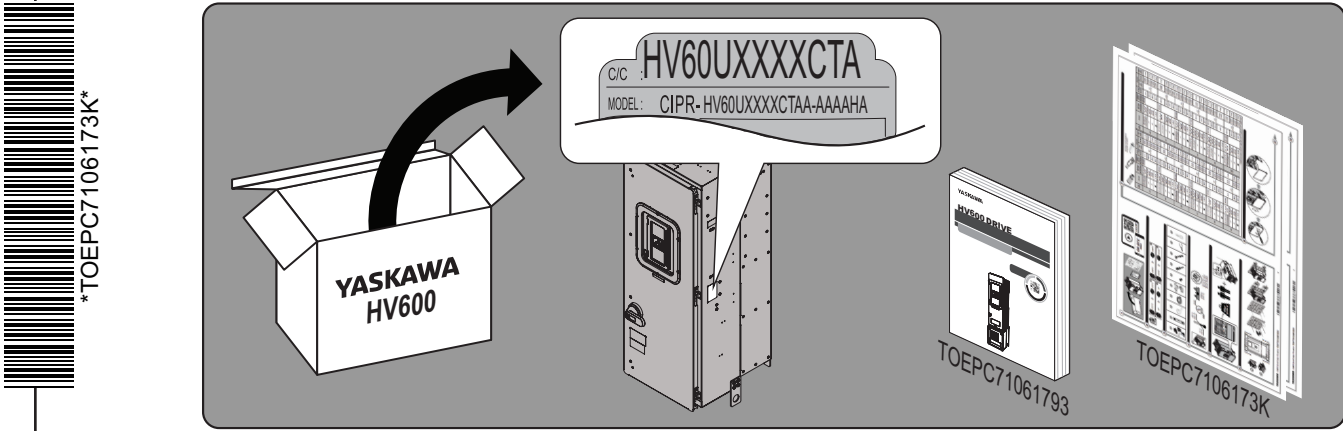
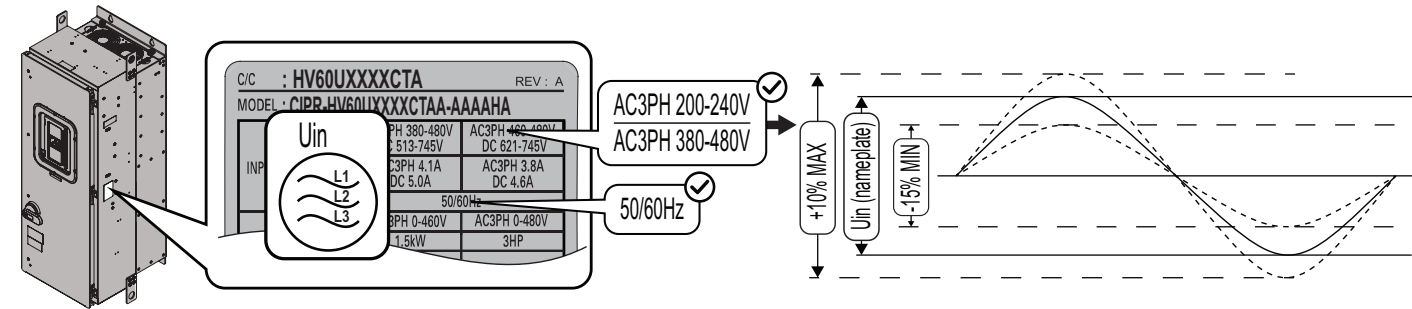
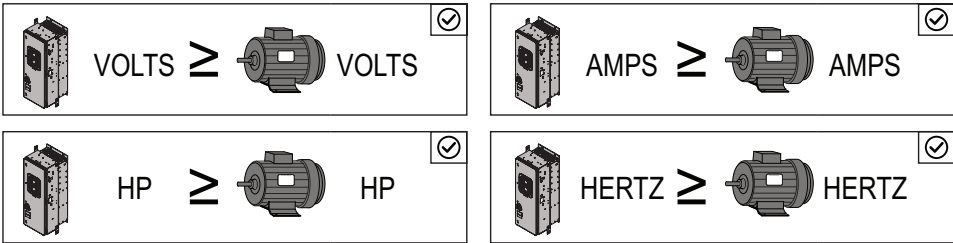


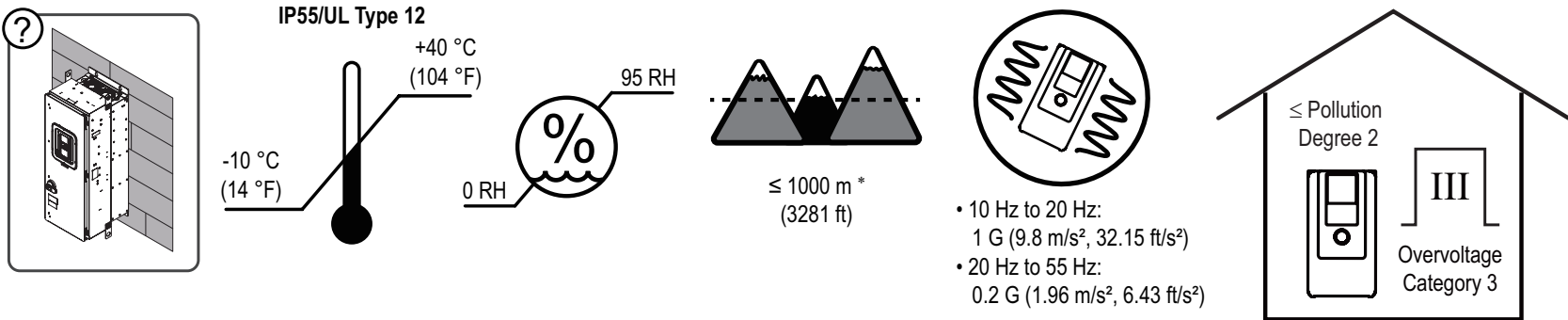


Read and follow the safety and installation procedures in the Installation & Primary Operation (TOEPC71061793) manual packaged with the drive.

