

## SED2 Variable Frequency Drive Electronic Bypass (E-Bypass) Options



### Product Description

The SED2 Electronic Bypass (E-Bypass) Options are companion packages for the family of SED2 Variable Frequency Drives (VFDs).

### Product Numbers

VBE... SED2 VFD Electronic Bypass Options

### Contents

The SED2 E-Bypass Option consists of a SED2 VFD and a bypass enclosure with electronic controls. The electronic controls include:

- Controller board
- Keypad
- Step-down power transformer
- Contactors
  - Bypass
  - Output
  - Input (Optional)
- Overload (current) relay
- Reactor (optional)
- Disconnect switch (or optional circuit breaker)
- Fuses (optional)

### Expected Installation Time

- Frames A and B: 15 minutes
- Frames C through E: 30 minutes
- Frame Size F: 60 minutes

### Warning/Caution Notations

<b>WARNING:</b>		Personal injury/loss of life may occur if you do not follow the procedures as specified.
<b>CAUTION:</b>		Equipment damage, or loss of data may occur if you do not follow the procedures as specified.

### Prerequisites

- Check for shipping damage. In the event of damage, contact the transport company.
- Locate the E-Bypass option nameplate and confirm the unit is configured to installation requirements.

### Installation



#### CAUTION:

On installation of a SED2 after extended storage, see the Extended Storage: Conditioning of Capacitors section in the *SED2 VFD Startup, Operation, and Maintenance Manual (125-3201)*. If capacitors are not properly recharged, catastrophic damage to the drive can result.

### Environmental Conditions

Install the E-Bypass Option in a heated, indoor controlled environment that is free of moisture and conductive contaminants such as condensation and dust.

The air entering the unit for ventilation/cooling must be clean and free from corrosive materials.

The ambient temperature must be between 14°F and 104°F (-10°C and 40°C), and the relative humidity must be 0° to 95° non-condensing.

**NOTE:** Do not mount unit in direct sunlight.



#### CAUTION:

Height above sea level: If installing a SED2 at an altitude of higher than 3280 ft (1000 m), derating is required.

Table 1. Bypass Frame Sizes and Power Ranges.

HP	kW	208/240V	480V	575V
.5	.37	A	A	C
.75	.55			
1	.75			
1.5	1.1	B	C	
2	1.5			
3	2.2			
5	4	C	C	
7.5	5.5			
10	7.5			
15	11	D	D	
20	15			
25	18.5			
30	22	E	D	D
40	30	F	E	E
50	37			
60	45			
75	55	N/A	F	F
100	75			
125	90			
HA1	-			N/A

Table 2. E-Bypass Output Current Ratings (Amps) — Per NEC Motor Tables.

HP	.5	.75	1	1.5	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	HA1
208V	2.3	3.0	3.9	5.5	7.4	10.4	16.7	22	28	42	54	68	80	104	130	154	-	-	-	-
240V	2.2	3.0	3.9	5.5	6.8	9.6	15.2	22	28	42	54	68	80	104	130	154	-	-	-	-
480V	1.1	1.6	2.1	3.0	3.4	4.8	7.6	11	14	21	27	34	40	52	65	77	96	124	156	178
575V	.9	1.3	1.4	2.1	2.7	3.9	6.1	9	11	17	22	27	32	41	52	62	77	99	125	-

NOTE: Drives are current rated devices. Verify that the listed ratings are ≥ the motor full load current rating.

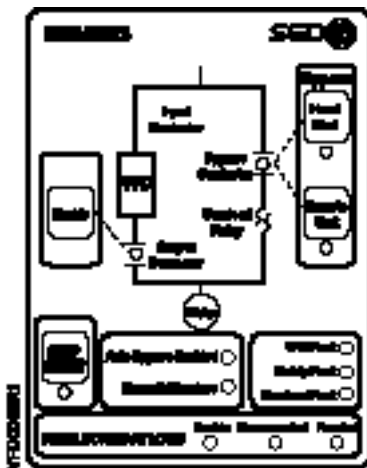


Figure 1. Two Contactor Unit Keypad.

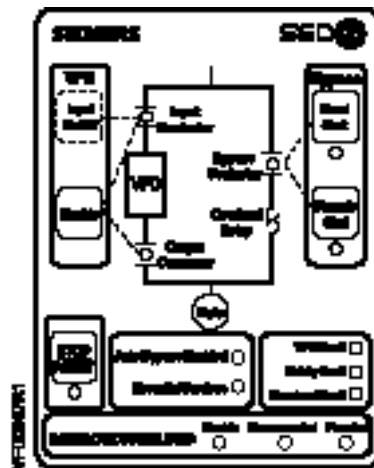


Figure 2. Three Contactor Unit Keypad.

