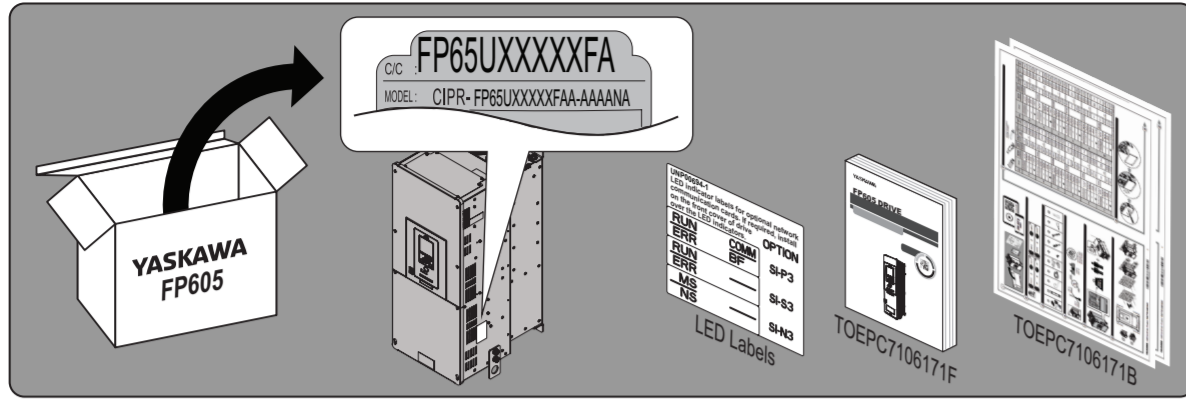
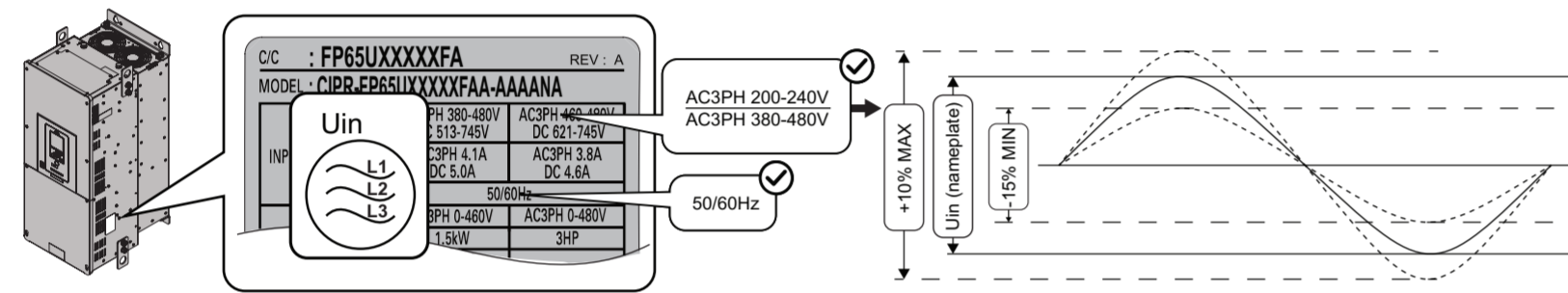
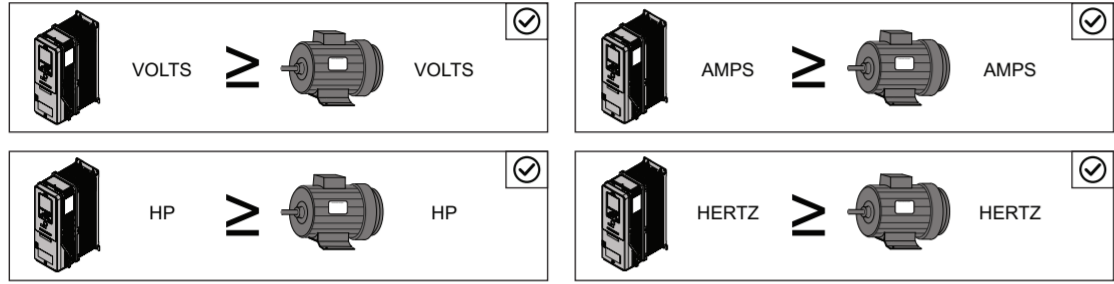


TOEPC7106171B

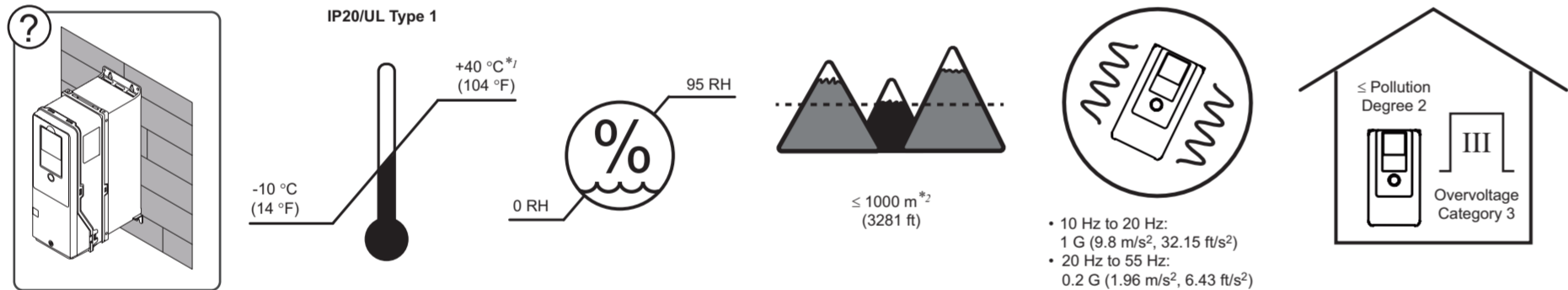


- Read and follow the safety and installation procedures in the Installation & Primary Operation (TOEPC7106171F) manual packaged with the drive.
- When you install an SI-P3, SI-S3, or SI-N3 communication option, you must also use the applicable LED label for your option. LED labels are included with the Installation & Primary Operation (TOEPC7106171F) manual.