1 Confirm the Drive and Motor Specifications

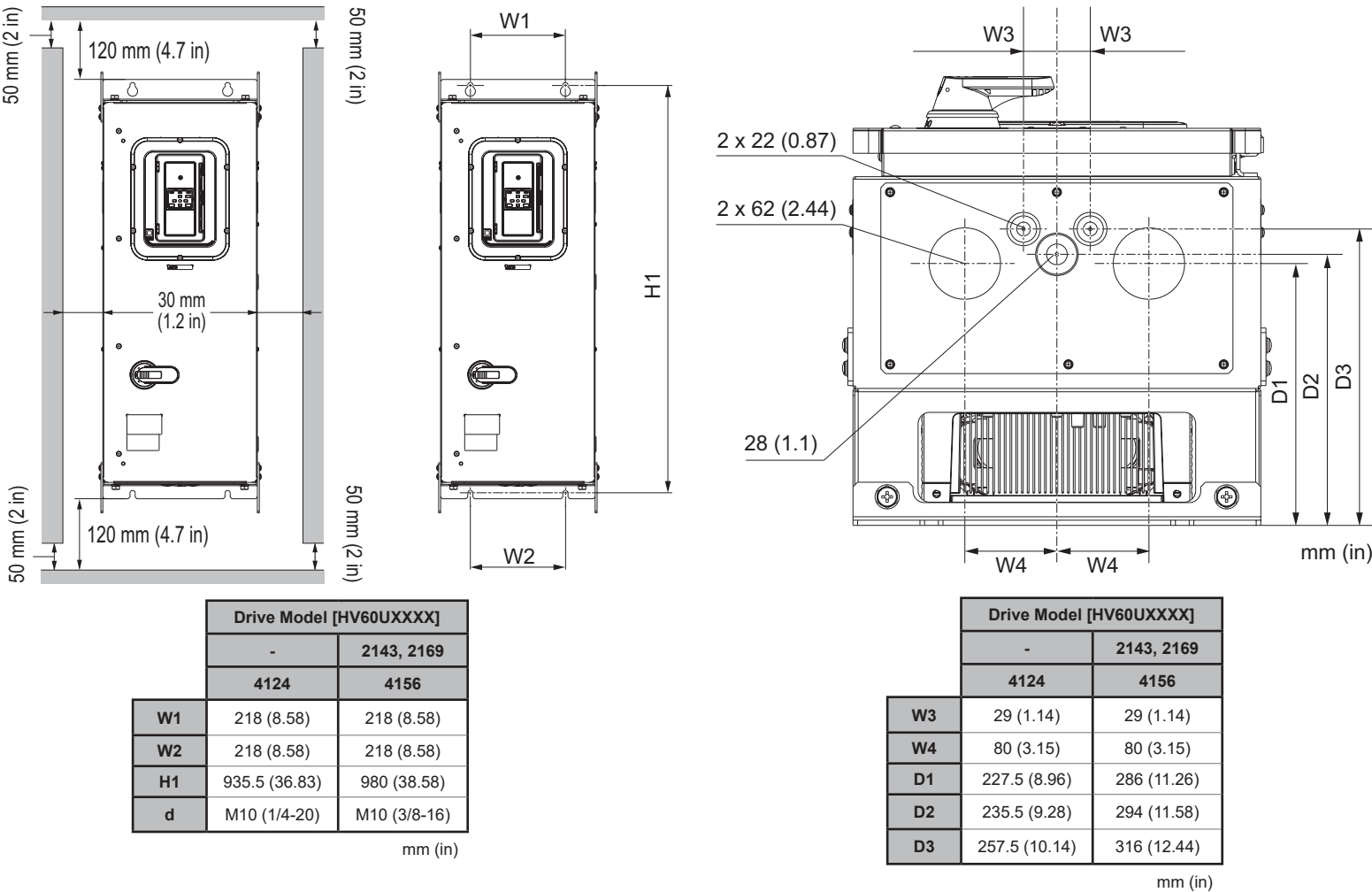


2 Confirm the Correct Drive Installation Environment

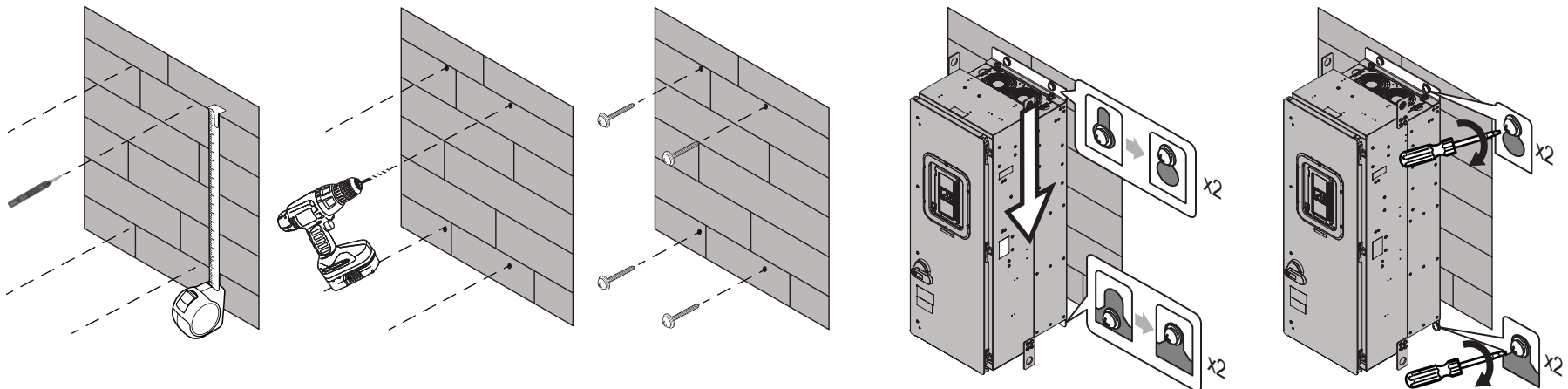


* Derate the output current by 1% for each 100 m (328 ft) to install the drive in altitudes between 1000 m to 4000 m (3281 ft to 13123 ft). Refer to the Technical Reference (SIEPC71061732) for derating information.