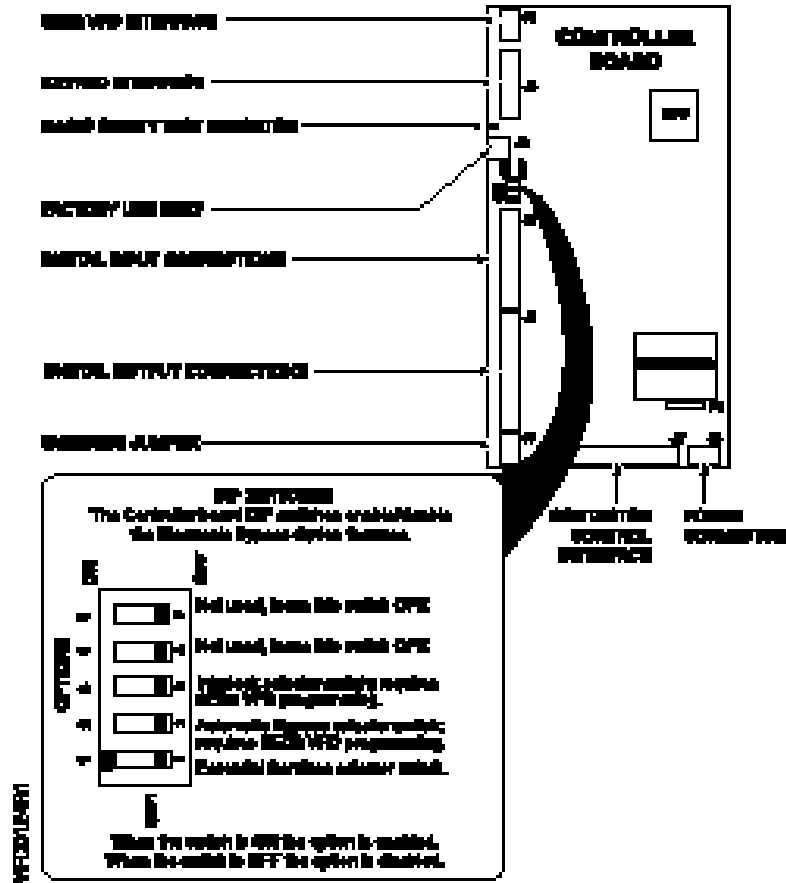


Figure 3. Controller Board.

## Mounting and Dimensions

**Mounting Clearance:** Leave six inches (150 mm) of space at top and sides of the unit for equipment access.

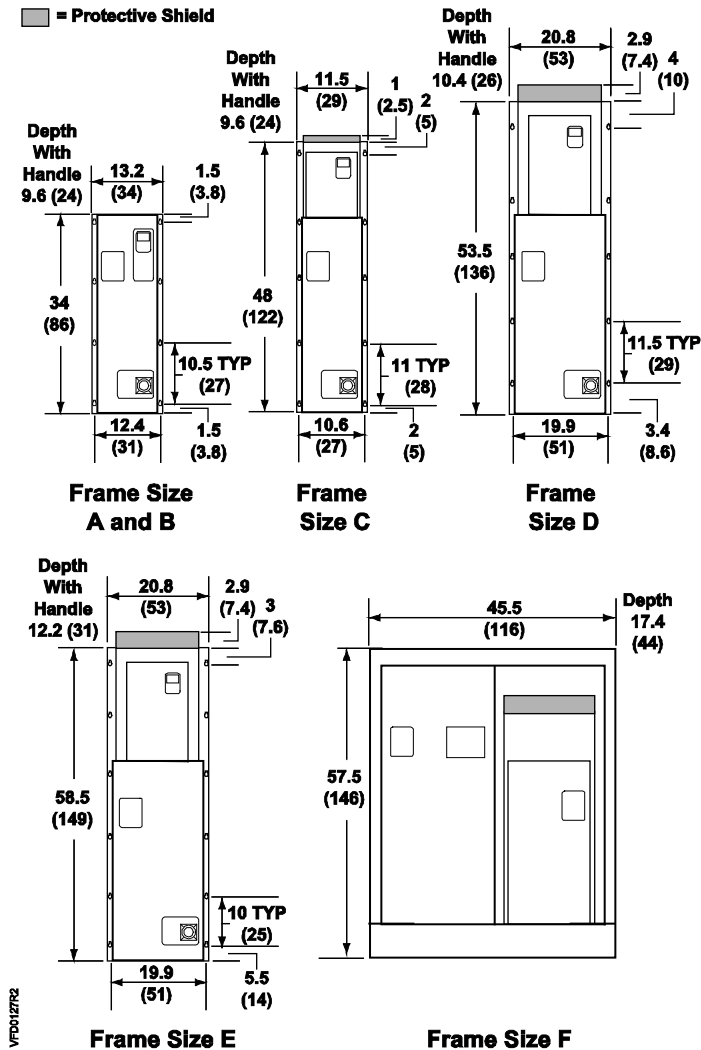


Figure 4. E-Bypass Overall and Mounting Dimensions in Inches (Centimeters).

Table 3. E-Bypass Approximate Weights.

Bypass Frame Size	Weight lb (kg)
A	45 (20)
B	55 (25)
C	75 (34)
D	150 (68)
E	180 (82)
F	470 (213)

**NOTE:** Exact weight will be affected by actual horsepower/voltage and selected power options.

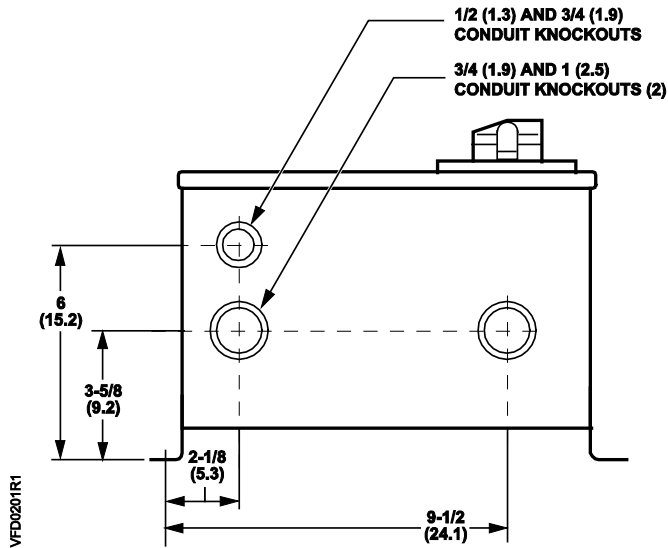


Figure 5. Frame Sizes A through C Conduit Locations. Viewed from Bottom; Dimensions in Inches (Centimeters).