1 Confirm the Drive and Motor Specifications

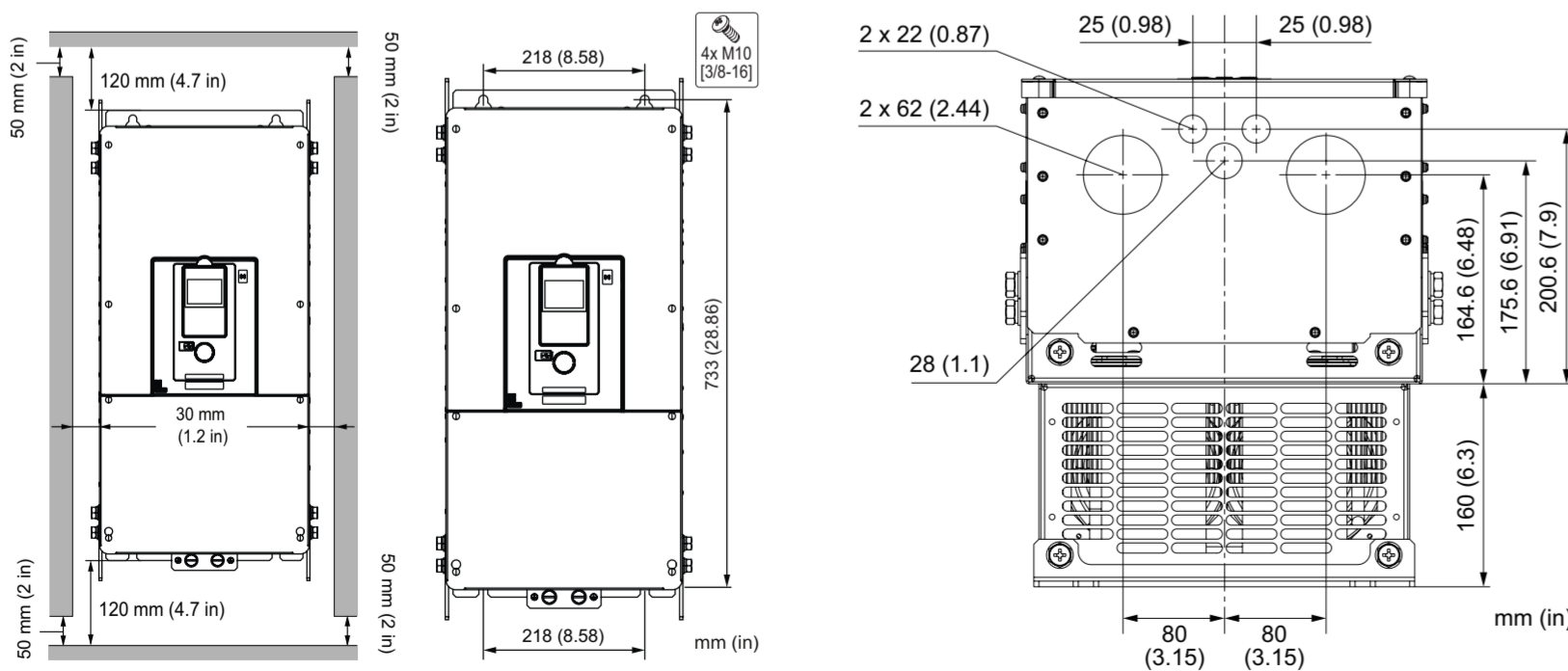


2 Confirm the Correct Drive Installation Environment

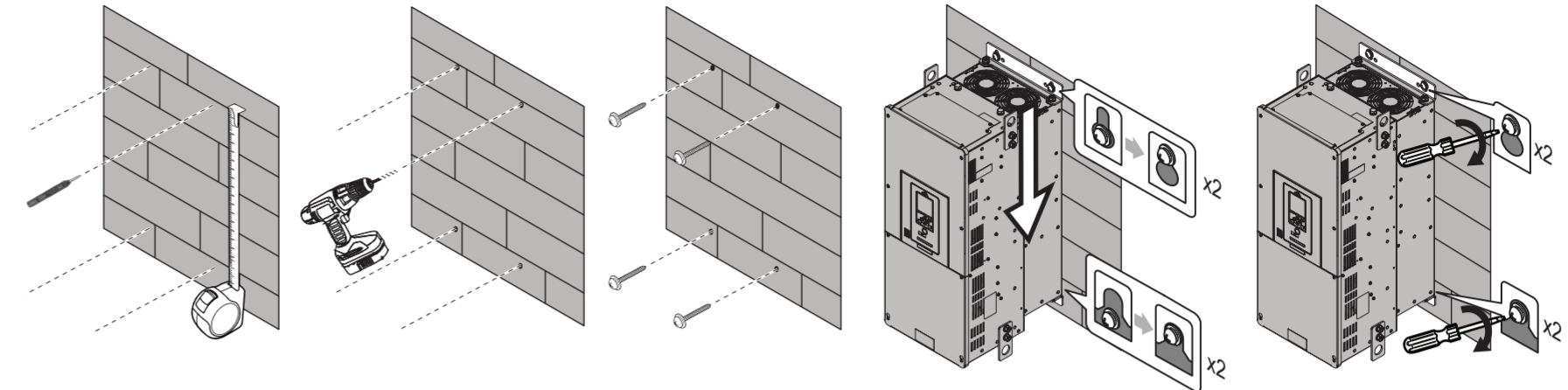


- *1 You can use the drive at a maximum of 60 °C (140 °F) when you derate the output current.
- *2 Derate the output current by 1% for each 100 m (328 ft) to install the drive in altitudes between 1000 m to 4000 m (3281 ft to 13123 ft). Refer to the Technical Reference (SIEPC7106171F) for derating information.

3 Select the Correct Mounting Location and Position



4 Mount the Drive Vertically



When you use non-metric hardware to install the drive, use Type B narrow washers or equivalent and make sure that the size of the screw head and washer are applicable for your drive before installation.