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 [HV60UXXXX]	Terminal ^{1/}	Wire Range AWG/kcmil (mm ²) ^{2/}	Recommended Wire Gauge AWG/kcmil	PANDUIT Crimp Terminal Part Number ^{3/4/}	Drive Model [HV60UXXXX]	Terminal ^{1/}	Wire Range AWG/kcmil (mm ²) ^{2/}	Recommended Wire Gauge AWG/kcmil	PANDUIT Crimp Terminal Part Number ^{3/4/}
2143	R/L1, S/L2, T/L3	4 - 4/0 (25 - 105)	2/0	LCA2/0-56-X	2169	R/L1, S/L2, T/L3	4 - 4/0 (25 - 105)	3/0	LCA3/0-56-X
	U/T1, V/T2, W/T3	6 - 4/0 (15 - 105)	3/0	LCA3/0-56-X		U/T1, V/T2, W/T3	6 - 4/0 (15 - 105)	4/0	LCA4/0-56-X
	⊕	6 - 4/0 (15 - 105)	4	LCA4-56-L		⊕	6 - 4/0 (15 - 105)	4	LCA4-56-L

480 V Wires and Crimp Terminals

Drive Model [HV60UXXXX]	Terminal ^{1/}	Wire Range AWG/kcmil (mm ²) ^{2/}	Recommended Wire Gauge AWG/kcmil	PANDUIT Crimp Terminal Part Number ^{3/4/}	Drive Model [HV60UXXXX]	Terminal ^{1/}	Wire Range AWG/kcmil (mm ²) ^{2/}	Recommended Wire Gauge AWG/kcmil	PANDUIT Crimp Terminal Part Number ^{3/4/}
4124	R/L1, S/L2, T/L3	4 - 2/0 (25 - 70)	1/0	LCA1/0-56-X	4156	R/L1, S/L2, T/L3	4 - 4/0 (25 - 105)	2/0	LCA2/0-56-X
	U/T1, V/T2, W/T3	8 - 2/0 (10 - 70)	2/0	LCA2/0-56-X		U/T1, V/T2, W/T3	6 - 4/0 (15 - 105)	3/0	LCA3/0-56-X
	⊕	8 - 2/0 (10 - 70)	4	LCA4-56-L		⊕	6 - 4/0 (15 - 105)	4	LCA4-56-L

- *1 You cannot use terminals - and +1 on IP55/UL Type 12 drives with Main Switch.
*2 The metric wire gauge values are provided as reference information from equivalent AWG sizes and not exactly the same sizes as the AWG/kmil value. Obey local safety regulations for wire sizes and make sure that the ferrule or crimp terminals are correct for your size.
*3 For use with PANDUIT Corp. heat-shrinkable tubing HSTT series or an equivalent UL-recognized-heat shrinkable tubing rated 600 V minimum.
*4 Refer to the Installation & Primary Operation (TOEPC71061793) 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 61800-5-1.

240 V Required Short Circuit Protection

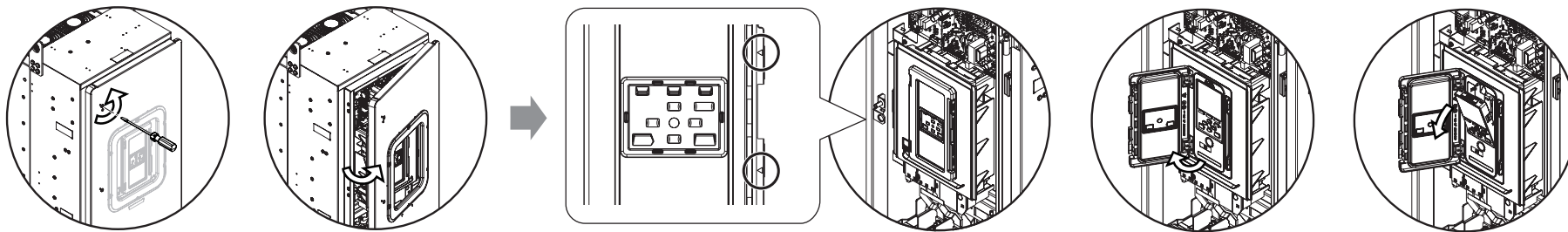
	Drive Model [HV60UXXXX]	
	2143	2169
Class J or T Fuse ^{*1/2} Maximum Amps	250	250

480 V Required Short Circuit Protection

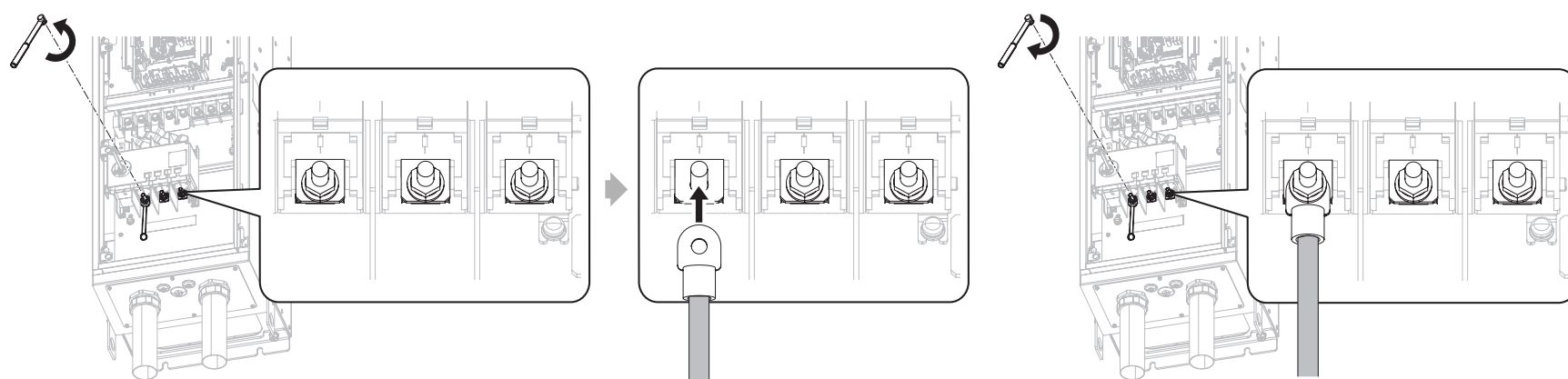
	Drive Model [HV60UXXXX]	
	4124	4156
Class J or T Fuse ^{*1/2} Maximum Amps	200	250