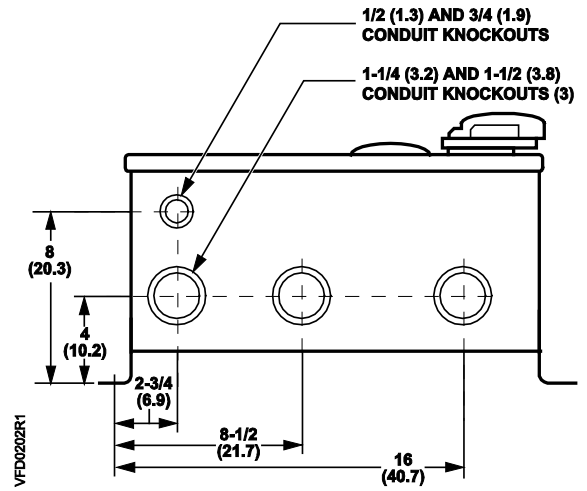


Figure 6. Frame Sizes D and E Conduit Locations. Viewed from Bottom; Dimensions in Inches (Centimeters).

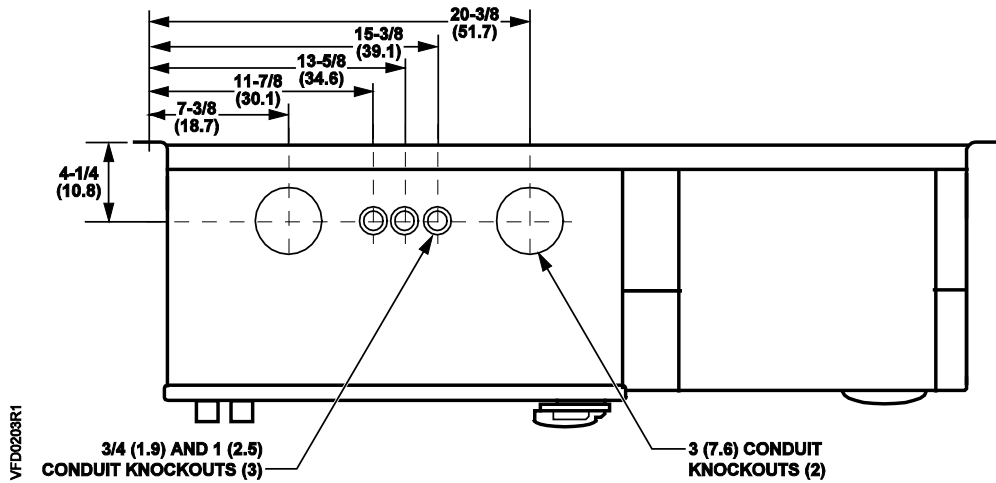


Figure 7. Frame Size F Conduit Locations. Viewed from Top; Dimensions in Inches (Centimeters).

## Wiring

### Wire Sizes and Tightening Torques

Table 4. Wire Sizes and Tightening Torques for E-Bypass with 208V Drive.

