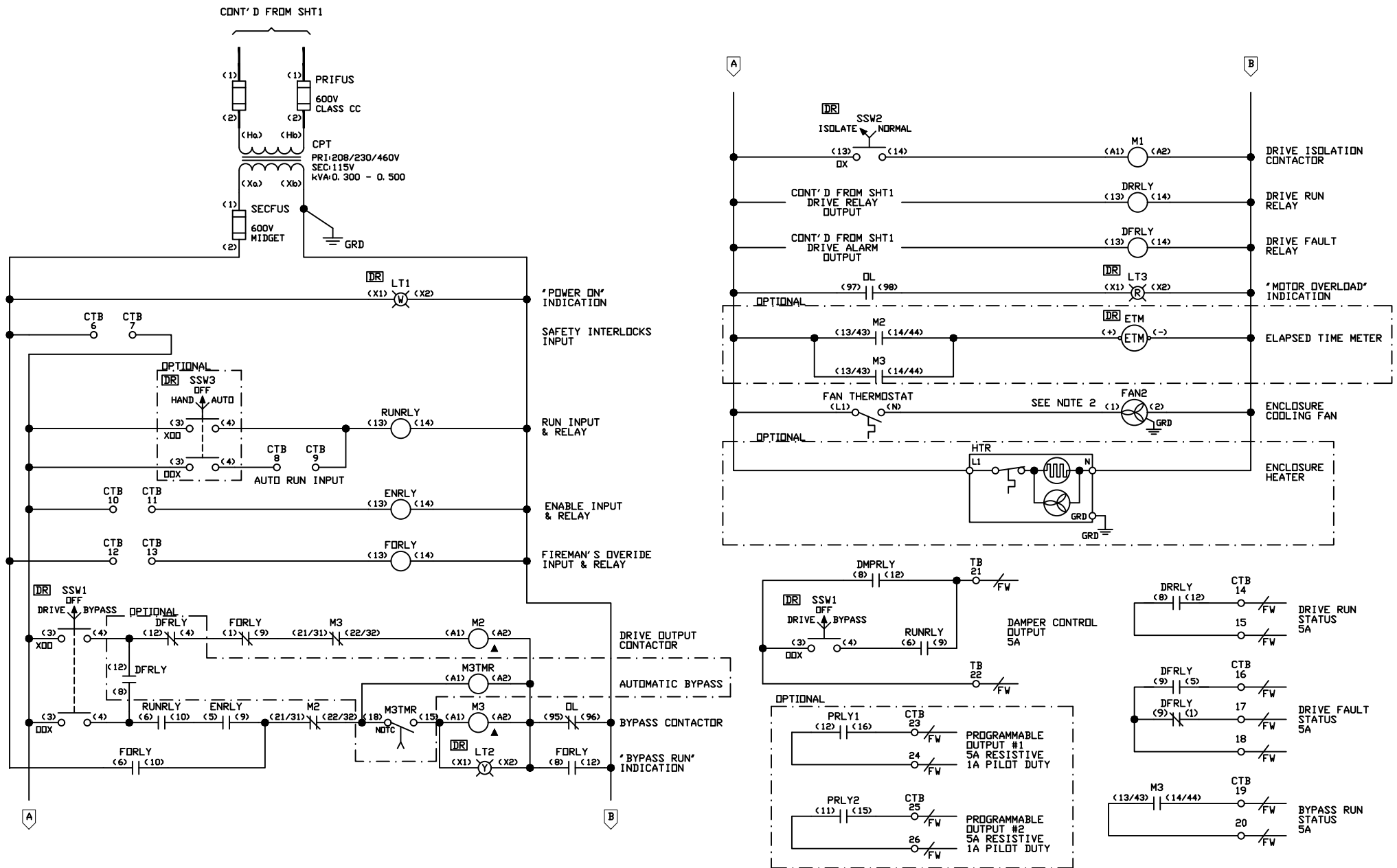
DR = DOOR MOUNTED DEVICE

NOTES:

1) "DCR" IS AN OPTION, AND A JUMPER IS INSTALLED BETWEEN DRIVE TERMINALS P1 & P(+).

2) QTY OF FANS PROVIDED AS REQUIRED, MULTIPLE FANS WIRED IN PARALLEL.