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

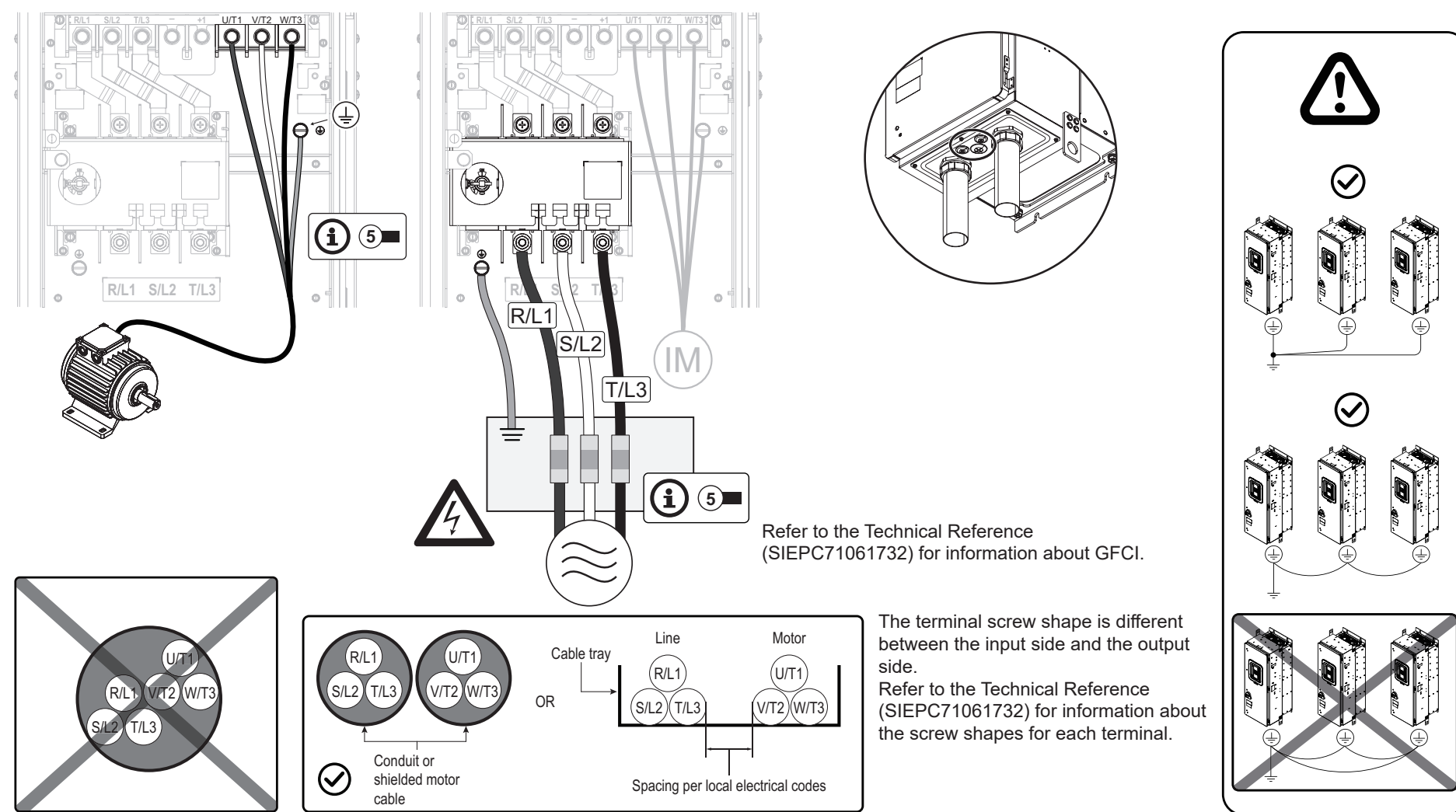
6 Open the Front Door and Remove the Keypad



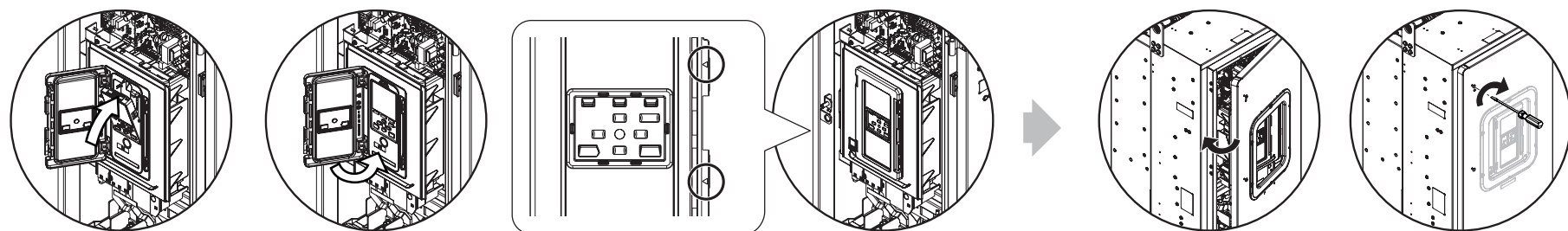
7 Remove Terminal Block Nut to Attach Crimp Terminals