5 Select the Motor and Power Wires, Crimp Terminals, and Branch Circuit Protection

240 V Wires and Crimp Terminals

Drive Model [FP65UXXXX]	Terminal	Wire Range AWG/kcmil (mm ²) ^{*1}	Recommended Wire Gauge AWG/kcmil	Panduit Crimp Terminal Part Number ^{*2,*3}	Drive Model [FP65UXXXX]	Terminal	Wire Range AWG/kcmil (mm ²) ^{*1}	Recommended Wire Gauge AWG/kcmil	Panduit Crimp Terminal Part Number ^{*2,*3}
2143	R/L1, S/L2, T/L3	6 - 4/0 (16 - 95)	2/0	LCA2/0-56-X	2169	R/L1, S/L2, T/L3	6 - 4/0 (16 - 95)	3/0	LCA3/0-56-X
	U/T1, V/T2, W/T3	6 - 4/0 (16 - 95)	3/0	LCA3/0-56-X		U/T1, V/T2, W/T3	6 - 4/0 (16 - 95)	4/0	LCA4/0-56-X
	-, +1	6 - 4/0 (16 - 95)	3/0	LCA3/0-56-X		-, +1	6 - 4/0 (16 - 95)	1/0 × 2	LCA1/0-56-X
	⊕	6 - 4/0 (16 - 95)	4	LCA4-56-L		⊕	6 - 4/0 (16 - 95)	4	LCA4-56-L

480 V Wires and Crimp Terminals

Drive Model [FP65UXXXX]	Terminal	Wire Range AWG/kcmil (mm ²) ^{*1}	Recommended Wire Gauge AWG/kcmil	Panduit Crimp Terminal Part Number ^{*2,*3}
4156	R/L1, S/L2, T/L3	6 - 4/0 (16 - 95)	2/0	LCA2/0-56-X
	U/T1, V/T2, W/T3	6 - 4/0 (16 - 95)	3/0	LCA3/0-56-X
	-, +1	6 - 4/0 (16 - 95)	4/0	LCA4/0-56-X
	⊕	6 - 4/0 (16 - 95)	4	LCA4-56-L

- *1 The metric wire gauge values are provided as reference information from equivalent AWG sizes and not exactly the same sizes as the AWG/kcmil value. Obey local safety regulations for wire sizes and make sure that the ferrule or crimp terminals are correct for your size.
- *2 For use with Panduit Corp. heat-shrinkable tubing HSTT series or an equivalent UL-recognized heat shrinkable tubing rated 600 V minimum.
- *3 Refer to the Installation & Primary Operation (TOEPC7106171F) for possible Panduit Type P and Type S crimp terminal alternatives.

Required Short Circuit Protection

Install one of the types of short circuit protection devices listed here to comply with UL 508C. Semiconductor protective type fuses are recommended, but the tables also show alternative short circuit protection devices.

Required Short Circuit Protection for FP605 AC Drives (Three-Phase 240 V)

Drive Mounted without Supplemental Enclosure (Using Type 1 Kit)	Eaton/Bussmann Semiconductor Fuse ^{*1} Part Number (Permitted Only in Type 1 Kit)	2143	2169	
		Class CC, J, or T Fuse ^{*2} Maximum Amps	Not allowed. Does not support internal fuses for these drive models.	250
Drive Mounted in Supplemental Enclosure	Any Size Protected Enclosure (Ventilated or Non-Ventilated)	Eaton/Bussmann Semiconductor Fuse ^{*1} Part Number	FWH-250A	FWH-275A
	Restricted Size Protected Enclosure (Ventilated Only)	Class CC, J, or T Fuse ^{*2,*3} Maximum Amps	250	250
		Class CC, J, or T Fuse ^{*2,*3} Maximum Amps	Enclosure volume not restricted. Refer to the values in the row above for fuses.	
		MCCB ^{*2} Maximum Amps	350	400
Enclosure Volume Minimum (in ³)	Schneider MCP ^{*2} Part Number	JLL36250M75	JLL36250M75	
	External Heatsink	21582	21582	
	Internal Heatsink	14657	14657	

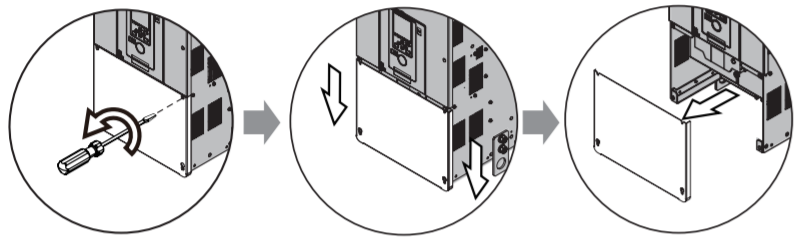
- *1 Protection device must be in same enclosure with drive.
- *2 Class T fuses are fast-acting (non-time-delay) only. Class CC and J can be either time-delay or non-time-delay.
- *3 Protection device and drive permitted in same or separate enclosure.

Required Short Circuit Protection for FP605 AC Drives (Three-Phase 480 V)

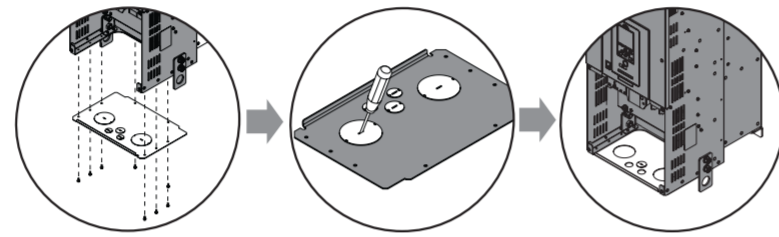
		4156	
Drive Mounted without Supplemental Enclosure (Using Type 1 Kit)	Eaton/Bussmann Semiconductor Fuse ^{*1} Part Number (Permitted Only in Type 1 Kit)	Not allowed. Does not support internal fuses for these drive models.	
	Class CC, J, or T Fuse ^{*2} Maximum Amps	250	
Drive Mounted in Supplemental Enclosure	Any Size Protected Enclosure (Ventilated or Non-Ventilated)	Eaton/Bussmann Semiconductor Fuse ^{*1} Part Number	FWH-325A
		Class CC, J, or T Fuse ^{*2,3} Maximum Amps	250
	Restricted Size Protected Enclosure (Ventilated Only)	Class CC, J, or T Fuse ^{*2,3} Maximum Amps	Enclosure volume not restricted. Refer to the values in the row above for fuses.
		MCCB ^{*3} Maximum Amps	350
		Schneider MCP ^{*3} Part Number	JLL36250M75
Enclosure Volume Minimum (in ³)	External Heatsink	21582	
	Internal Heatsink	14657	

*1 Protection device must be in same enclosure with drive.
 *2 Class T fuses are fast-acting (non-time-delay) only. Class CC and J can be either time-delay or non-time-delay.
 *3 Protection device and drive permitted in same or separate enclosure.