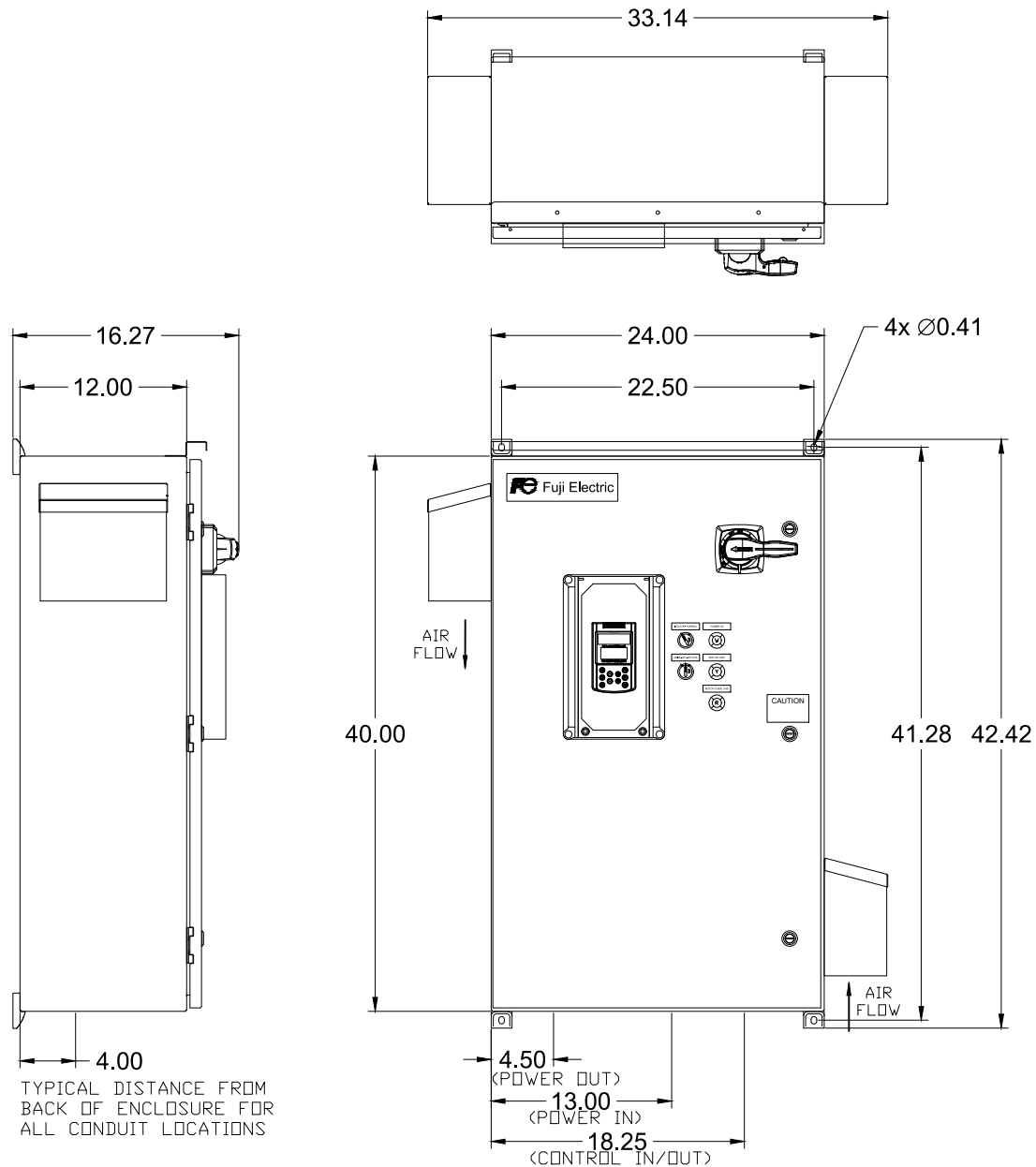
3) "M2" & "M3" ARE ELECTRICALLY AND MECHANICALLY INTERLOCKED.