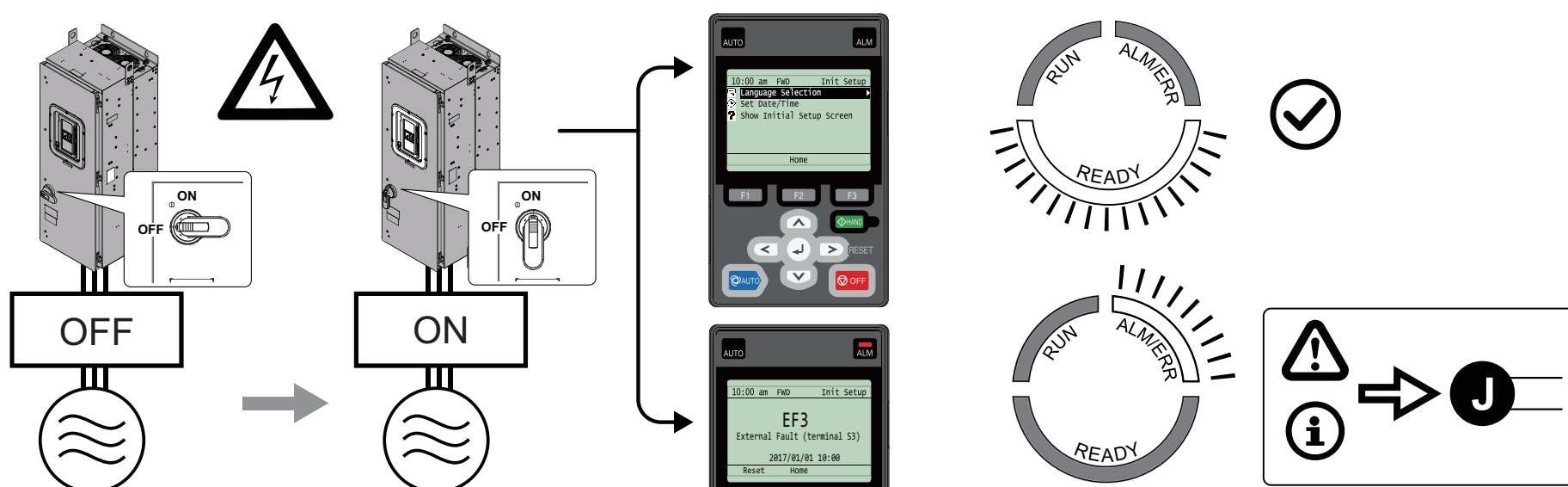
8 Install the Motor Wiring and Power Wiring



9 Install the Front Cover and Keypad

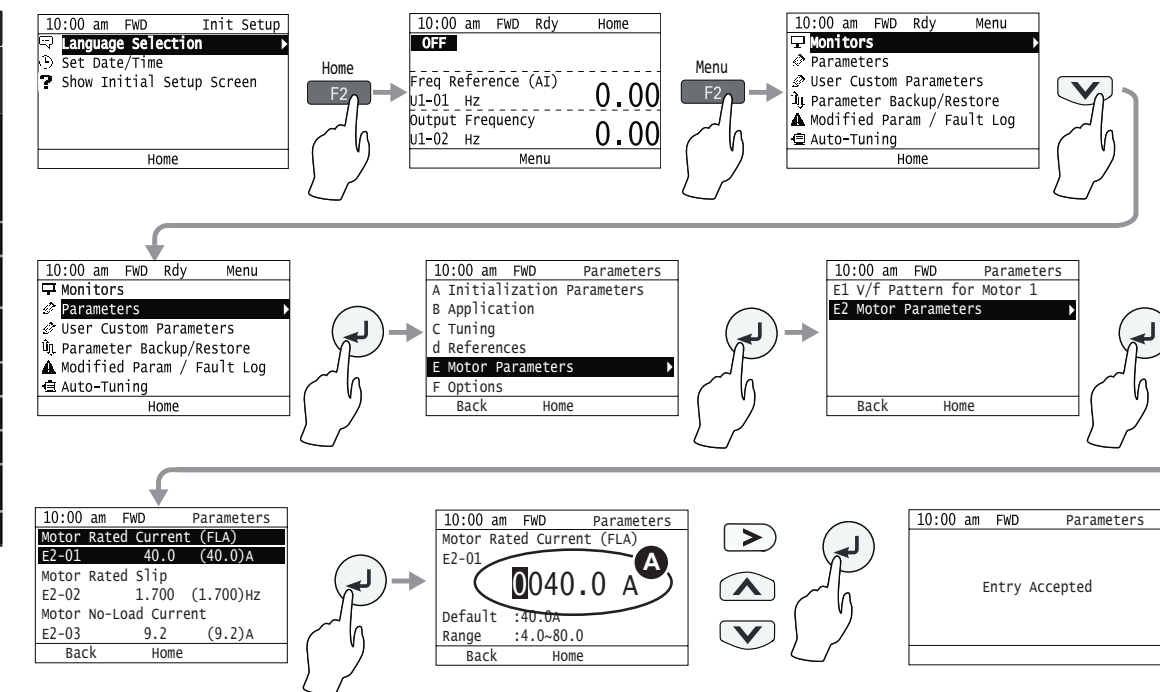


10 Energize the Drive and Confirm It is Ready

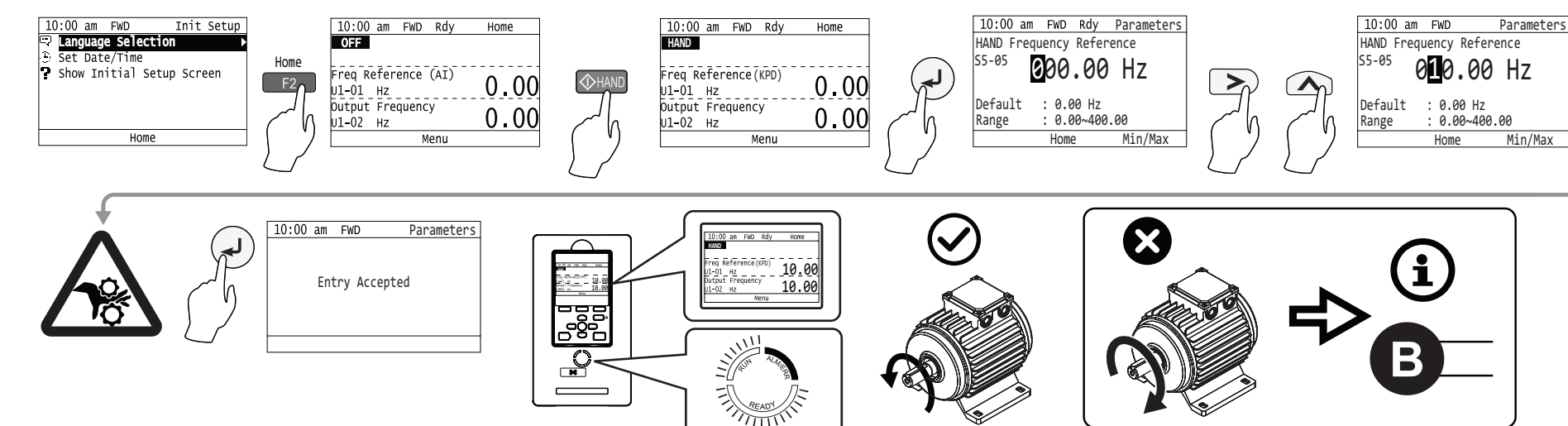


11 Set the Motor Rated Current (FLA) from the Motor Nameplate in E2-01

3 PHASE INVERTER DUTY AC INDUCTION MOTOR NAMEPLATE EXAMPLE									
MODEL XX	123AAA123XX-X0								
POLES X	ENC XXX	CODE X							
VOLTS XXX	FL XXXX	XXXX							
SF 1.0	DUTY CONT	MAX AMB °C XX							
SERIAL		N.L. AMPS XX.X/X.X							
MAX RPM 4200	S.E. BRG. 309	O.S.E. BRG. XXX							
HZ	HP	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: X.XX	XM: XX.X				
P/N XXXXXX									