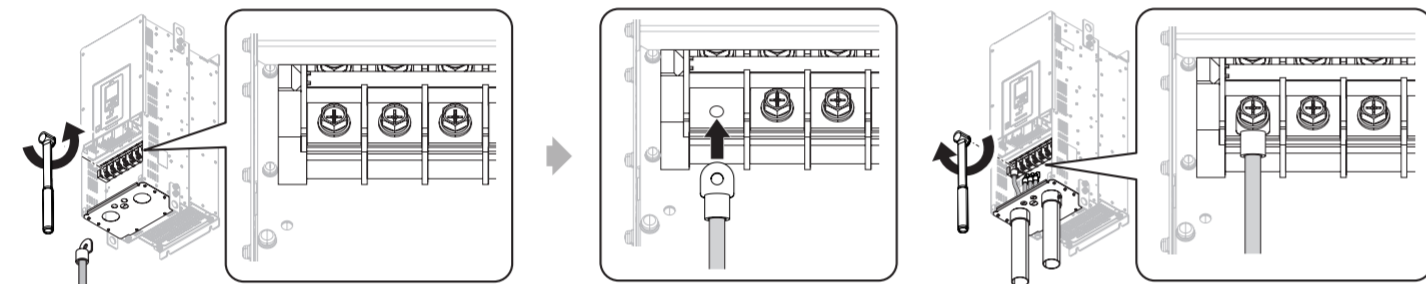
6 Remove the Terminal Cover



7 Remove the Conduit Bracket and Knock-Outs, Reinstall Bracket



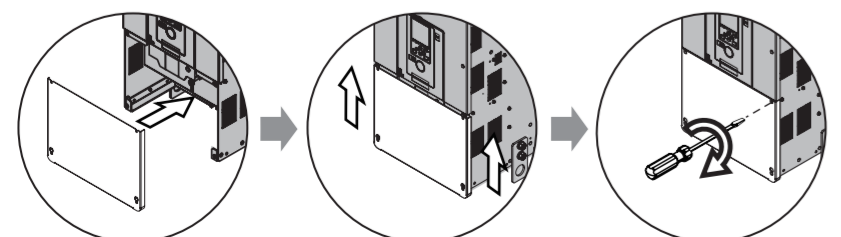
8 Remove the Terminal Block Bolt to Attach Crimp Terminals



9 Install the Motor Wiring and Power Wiring

Refer to the Technical Reference (SIEPC7106171F) for information about GFCIs.

10 Install the Terminal Cover



11 Energize the Drive and Confirm It Is Ready

12 Set the Motor Rated Current (FLA) from the Motor Nameplate in E2-01

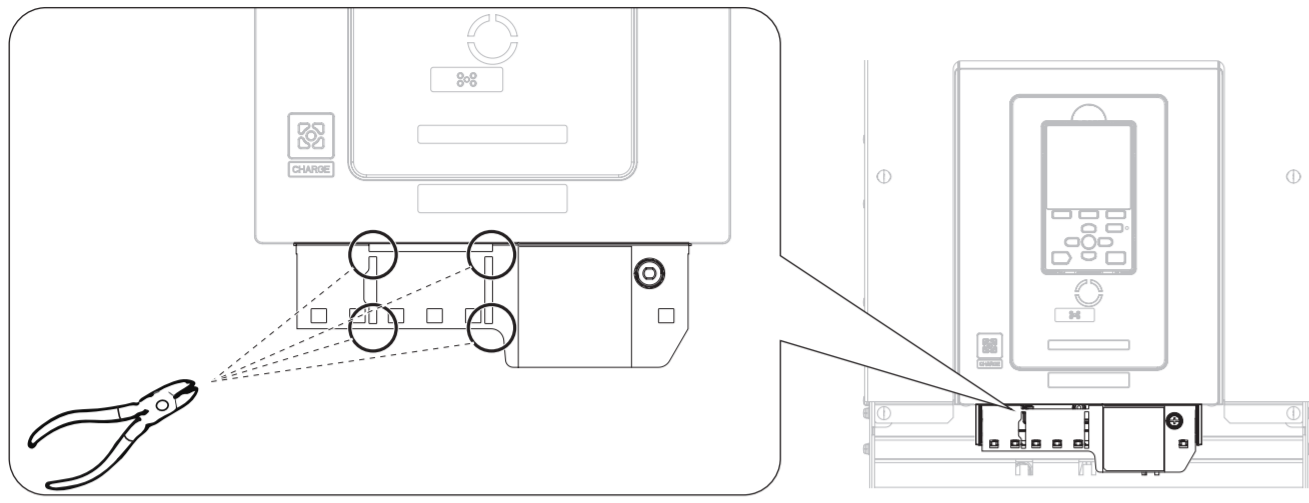
3 PHASE INVERTER DUTY AC INDUCTION MOTOR NAMEPLATE EXAMPLE					
MODEL	XX	123AAAA123XX-X0		X	FRAME 123AX
POLES	X	ENC XXX	CODE X	DES A	TYPE ABC INS X0
VOLTS	XXX	FL RPM XXXX		FL AMPS XX/XX	
SF 1.0	DUTY CONT	MAX AMB °C XX		TEMP SENSORS T-STATS	
SERIAL		N.L.AMPS XX.X/X.X			
MAX RPM	4200	S.E. BRG. 309	O.S.E. BRG.	ROTOR WK' X.X	
HZ	kW	RPM	TORQUE (LB FT)	VOLTS (HIGH CONN)	AMPS (HIGH CONN)
1	-	0	XX.X	-	XX.X
60	XX	XXXX	XX.X	XXX	XX.X
120	XX	XXXX	XX.X	XXX	XX.X
OHMS PH.	R1: .XXX	R2: .XXX	x1: X.XX	x2: .XXX	xM: XX.X
P/N XXXXXX					