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		Low Z AC Line Reactor		High Z 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				30	15	200k	100k	See High Z AC Line Reactor		High Z Line Reactor Included as Standard on 208 VAC		LR3 24-6/10	10A/2.2mH
3	10.6	12.6				30	20	200k	100k	See High Z AC Line Reactor				LR3 24-6/16	16A/1.38mH
5	16.7	18.7				30	30	200k	100k	See High Z AC Line Reactor				LR3 24-6/20	20A/1.1mH
7.5	24.2	27	40	22k	5k	60	45	200k	100k	See High Z AC Line Reactor				LR3 24-6/30	30A/.74mH
10	30.8	33	50	22k	5k	60	50	200k	100k	See High Z AC Line Reactor				LR3 24-6/35	35A/.63mH
15	46.2	49	80	22k	5k	100	80	200k	100k	See High Z AC Line Reactor				LR3 24-6/50	50A/.44mH
20	59.4	62	100	22k	5k	100	100	200k	100k	See High Z AC Line Reactor				LR3 24-6/63	63A/.350mH
25	74.8	78	125	25k	5k	200	125	100k	100k	See High Z AC Line Reactor				LR3 24-6/80	80A/.270mH
30	88	91	150	35k	10k	200	150	100k	100k	See High Z AC Line Reactor				LR3 24-6/90	90A/.245mH
460VAC, 60Hz, 3PH															
2	3.4	4.7				30	8	200k	100k	See Low Z AC Line Reactor		LR3 48-3/6	6A/3.700mH	LR3 48-5/6	6A/6.200mH
3	4.8	6				30	10	200k	100k	See Low Z AC Line Reactor		LR3 48-3/8	8A/2.750mH	LR3 48-5/8	8A/4.600mH
5	7.6	9.5				30	15	200k	100k	See Low Z AC Line Reactor		LR3 48-3/10	10A/2.200mH	LR3 48-5/10	10A/3.680mH
7.5	11	12				30	20	200k	100k	See Low Z AC Line Reactor		LR3 48-3/16	16A/1.380mH	LR3 48-5/16	16A/2.300mH
10	14	15				30	25	200k	100k	See Low Z AC Line Reactor		LR3 48-3/16	16A/1.380mH	LR3 48-5/16	16A/2.300mH
15	21	22	40	22k	5k	60	40	200k	100k	See Low Z AC Line Reactor		LR3 48-3/25	25A/.880mH	LR3 48-5/25	25A/1.470mH
20	27	29	50	22k	5k	60	50	200k	100k	See Low Z AC Line Reactor		LR3 48-3/30	30A/.740mH	LR3 48-5/30	30A/1.23mH
25	34	35	60	22k	5k	60	60	200k	100k	See Low Z AC Line Reactor		LR3 48-3/35	35A/.630mH	LR3 48-5/35	35A/1.05mH
30	40	41	70	22k	5k	100	70	200k	100k	See Low Z AC Line Reactor		LR3 48-3/45	45A/.490mH	LR3 48-5/45	45A/.817mH
40	52	53	90	22k	5k	100	90	200k	100k	See Low Z AC Line Reactor		LR3 48-3/50	50A/.440mH	LR3 48-5/50	50A/.735mH
50	65	68	100	22k	5k	100	100	100k	100k	See Low Z AC Line Reactor		LR3 48-3/70	70A/.315mH	LR3 48-5/70	70A/.525mH
60	77	79	125	25k	5k	200	125	100k	100k	See Low Z AC Line Reactor		LR3 48-3/80	80A/.27mH	LR3 48-5/80	80A/.46mH
75	96	97	200	35k	10k	200	175	100k	100k	See Low Z AC Line Reactor		LR3 48-3/100	100A/.22mH	LR3 48-5/100	100A/.368mH

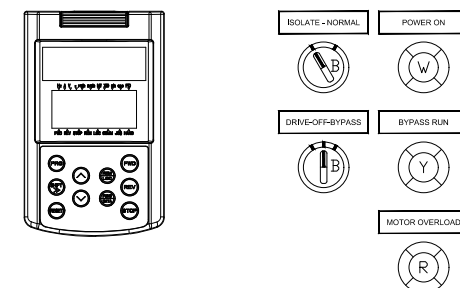
DIMENSIONS PROVIDED FOR ESTIMATING PURPOSES ONLY



NOTES:

- 1) INSTRUCTION BOOKS: FECA-IN-109 FOR FULLY
FEATURED BYPASS & FECA-IN-111 FOR BASIC BYPASS.
2) CONDUIT HUBS TO BE "LIQUID-TIGHT" TYPE TO
MAINTAIN TYPE 3R ENCLOSURE INTEGRITY.