Part Number	Bypass Frame Size	HP	kW	Amps	Circuit Breaker		Disconnect Switch		Overload				Ground Lug	
					Wire Size *	Torque, lb-in (Nm)	Wire Size *	Torque, lb-in (Nm)	Wire Size *	Torque, lb-in (Nm)	Range, Amps	Max Backup Fuse, Amps	Wire Size *	Torque, lb-in (Nm)
VBE10.5----	A	0.5	0.37	2.3	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	1.8 - 2.5	10	14-2	35 (4)
VBE10.7----	A	0.7	0.55	3.0	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	2.2 - 3.2	12	14-2	35 (4)
VBE11.0----	A	1.0	0.75	3.9	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	2.8 - 4	16	14-2	35 (4)
VBE11.5----	B	1.5	1.1	5.5	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	4.5 - 6.3	25	14-2	35 (4)
VBE12.0----	B	2.0	1.5	7.4	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	5.5 - 8.0	30	14-2	35 (4)
VBE13.0----	B	3.0	2.2	10.4	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	7 - 10	40	14-2	35 (4)
VBE15.0----	C	5.0	4.0	16.7	14-10 Cu	32 (3.6)	14-8	17 - 22 (1.9 - 2.5)	14-10	18 - 22 (2 - 25)	14 - 20	80	14-2	35 (4)
VBE17.5----	C	7.5	5.5	22.0	14-10 Cu	20 - 60 (2.2 - 6.8)	14-8	17 - 22 (1.9 - 2.5)	14-10	18 - 22 (2 - 25)	20 - 25	100	14-2	35 (4)
VBE110.----	C	10	7.5	28	10-1/0 Cu	20 - 60 (2.2 - 6.8)	14-8	17 - 22 (1.9 - 2.5)	18-3	27 - 40 (3.1 - 4.5)	22 - 32	125	14-2	35 (4)
VBE115.----	D	15	11.0	42	10-1/0 Cu	20 - 60 (2.2 - 6.8)	14-6	22 - 27 (2.5 - 3.1)	18-3	27 - 40 (3.1 - 4.5)	40 - 50	200	14-2	35 (4)
VBE120.----	D	20	15.0	54	10-1/0 Cu	20 - 60 (2.2 - 6.8)	12-1	22 - 27 (2.5 - 3.1)	10-1/0	36 - 53 (4.1 - 6)	45 - 63	250	14-2	35 (4)
VBE125.----	D	25	18.5	68	3-3/0-3 Cu	80 (9)	12-1	22 - 27 (2.5 - 3.1)	10-1/0	36 - 53 (4.1 - 6)	57 - 75	300	14-2	35 (4)
VBE130.----	E	30	22.0	80	3-3/0-3 Cu	80 (9)	12-1	22 - 27 (2.5 - 3.1)	10-1/0	36 - 53 (4.1 - 6)	70 - 90	350	14-2	35 (4)
VBE140.----	F	40	30.0	104	6 - 350 kcmil Cu	120 - 275 (14 - 31.1)	12-1	22 - 27 (2.5 - 3.1)	6-3/0	124 - 210 (14 - 23.7)	50 - 200	800	14-2/0	50 (5.6)
VBE150.----	F	50	37.0	130	6 - 350 kcmil Cu	120 - 275 (14 - 31.1)	6 - 350 kcmil	120 - 275 (13.5 - 31.1)	6-3/0	124 - 210 (14 - 23.7)	50 - 200	800	14-2/0	50 (5.6)
VBE160.----	F	60	45.0	154	6 - 350 kcmil Cu	120 - 275 (14 - 31.1)	6 - 350 kcmil	120 - 275 (13.5 - 31.1)	6-3/0	124 - 210 (14 - 23.7)	50 - 200	800	14-2/0	50 (5.6)

\* Wire Size in AWG unless noted otherwise. Use Copper (Cu) wire that is rated 167°F (75°C) minimum, 600 Vac.

**Table 5. Wire Sizes and Tightening Torques E-Bypass with 230V to 240V Drive.**

Part Number	Bypass Frame Size	HP	kW	Amps	Circuit Breaker		Disconnect Switch		Overload				Ground Lug	
					Wire Size *	Torque, lb-in (Nm)	Wire Size *	Torque, lb-in (Nm)	Wire Size *	Torque, lb-in (Nm)	Range, Amps	Max Backup Fuse, Amps	Wire Size *	Torque, lb-in (Nm)
VBE20.5---	A	0.5	0.37	2.2	14-10 Cu	32 (3.6)	18-10	13 - (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	1.8 - 2.5	10	14-2	35 (4)
VBE20.7---	A	0.7	0.55	3.0	14-10 Cu	32 (3.6)	18-10	13 - (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	2.2 - 3.2	12	14-2	35 (4)
VBE21.0---	A	1.0	0.75	3.9	14-10 Cu	32 (3.6)	18-10	13 - (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	2.8 - 4	16	14-2	35 (4)
VBE21.5---	B	1.5	1.1	5.5	14-10 Cu	32 (3.6)	18-10	13 - (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	4.5 - 6.3	25	14-2	35 (4)
VBE22.0---	B	2.0	1.5	6.8	14-10 Cu	32 (3.6)	18-10	13 - (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	5.5 - 8.0	30	14-2	35 (4)
VBE23.0---	B	3.0	2.2	9.6	14-10 Cu	32 (3.6)	18-10	13 - (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	7 - 10	40	14-2	35 (4)
VBE25.0---	C	5.0	4.0	15.2	14-10 Cu	32 (3.6)	14-8	17 - 22 (1.9 - 2.5)	14-10	18 - 22 (2 - 25)	14 - 20	80	14-2	35 (4)
VBE27.5---	C	7.5	5.5	22	14-10 Cu	20 - 60 (2.2 - 6.8)	14-8	17 - 22 (1.9 - 2.5)	14-10	18 - 22 (2 - 25)	20 - 25	100	14-2	35 (4)
VBE210----	C	10	7.5	28	10-1/0 Cu	20 - 60 (2.2 - 6.8)	14-8	17 - 22 (1.9 - 2.5)	18-3	27 - 40 (3.1 - 4.5)	22 - 32	125	14-2	35 (4)
VBE215----	D	15	11.0	42	10-1/0 Cu	20 - 60 (2.2 - 6.8)	14-6	22 - 27 (2.5 - 3.1)	18-3	27 - 40 (3.1 - 4.5)	40 - 50	200	14-2	35 (4)
VBE220----	D	20	15.0	54	10-1/0 Cu	20 - 60 (2.2 - 6.8)	12-1	22 - 27 (2.5 - 3.1)	10-1/0	36 - 53 (4.1 - 6)	45 - 63	250	14-2	35 (4)
VBE225----	D	25	18.5	68	3-3/0-3 Cu	80 (9)	12-1	22 - 27 (2.5 - 3.1)	10-1/0	36 - 53 (4.1 - 6)	57 - 75	300	14-2	35 (4)
VBE230----	E	30	22.0	80	3-3/0-3 Cu	80 (9)	12-1	22 - 27 (2.5 - 3.1)	10-1/0	36 - 53 (4.1 - 6)	70 - 90	350	14-2	35 (4)
VBE240----	F	40	30.0	104	6 - 350 kcmil Cu	120 - 275 (14 - 31.1)	12-1	22 - 27 (2.5 - 3.1)	6-3/0	124 - 210 (14 - 23.7)	50 - 200	800	14-2/0	50 (5.6)
VBE250----	F	50	37.0	130	6 - 350 kcmil Cu	120 - 275 (14 - 31.1)	6 - 350 kcmil	120 - 275 (13.5 - 31.1)	6-3/0	124 - 210 (14 - 23.7)	50 - 200	800	14-2/0	50 (5.6)
VBE260----	F	60	45.0	154	6 - 350 kcmil Cu	120 - 275 (14 - 31.1)	6 - 350 kcmil	120 - 275 (13.5 - 31.1)	6-3/0	124 - 210 (14 - 23.7)	50 - 200	800	14-2/0	50 (5.6)