13 Set the Drive for LOCAL Control and Check the Motor Rotation Direction

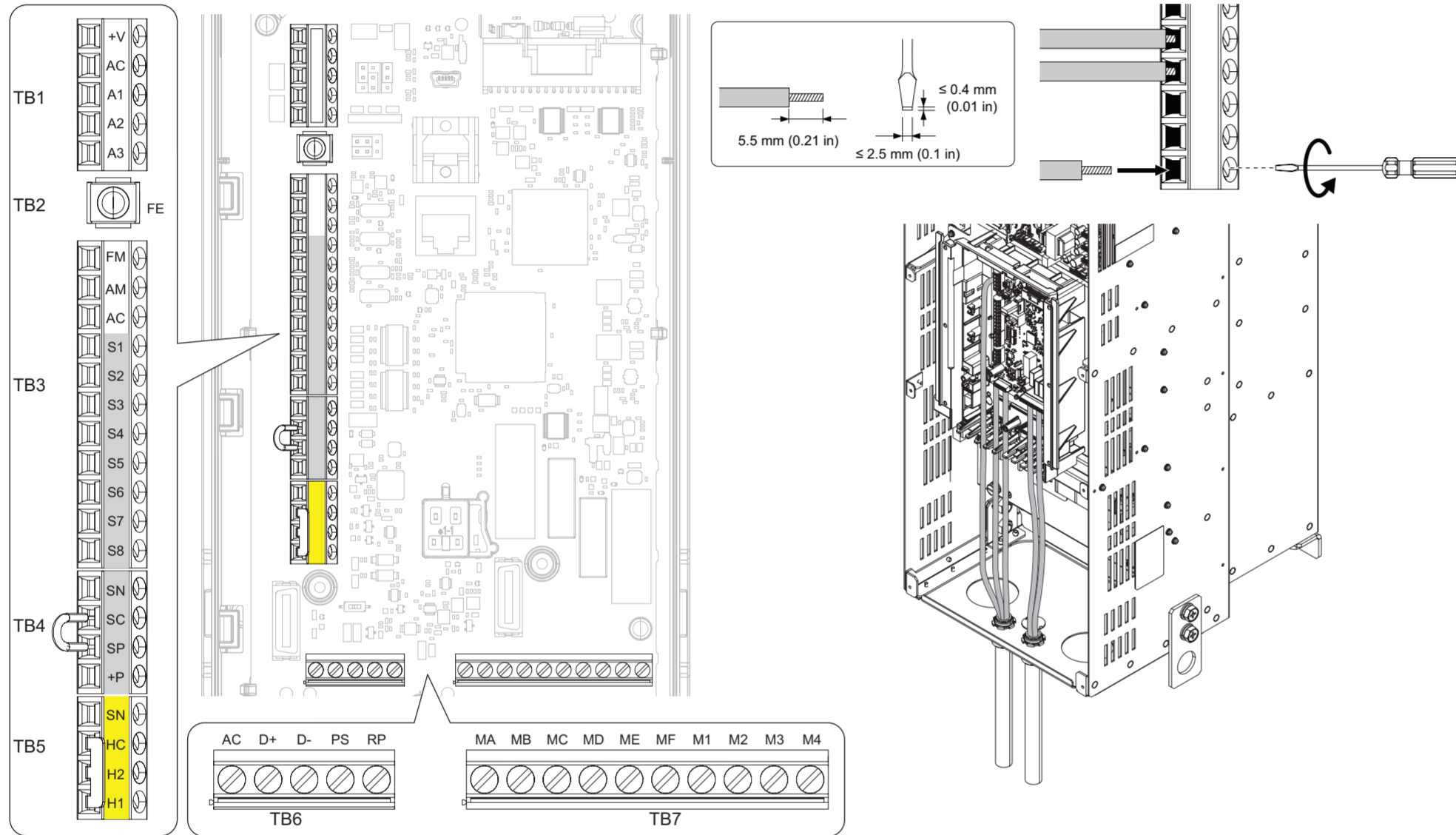
Additional Information for Installation and Primary Operation

A If the Motor Does Not Rotate in the Correct Direction

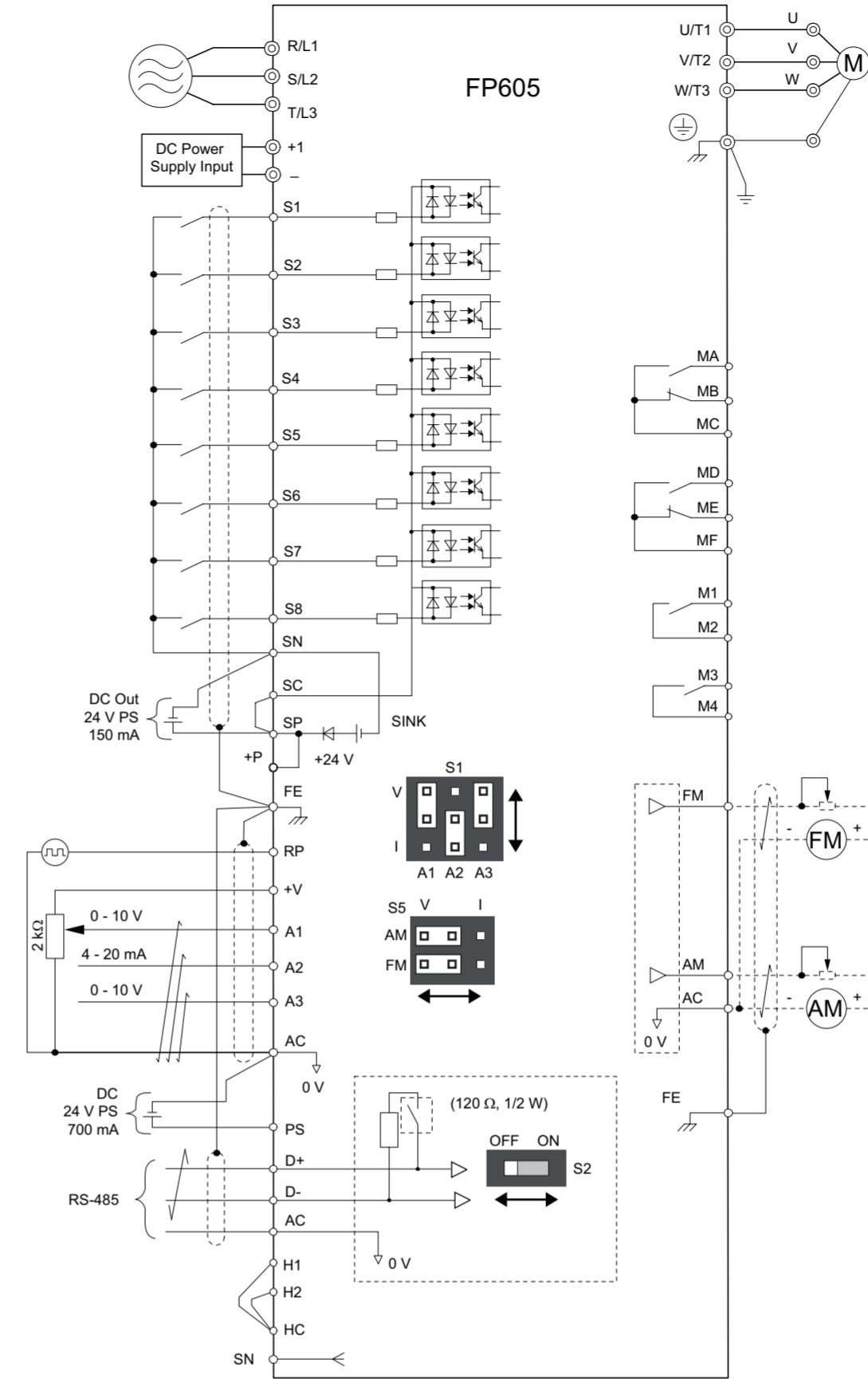
B To Install a DeviceNet Communication Option Card (SI-N3), Remove the Faceplate Cut Away Section