ENLARGED VIEW
OF DOOR DEVICES



DIMENSIONS ARE IN INCHES

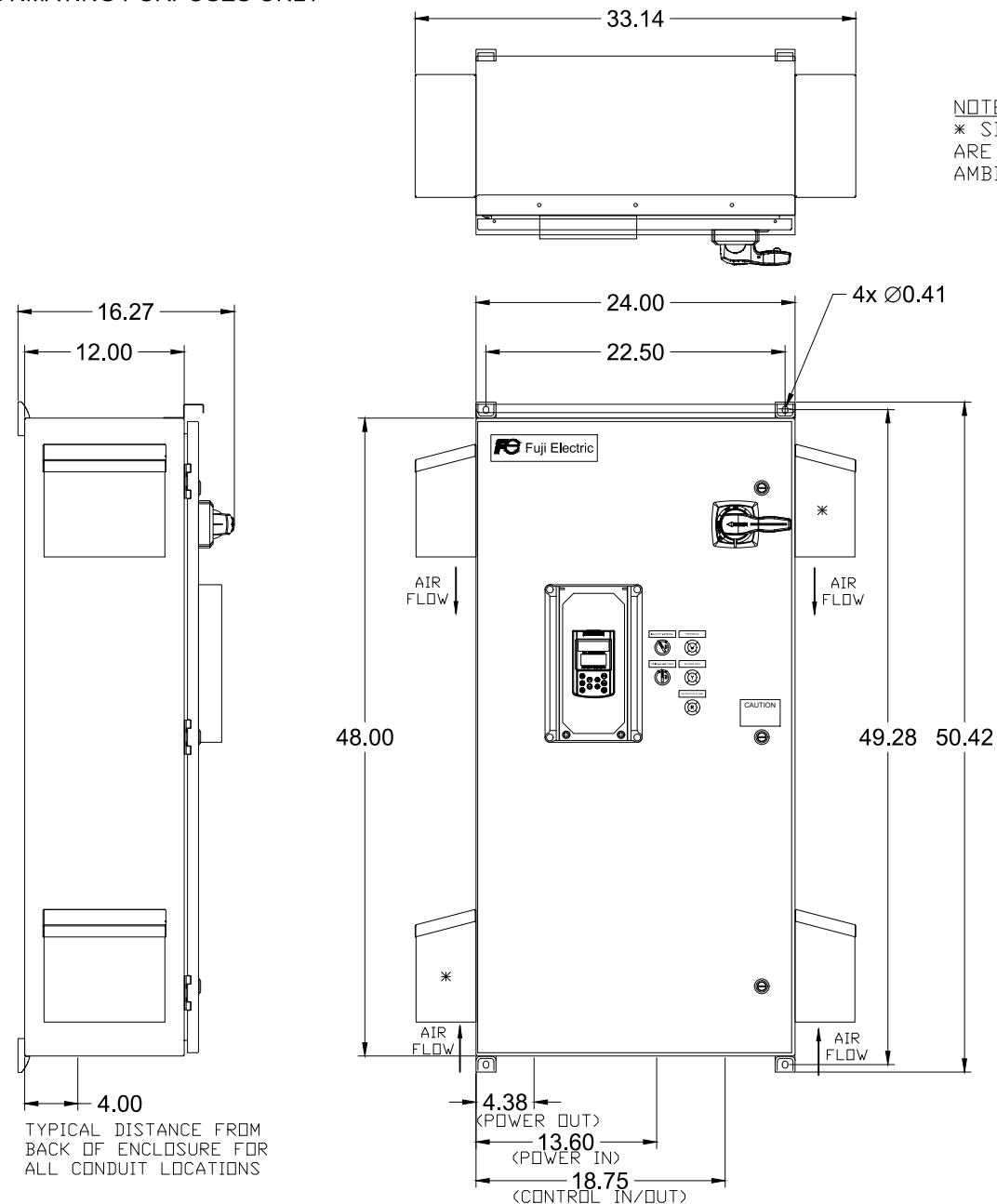


DESCRIPTION:	FRENIC-EcoPAK - BYPASS 2-5Hp @ 208/230V 2-7.5Hp @ 460V NEMA 3R VENT.
INSTRUCTION BOOK:	SEE NOTE 1

DRN. BY:		DATE:
R. MONTES		03/03/20
REV.	REV. DATE:	REV. BY:
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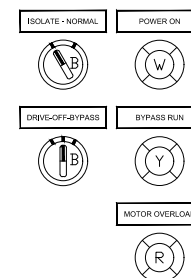
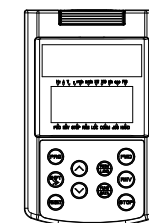
DWG. NO. :
R0A700273
SHT. 1 OF 1

DIMENSIONS PROVIDED FOR ESTIMATING PURPOSES ONLY



NOTE:
* SIDE-MOUNTED RAIN HOODS
ARE FOR OPTIONAL 45°C
AMBIENT PACKAGE.