\* Wire Size in AWG unless noted otherwise. Use Copper (Cu) wire that is rated 167°F (75°C) minimum, 600 Vac.

**Table 6. Wire Sizes and Tightening Torques for E-Bypass with 380V to 480V Drive.**

Part Number	Bypass Frame Size	HP	kW	Amps	Circuit Breaker		Disconnect Switch		Overload			Ground Lug		
					Wire Size *	Torque, lb-in (Nm)	Wire Size *	Torque, lb-in (Nm)	Wire Size *	Torque, lb-in (Nm)	Range, Amps	Max Backup Fuse, Amps	Wire Size *	Torque, lb-in (Nm)
VBE30.5----	A	0.5	0.37	1.1	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	.7 - 1.0	4	14-2	35 (4)
VBE30.7----	A	0.7	0.55	1.6	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	1.1 - 1.6	6	14-2	35 (4)
VBE31.0----	A	1.0	0.75	2.1	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	1.4 - 2.0	8	14-2	35 (4)
VBE31.5----	A	1.5	1.1	3.0	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	2.2 - 3.2	12	14-2	35 (4)
VBE32.0----	A	2.0	1.5	3.4	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	2.8 - 4	16	14-2	35 (4)
VBE33.0----	B	3.0	2.2	4.8	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	3.5 - 5	20	14-2	35 (4)
VBE35.0----	B	5.0	4.0	7.6	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	7 - 10	40	14-2	35 (4)
VBE37.5----	C	7.5	5.5	11	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	9 - 12	45	14-2	35 (4)
VBE310----	C	10	7.5	14	14-10 Cu	32 (3.6)	18-10	13 to 17 (1.5 - 1.7)	14-10	18 - 22 (2 - 2.5)	11 - 16	60	14-2	35 (4)
VBE315----	C	15	11.0	21	14-10 Cu	20 - 60 (2.2 - 6.8)	14-8	17 - 22 (1.9 - 2.5)	14-10	18 - 22 (2 - 2.5)	17 - 22	80	14-2	35 (4)
VBE320----	C	20	15.0	27	10-1/0 Cu	20 - 60 (2.2 - 6.8)	14-8	17 - 22 (1.9 - 2.5)	18-3	27 - 40 (3.1 - 4.5)	22 - 32	125	14-2	35 (4)
VBE325----	D	25	18.5	34	10-1/0 Cu	20 - 60 (2.2 - 6.8)	14-6	22 - 27 (2.5 - 3.1)	18-3	27 - 40 (3.1 - 4.5)	28 - 40	150	14-2	35 (4)
VBE330----	D	30	22.0	40	10-1/0 Cu	20 - 60 (2.2 - 6.8)	14-6	22 - 27 (2.5 - 3.1)	18-3	27 - 40 (3.1 - 4.5)	28 - 40	150	14-2	35 (4)
VBE340----	D	40	30.0	52	10-1/0 Cu	20 - 60 (2.2 - 6.8)	14-6	22 - 27 (2.5 - 3.1)	18-3	27 - 40 (3.1 - 4.5)	40 - 50	200	14-2	35 (4)
VBE350----	E	50	37.0	65	10-1/0 Cu	20 - 60 (2.2 - 6.8)	12-1	22 - 27 (2.5 - 3.1)	10-1/0	36 - 53 (4.1 - 6)	57 - 75	300	14-2	35 (4)
VBE360----	E	60	45.0	77	3-3/0 Cu	80 (9)	12-1	22 - 27 (2.5 - 3.1)	10-1/0	36 - 53 (4.1 - 6)	70 - 90	350	14-2	35 (4)
VBE375----	F	75	55.0	96	3-3/0 Cu	80 (9)	12-1	22 - 27 (2.5 - 3.1)	10-1/0	36 - 53 (4.1 - 6)	80 - 100	400	14-2/0	50 (5.6)
VBE3100----	F	100	75.0	124	6 - 350 kcmil Cu	120 - 275 (14 - 31.1)	6 - 350 kcmil	120 - 275 (13.5 - 31.1)	6-3/0	124 - 210 (14 - 23.7)	50 - 200	800	14-2/0	50 (5.6)
VBE3125----	F	125	90.0	156	6 - 350 kcmil Cu	120 - 275 (14 - 31.1)	6 - 350 kcmil	120 - 275 (13.5 - 31.1)	6-3/0	124 - 210 (14 - 23.7)	50 - 200	800	14-2/0	50 (5.6)
VBE3125--- HA1	F	—	90.0	178	6 - 350 kcmil Cu	120 - 275 (14 - 31.1)	6 - 350 kcmil	120 - 275 (13.5 - 31.1)	6-3/0	124 - 210 (14 - 23.7)	50 - 200	800	14-2/0	50 (5.6)

\* Wire Size in AWG unless noted otherwise. Use Copper (Cu) wire that is rated 167°F (75°C) minimum, 600 Vac.