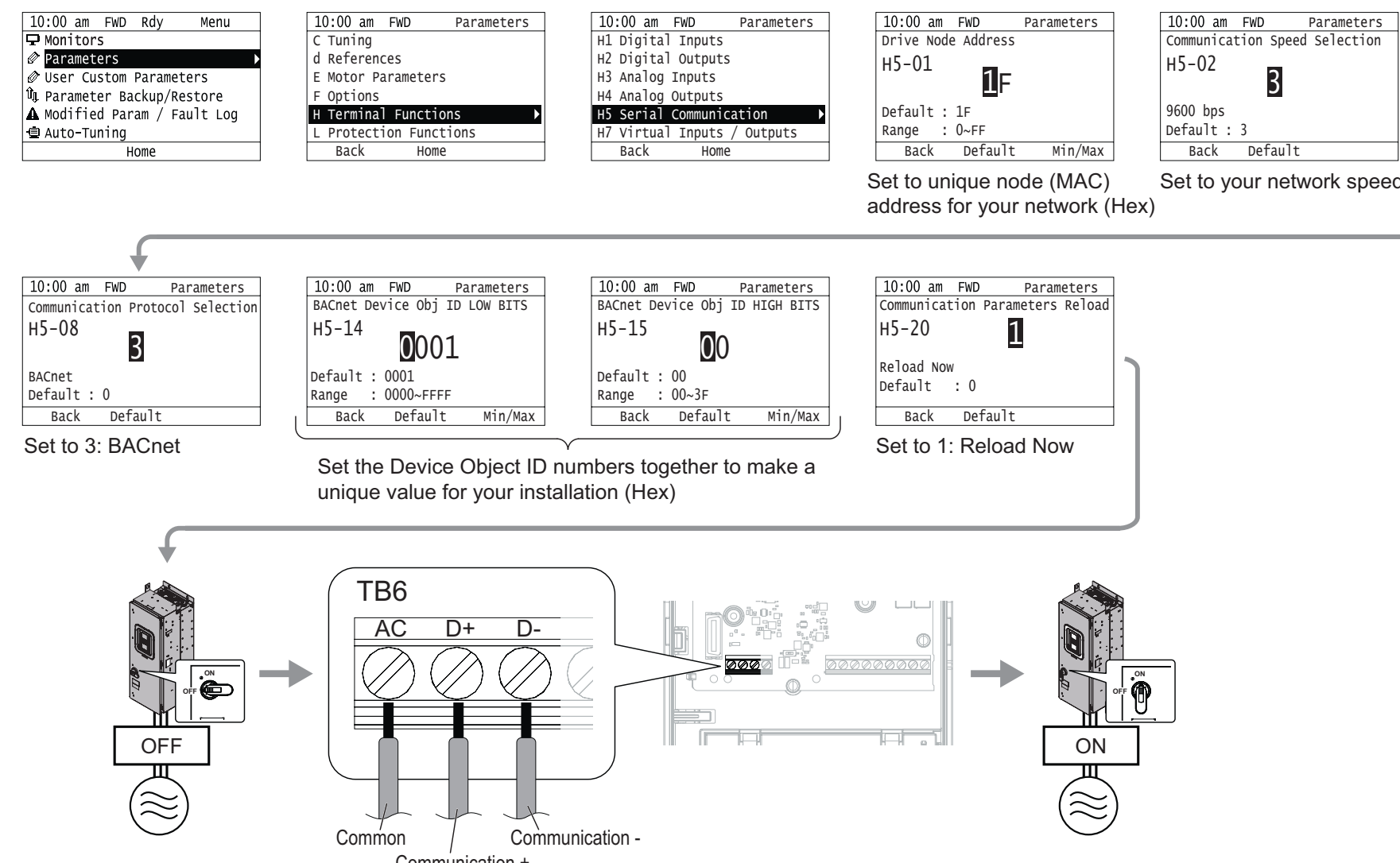


12 Set the Drive for HAND Operation and Check the Motor Rotation Direction

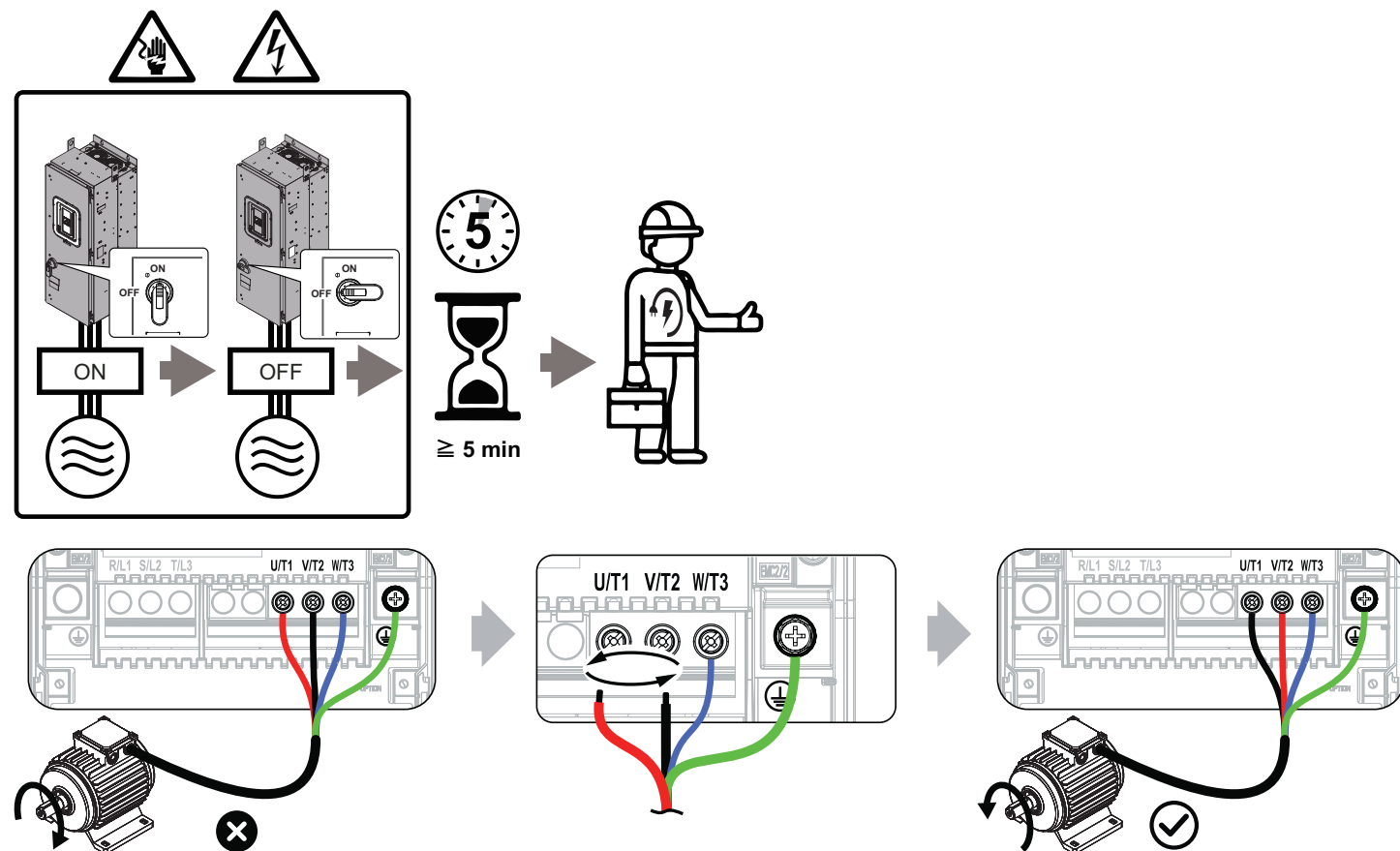