ENLARGED VIEW
OF DOOR DEVICES



NOTES:

- 1) INSTRUCTION BOOKS: FECA-IN-109 FOR FULLY FEATURED BYPASS & FECA-IN-111 FOR BASIC BYPASS.
- 2) CONDUIT HUBS TO BE "LIQUID-TIGHT" TYPE TO MAINTAIN TYPE 3R ENCLOSURE INTEGRITY.

DIMENSIONS ARE IN INCHES

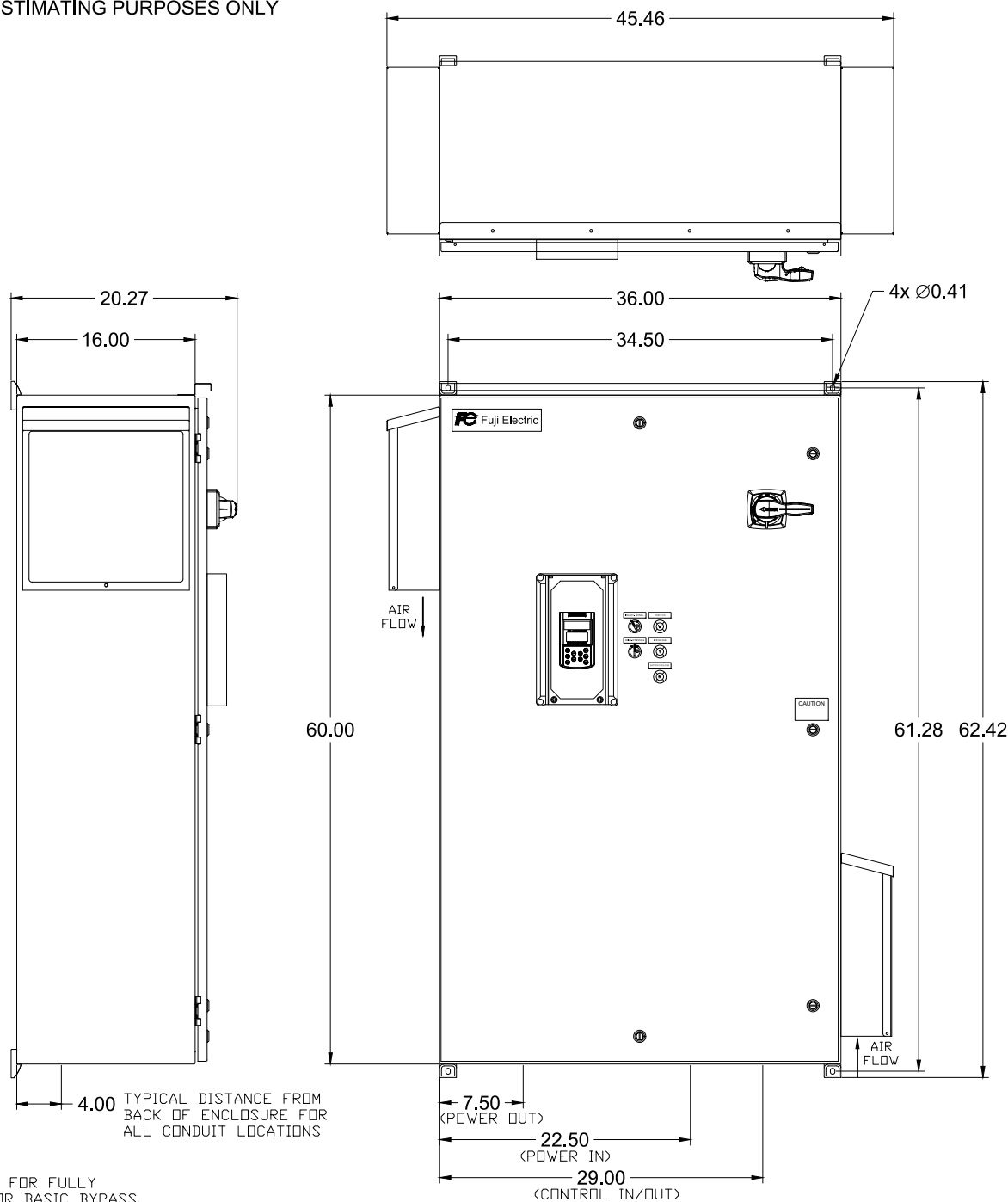


DESCRIPTION: FRENIC-EcoPAK - BYPASS
7.5-15Hp @ 208/230V | 10-20Hp @ 460V
NEMA 3R VENT.
INSTRUCTION BOOK: SEE NOTE 1

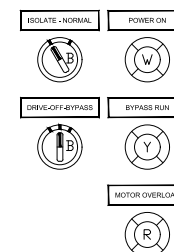
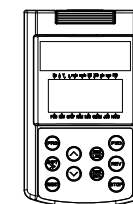
DRN. BY: R. MONTES