**Table 7. Wire Sizes and Tightening Torques for E-Bypass with 500V to 600V Drive.**

Part Number	Bypass Frame Size	HP	kW	Amps	Circuit Breaker		Disconnect Switch		Overload				Ground Lug	
					Wire Size *	Torque, lb-in (Nm)	Wire Size *	Torque, lb-in (Nm)	Wire Size *	Torque, lb-in (Nm)	Range, Amps	Max Backup Fuse, Amps	Wire Size *	Torque, lb-in (Nm)
VBE40.5----	C	0.5	0.37	.9	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	.7 - 1.0	4	14-2	35 (4)
VBE40.7----	C	0.7	0.55	1.3	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	.9 - 1.25	5	14-2	35 (4)
VBE41.0----	C	1.0	0.75	1.4	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	1.1 - 1.6	6	14-2	35 (4)
VBE41.5----	C	1.5	1.1	2.1	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	1.8 - 2.5	10	14-2	35 (4)
VBE42.0----	C	2.0	1.5	2.7	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	2.2 - 3.2	12	14-2	35 (4)
VBE43.0----	C	3.0	2.2	3.9	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	2.8 - 4	16	14-2	35 (4)
VBE45.0----	C	5.0	4.0	6.1	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	4.5 - 6.3	25	14-2	35 (4)
VBE47.5----	C	7.5	5.5	9	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	7 - 10	40	14-2	35 (4)
VBE410.----	C	10	7.5	11	14-10 Cu	32 (3.6)	18-10	13 - 17 (1.5 - 1.7)	18-14	7 - 10.3 (8 - 1.2)	9 - 2	45	14-2	35 (4)
VBE415.----	C	15	11.0	17	14-10 Cu	32 (3.6)	14-8	17 - 22 (1.9 - 2.5)	14-10	18 - 22 (2 - 2.5)	14 - 20	80	14-2	35 (4)
VBE420.----	C	20	15.0	22	10-1/0 Cu	20 - 60 (2.2 - 6.8)	14-8	17 - 22 (1.9 - 2.5)	14-10	18 - 22 (2 - 2.5)	17 - 22	80	14-2	35 (4)
VBE425.----	C	25	18.5	27	10-1/0 Cu	20 - 60 (2.2 - 6.8)	14-6	22 - 27 (2.5 - 3.1)	18-3	27 - 40 (3.1 - 4.5)	22 - 32	125	14-2	35 (4)
VBE430.----	D	30	22.0	32	10-1/0 Cu	20 - 60 (2.2 - 6.8)	14-6	22 - 27 (2.5 - 3.1)	18-3	27 - 40 (3.1 - 4.5)	28 - 40	150	14-2	35 (4)
VBE440.----	D	40	30.0	41	10-1/0 Cu	20 - 60 (2.2 - 6.8)	14-6	22 - 27 (2.5 - 3.1)	18-3	27 - 40 (3.1 - 4.5)	36 - 45	175	14-2	35 (4)
VBE450.----	E	50	37.0	52	10-1/0 Cu	20 - 60 (2.2 - 6.8)	14-6	22 - 27 (2.5 - 3.1)	18-3	27 - 40 (3.1 - 4.5)	40 - 50	200	14-2	35 (4)
VBE460.----	E	60	45.0	62	10-1/0 Cu	20 - 60 (2.2 - 6.8)	12-1	22 - 27 (2.5 - 3.1)	10-1/0	36 - 53 (4.1 - 6)	45 - 63	250	14-2	35 (4)
VBE475.----	F	75	55.0	77	3-3/0 Cu	80 (9)	12-1	22 - 27 (2.5 - 3.1)	10-1/0	36 - 53 (4.1 - 6)	70 - 90	350	14-2/0	50 (5.6)
VBE4100----	F	100	75.0	99	3-3/0 Cu	80 (9)	12-1	22 - 27 (2.5 - 3.1)	10-1/0	36 - 53 (4.1 - 6)	80 - 100	400	14-2/0	50 (5.6)
VBE4125----	F	125	90.0	125	6 - 350 kcmil Cu	120 - 275 (14 - 31.1)	6 - 350 kcmil	120 - 275 (14 - 31.1)	10-1/0	124 - 210 (14 - 23.7)	50 - 200	800	14-2/0	50 (5.6)

\* Wire Size in AWG unless noted otherwise. Use Copper (Cu) wire that is rated 167°F (75°C) minimum, 600 Vac.

## Motor Cable Length

Maximum motor cable length is 164 ft (50 m). Motor cable length is given to ensure performance of only the SED2, not the suitability of the motor when connected to a SED2 at this distance. See Figure 8 for motor cable installation notes.