Additional Information for Installation and Primary Operation

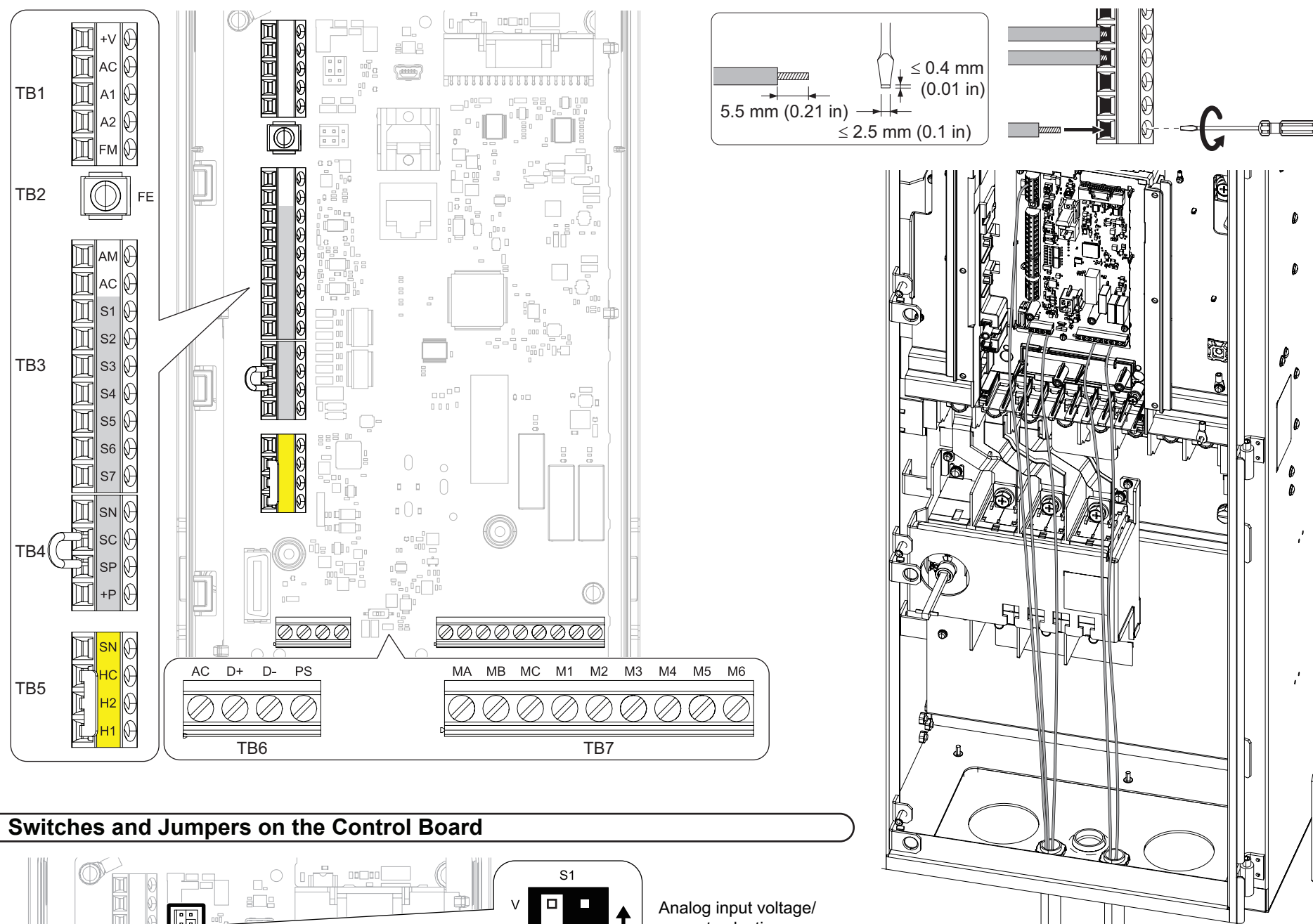
A How to Set Up the Drive for Monitoring via BACnet MS/TP