DATE: 03/03/20
REV. 0
REV. DATE: REV. BY:

DWG. NO.: R0A700274
SHT. 1 OF 1

DIMENSIONS PROVIDED FOR ESTIMATING PURPOSES ONLY



ENLARGED VIEW
OF DOOR DEVICES



NOTES:

- 1) INSTRUCTION BOOKS: FECA-IN-109 FOR FULLY FEATURED BYPASS & FECA-IN-111 FOR BASIC BYPASS.
- 2) CONDUIT HUBS TO BE "LIQUID-TIGHT" TYPE TO MAINTAIN TYPE 3R ENCLOSURE INTEGRITY.

DIMENSIONS ARE IN INCHES

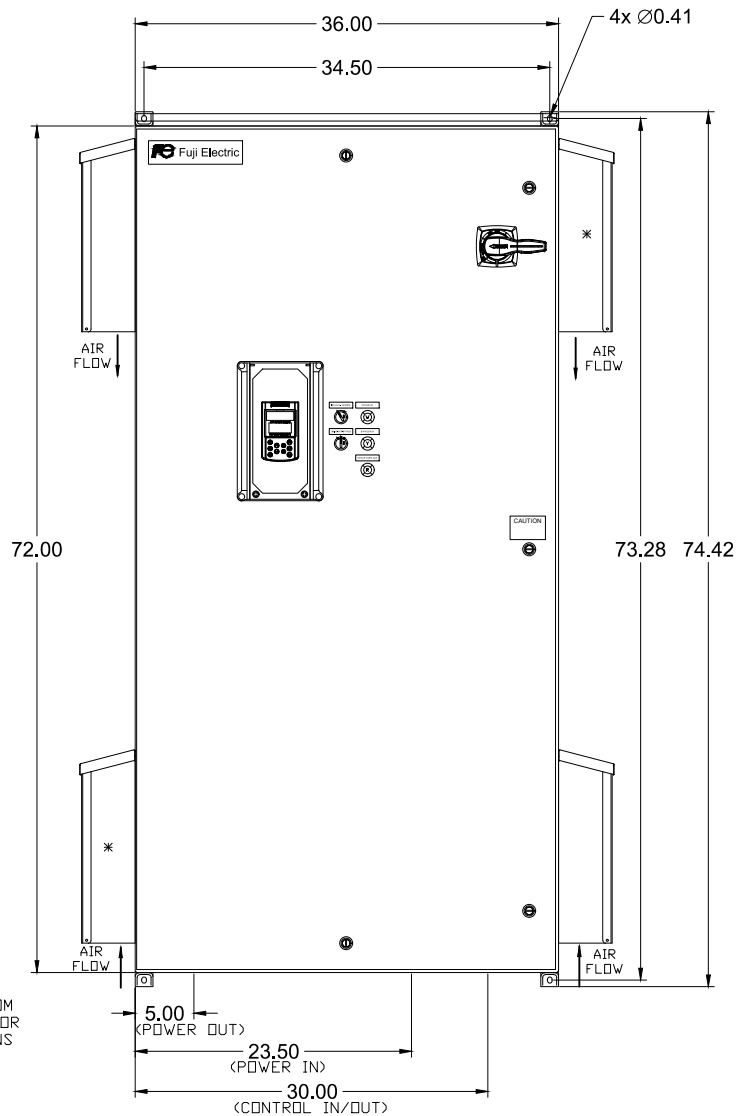
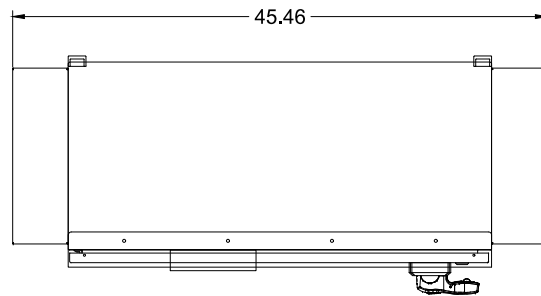
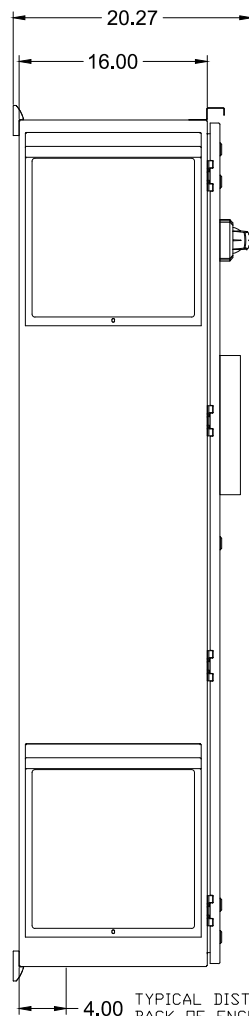