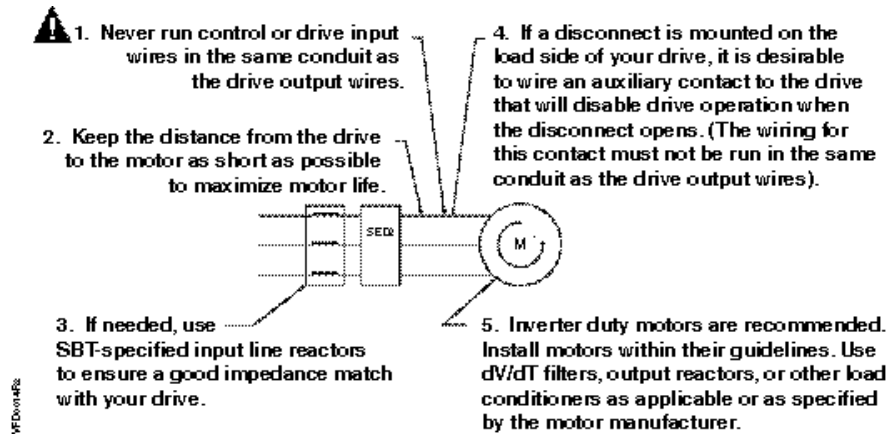


Figure 8. Motor Cable Installation Notes.

## Wiring Connections

See Figures 12 and 13 for all E-Bypass wiring.

1. Route shielded twisted pair (recommended wire type) cable, 24-gauge minimum *control wiring* in conduit through knockout and into housing (Figures 9 through 11). Connect control wiring per job-specific drawings and Figure 12.

### NOTES:

- Terminate shield at control device.
- Control wiring is 12 to 26 AWG and tightening torque is 5 lb-in.

2. If applicable, route *communications wiring (P1)* in conduit through knockout and into housing (Figures 9 through 11). Continue to route communications wiring to VFD and terminate per *SED2 VFD Startup, Operation, and Maintenance Manual (125-3201)*.

**NOTE:** Communication wiring should be run with maximum separation possible from all other wiring.

3. Route motor wiring in conduit through knockout and into housing (Figures 9 through 11). Connect motor wiring to motor overload and ground lug. See Tables 4 through 7 for wire sizes and tightening torques.
4. Route input power wiring in conduit through knockout and into housing (Figures 9 through 11). Connect input power wiring to disconnect switch and ground lug or to circuit breaker and ground lug. See Tables 4 through 7 for wire sizes and tightening torques.



### WARNING:

Use only permanently wired input power connections.

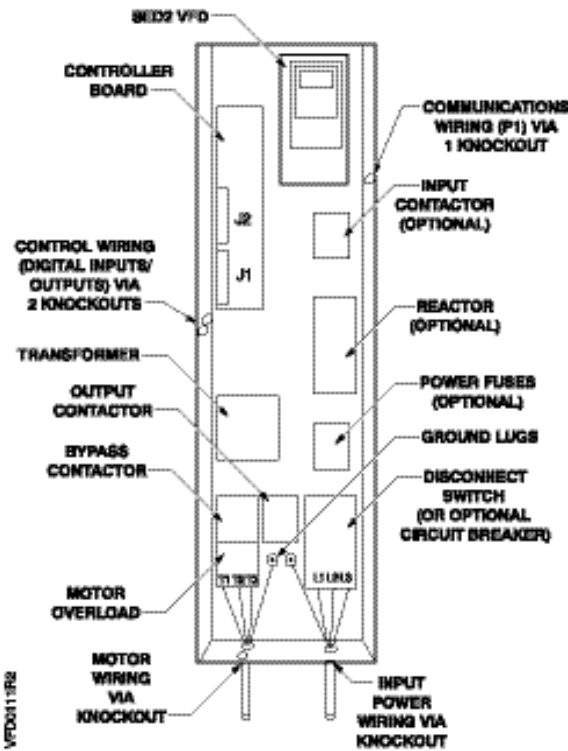


Figure 9. Routing of Power and Control Wiring for Frame Sizes A and B.

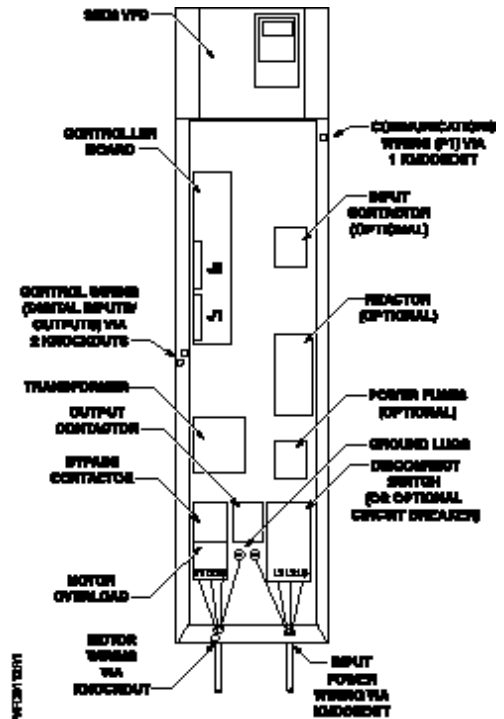


Figure 10. Routing of Power and Control Wiring for Frame Sizes C, D, and E.