C Control Circuit Configuration

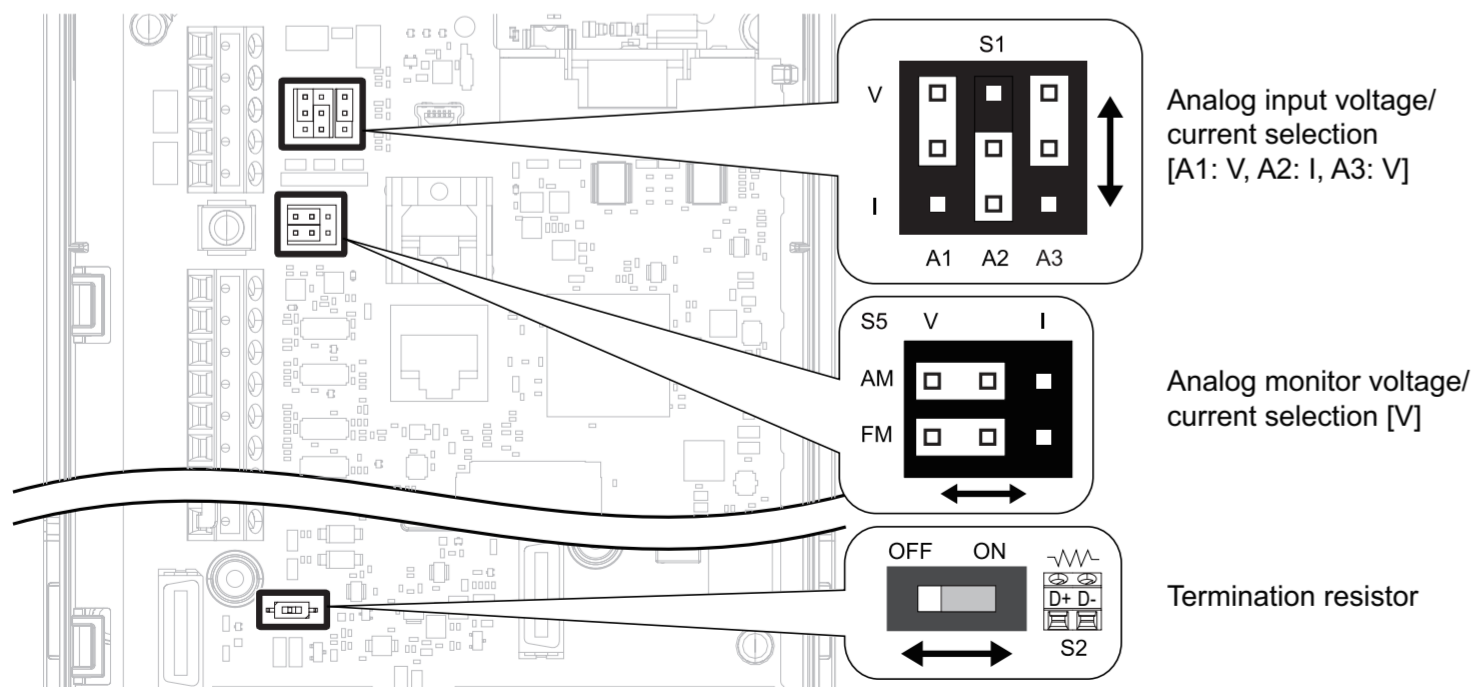


E Connection Diagram and Terminal Functions

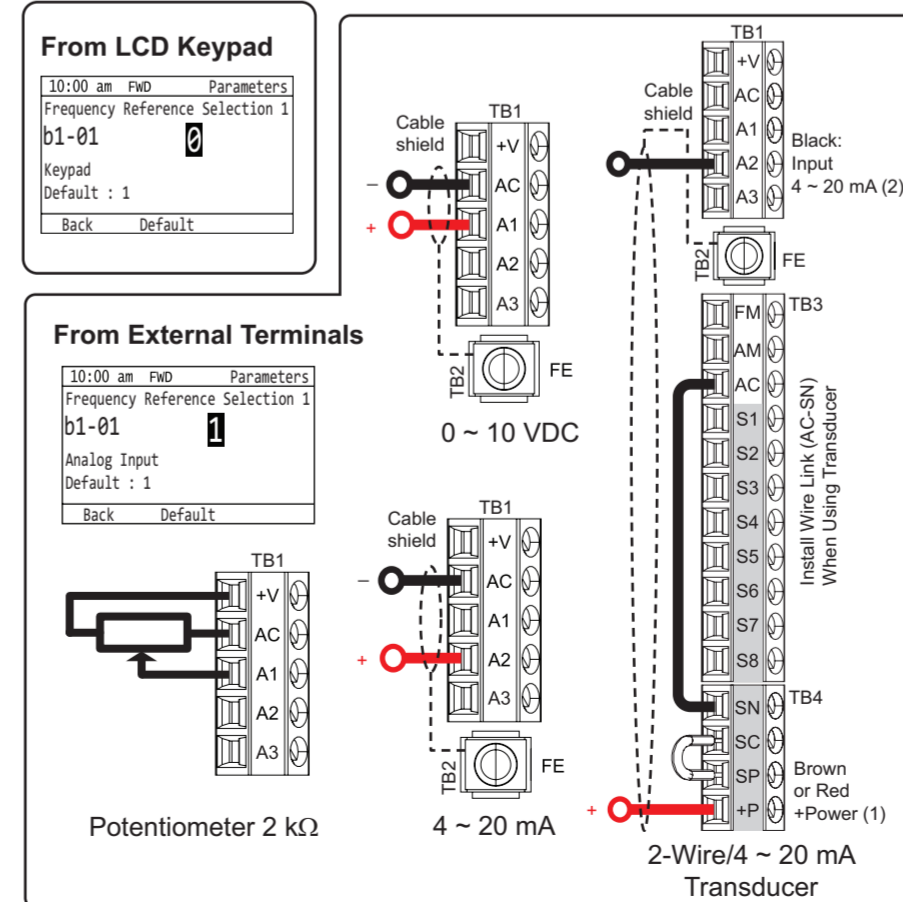


Terminal	Type	Signal Level	Default
S1	MFDI 1	Photocoupler 24 V, 6 mA Internal impedance: 4.7 kΩ	Forward RUN (2-Wire)
S2	MFDI 2		Reverse RUN (2-Wire)
S3	MFDI 3		External Fault (NO-Always-Coast)
S4	MFDI 4		Fault Reset
S5	MFDI 5		Multi-Step Speed Reference 1
S6	MFDI 6		Multi-Step Speed Reference 2
S7	MFDI 7		Jog Reference Selection
S8	MFDI 8		Baseblock Command (N.O.)
SN	MFDI power 0 V	24 V, 150 mA maximum	-
SC	MFDI common	-	-
SP	MFDI power +24 VDC	-	-
H1	Safe disable input 1	Photocoupler 24 V, 6 mA Internal impedance: 4.7 kΩ	-
H2	Safe disable input 2		-
HC	Safe disable common		-
RP	Multi-function pulse train input	<ul style="list-style-type: none"> Response frequency: 0 Hz ~ 32 Hz H level duty: 30% ~ 70% H level voltage: 3.5 V ~ 13.2 V L level voltage: 0.0 V ~ 0.8 V Input impedance: 3 kΩ 	-
+V	Frequency setting power supply	10.5 V (20 mA maximum)	-
A1	MFAI 1	0 V ~ 10 V/100% (input impedance 20 kΩ)	Master frequency reference