DESCRIPTION: FRENIC-EcoPAK - BYPASS
20-25Hp @ 208/230V | 25-40Hp @ 460V
NEMA 3R VENT.
INSTRUCTION BOOK: SEE NOTE 1

DRN. BY: R. MONTES
DATE: 03/03/20
REV. DATE: REV. BY: 0

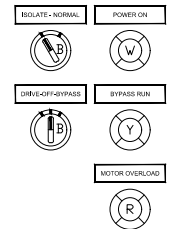
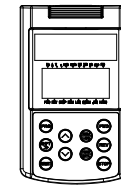
DWG. NO.: R0A700275
SHT. 1 OF 1

DIMENSIONS PROVIDED FOR ESTIMATING PURPOSES ONLY



NOTE:
* SIDE-MOUNTED RAIN HOODS
ARE FOR OPTIONAL 45°C
AMBIENT PACKAGE.

ENLARGED VIEW
OF DOOR DEVICES



NOTES:

- 1) INSTRUCTION BOOKS: FECA-IN-109 FOR FULLY FEATURED BYPASS & FECA-IN-111 FOR BASIC BYPASS.
- 2) CONDUIT HUBS TO BE "LIQUID-TIGHT" TYPE TO MAINTAIN TYPE 3R ENCLOSURE INTEGRITY.

TYPICAL DISTANCE FROM
BACK OF ENCLOSURE FOR
ALL CONDUIT LOCATIONS

DIMENSIONS ARE IN INCHES

FE Fuji Electric

DESCRIPTION: FRENIC-EcoPAK - BYPASS
30Hp @ 208/230V | 50-75Hp @ 460V
NEMA 3R VENT.
INSTRUCTION BOOK: SEE NOTE 1

DRN. BY:	DATE:
R. MONTES	03/03/20
REV. DATE:	REV. BY:
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DWG. NO. :
ROA700276
SHT. 1 OF 1

RENIC-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	42.42 x 33.14 x 16.27	197	229
3	42.42 x 33.14 x 16.27	197	276
5	42.42 x 33.14 x 16.27	201	361
7.5	50.42 x 33.14 x 16.27	250	548
10	50.42 x 33.14 x 16.27	255	660
15	50.42 x 33.14 x 16.27	266	877
20	62.42 x 45.46 x 20.27	335	1145
25	62.42 x 45.46 x 20.27	360	1275
30	74.42 x 45.46 x 20.27	410	1469
460VAC, 60Hz, 3PH, UL/NEMA Type 3R			
2	42.42 x 33.14 x 16.27	196	200
3	42.42 x 33.14 x 16.27	197	258
5	42.42 x 33.14 x 16.27	197	397
7.5	42.42 x 33.14 x 16.27	203	427
10	50.42 x 33.14 x 16.27	247	632
15	50.42 x 33.14 x 16.27	250	760
20	50.42 x 33.14 x 16.27	263	918
25	62.42 x 45.46 x 20.27	304	1074
30	62.42 x 45.46 x 20.27	310	1236
40	62.42 x 45.46 x 20.27	323	1519
50	74.42 x 45.46 x 20.27	426	1805
60	74.42 x 45.46 x 20.27	437	2090
75	74.42 x 45.46 x 20.27	491	2143