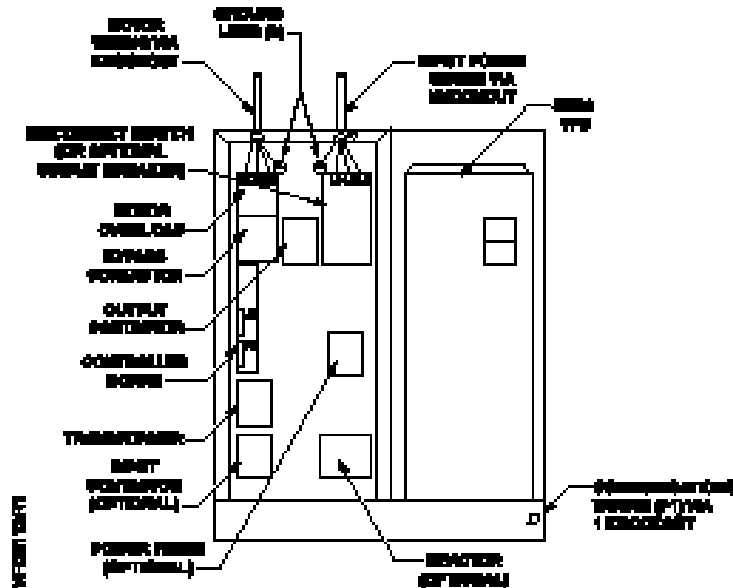


Figure 11. Routing of Power and Control Wiring for Frame Size F.

## Wiring Diagrams

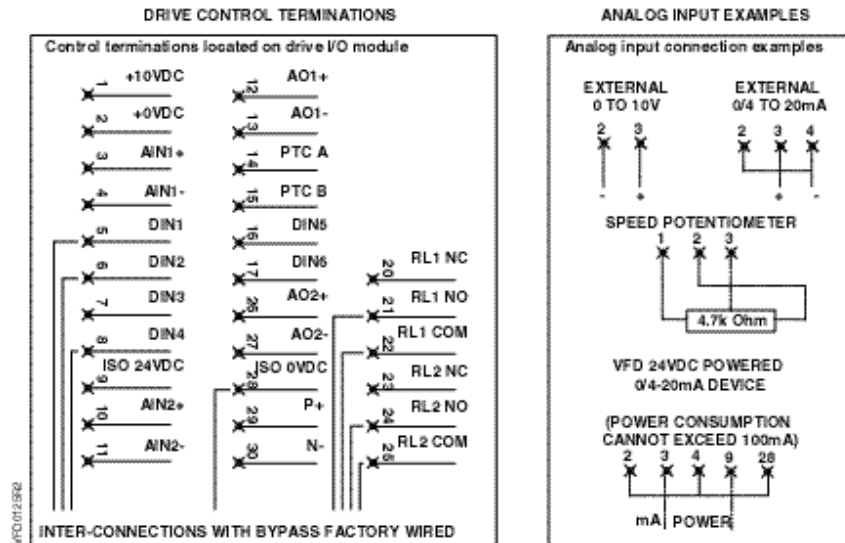
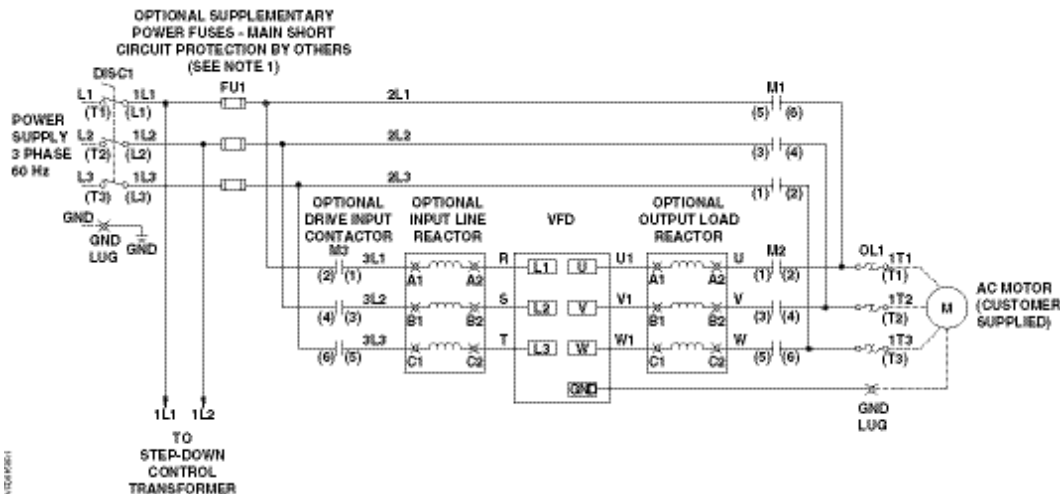


Figure 12. Drive Terminations.



**NOTES:**

1. Branch circuit protection to be provided by installer, per UL508A, if not provided with drive.
2. For bypass operation, modify these drive parameters: P0702[0] and P0702[1] = 3, P0748 = Digital Out 1 Reverse (-----).
3. Control and communication wiring should be 300V UL minimum.
4. Communication wiring should be run with maximum separation possible from all other wiring.
5. Essential service mode operates the motor full speed (bypass) with no protection for the motor or system.
6. Ensure that automatic bypass will not damage the system before activating.
7. See Siemens Publication No. 125-3208 for proper fuse and wire sizes.
8. See Siemens Publication No. 125-3201 for SED2 input/output control signal wiring details.

Figure 13. E-Bypass Power Circuit.

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