A2	MFAI 2	4 mA ~ 20 mA/100% (input impedance 250 Ω)	Combined w/A1
A3	MFAI 3	0 mA ~ 20 mA/100% (input impedance 250 Ω)	Auxiliary frequency reference 1
AC	Common	0 V	-
FE	Connect shielded cable	-	-
MA	Fault relay out	30 VDC, 10 mA ~ 2 A 250 VAC, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	Fault
MB	Common	-	Fault
MC	Common	-	-
MD	MFDO	30 VDC, 10 mA ~ 2 A 250 VAC, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	Speed agree 1
ME	Common	-	-
M1	MFDO	30 VDC, 10 mA ~ 2 A 250 VAC, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	During run
M2	Common	-	Zero speed
M3	MFDO	30 VDC, 10 mA ~ 2 A 250 VAC, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	Output frequency
M4	Common	-	Output current
FM	MFAO 1	0 V ~ +10 V/0% ~ 100% 4 mA ~ 20 mA	-
AM	MFAO 2	-	-
AC	Common	0 V	-
+P	External power supply	24 V (150 mA maximum)	-
PS	External 24 V PS input	21.6 VDC ~ 26.4 VDC, 700 mA	-
AC	External 24 V PS ground	0V	-
D+	Communication +	MEMOBUS/Modbus 115.2 kbps maximum	-
D-	Communication -	-	-
AC	Common	0 V	-

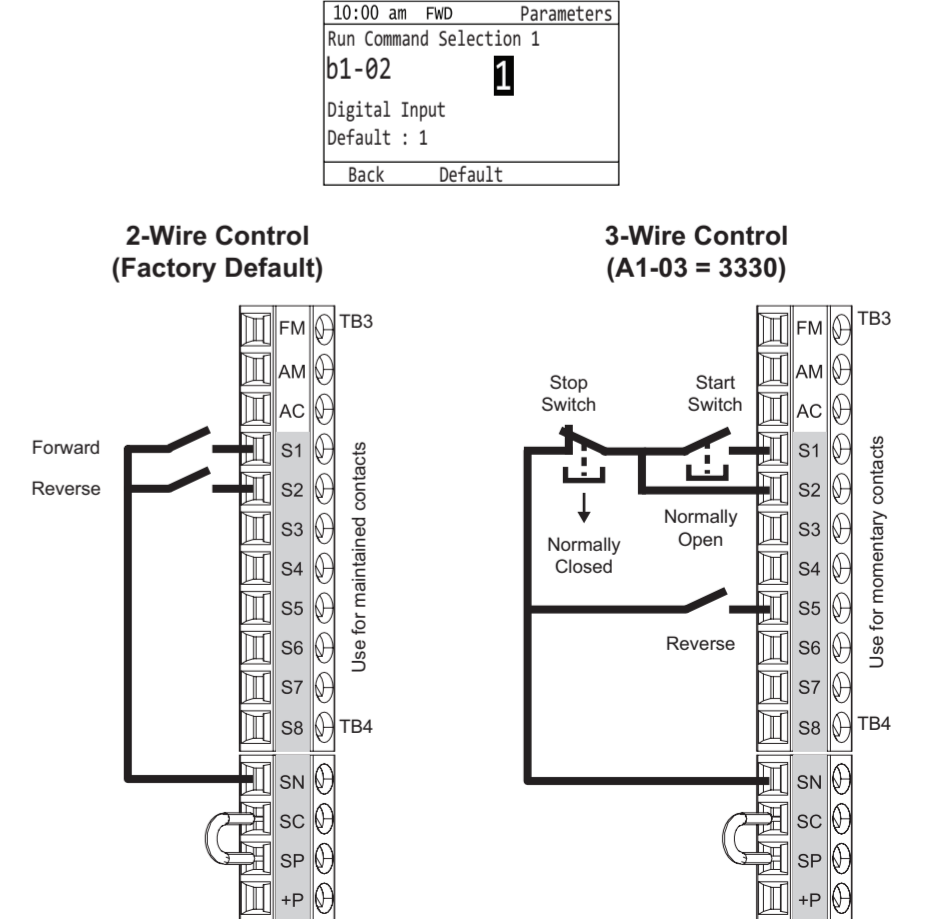
D Switches and Jumpers on the Control Board



F Set Frequency Reference Source



G Set Start/Stop Control Method from External Terminals



H If You Push the RUN Button but the Motor Does Not Spin

The diagram illustrates the steps to resolve a 'RUN' button press without motor rotation. It shows the keypad menu with parameters like 'Freq Reference (KPD)', 'Output Frequency', and 'Output Current' all at 0.00. A 'RUN' button is pressed, but the motor does not spin. The user then navigates to 'Init Setup' and 'Parameters' screens, setting 'Reference 1' to 10.00 Hz. After confirming the entry, the motor is shown spinning at 10 Hz.

I Parameter Groups

A: Initialization	d: Reference Settings	H: Terminal Functions	n: Special Adjustment	Y: Application Features
A1 Initialization	d1 Frequency Reference	H1 Digital Inputs	n1 Hunting Prevention	Y1 Application Basics
A2 User Parameters	d2 Reference Limits	H2 Digital Outputs	n3 High Slip/Overexcite Braking	Y2 PID Sleep and Protection
b: Application				
b1 Operation Mode Selection	d3 Jump Frequency	H3 Analog Inputs	n7 EZ Drive	Y3 Contactor Multiplex
b2 DC Injection Braking and Short Circuit Braking	d4 Freq. Ref. Up/Down & Hold	H4 Analog Outputs	n8 PM Motor Control Tuning	Y4 Application Advanced
b3 Speed Search	d6 Field Weakening	H5 Modbus Communication	o: Keypad-Related Settings	
b4 Timer Function	d7 Offset Frequency	H6 Pulse Train Input	o1 Keypad Display	Y8 De-Scale/De-Rag
b5 PID Control	E: Motor		o2 Keypad Operation	YA Preset Setpoint
b6 Dwell Function	E1 V/f Pattern for Motor 1	H7 Virtual Inputs/Outputs	o3 Copy Keypad Function	YC Feedback Features
b8 Energy Saving	E2 Motor Parameters	L: Protection Functions		YF PI Auxiliary Control
C: Tuning				
C1 Accel & Decel Time	E3 V/f Pattern for Motor 2	L1 Motor Protection	o4 Maintenance Monitors	
C2 S-Curve Characteristics	E4 Motor 2 Parameters	L2 Power Loss Ride Through	o5 Log Function	
C3 Slip Compensation	E5 PM Motor Settings	L3 Stall Prevention	S: Special Applications	
C4 Torque Compensation	E9 Motor Setting	L4 Speed Detection	S1 Dynamic Noise Control	
C5 Auto Speed Regulator (ASR)	F: Options		S3 PI2 Control	
C6 Carrier Frequency	F2 Analog Input Option	L5 Fault Restart	S6 Protection	
	F3 Digital Input Option	L6 Torque Detection	T: Auto-Tuning	
	F4 Analog Output Option	L7 Torque Limit	T1 InductionMotor Auto-Tuning	
	F5 Digital Output Option	L8 Drive Protection	T2 PM Motor Auto-Tuning	
	F6 Communication Options	L9 Drive Protection 2	T4 EZ Tuning	
	F7 Ethernet Options			

Frequently Used Parameters

Parameter Number Name	Default Description	Parameter Number Name	Default Description	Parameter Number Name	Default Description
A1-06 Application Preset	0 No preset	b5-03 Integral Time (I)	1.0 s	d2-02 Frequency Reference Lower Limit	0.0%
b1-01 Frequency Reference Selection 1	1 Analog Input	b5-05 Derivative Time (D)	0.00 s	E1-01 Input AC Supply Voltage	-
b1-02 Run Command Selection 1	1 Digital Input	C1-01 Acceleration Time 1	10.0 s	E2-01 Motor Rated Current (FLA)	-
b1-03 Stopping Method Selection	1 Coast to Stop	C1-02 Deceleration Time 1	10.0 s	H3-09 Terminal A2 Signal Level Select	2 4 to 20 mA
b5-01 PID Mode Setting	0 Disabled	d2-01 Frequency Reference Upper Limit	100.0%	H3-10 Terminal A2 Function Selection	0 Frequency Reference
b5-02 Proportional Gain (P)	1.00				

J Troubleshooting Resources for Drive Faults and Alarms

Resource	Choose This When:	URL	QR Code
Installation & Primary Operation	You have access to the paper copy of the manual that was packaged with the drive. This manual lists all drive faults and alarms, and offers a selection of causes and solutions.	https://www.yaskawa.com/toepc7106171f	PDF download
DriveWizard Mobile App	You want to use your smartphone or tablet and use the embedded help to look up the full complement of causes and solutions to all drive faults and alarms.	https://www.yaskawa.com/dwm	App download
Maintenance & Troubleshooting Manual	You want to download a PDF of the manual to your smartphone or tablet. This manual lists the full complement of causes and solutions to all drive faults and alarms and also includes detailed information about drive maintenance, wiring, and programming.	https://www.yaskawa.com/toeypaifp6001	PDF download

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