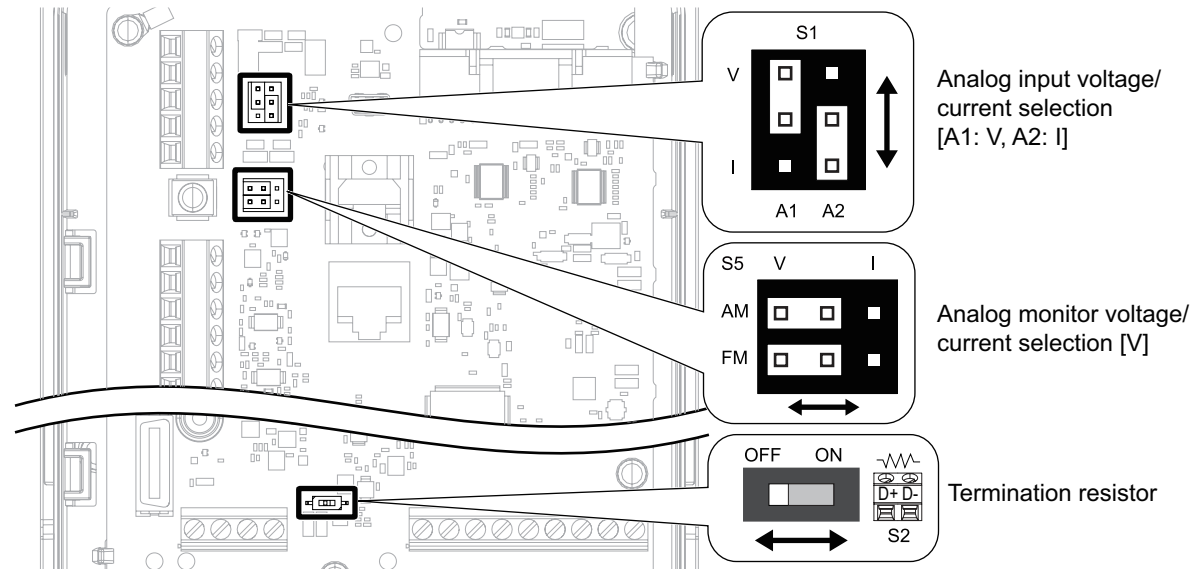
B If the Motor Does Not Rotate in the Correct Direction



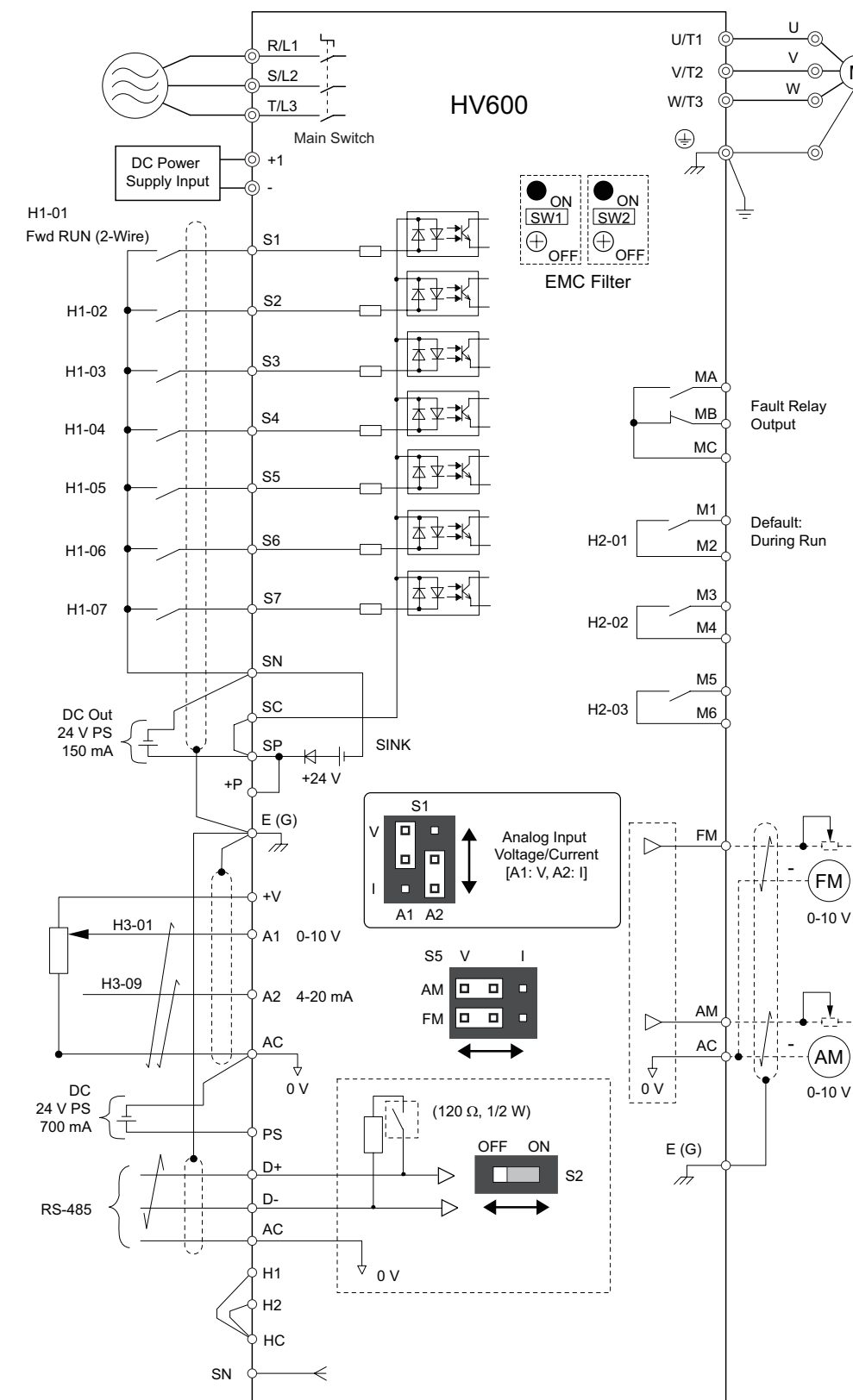
C Control Circuit Configuration and Accessibility



D Switches and Jumpers on the Control Board



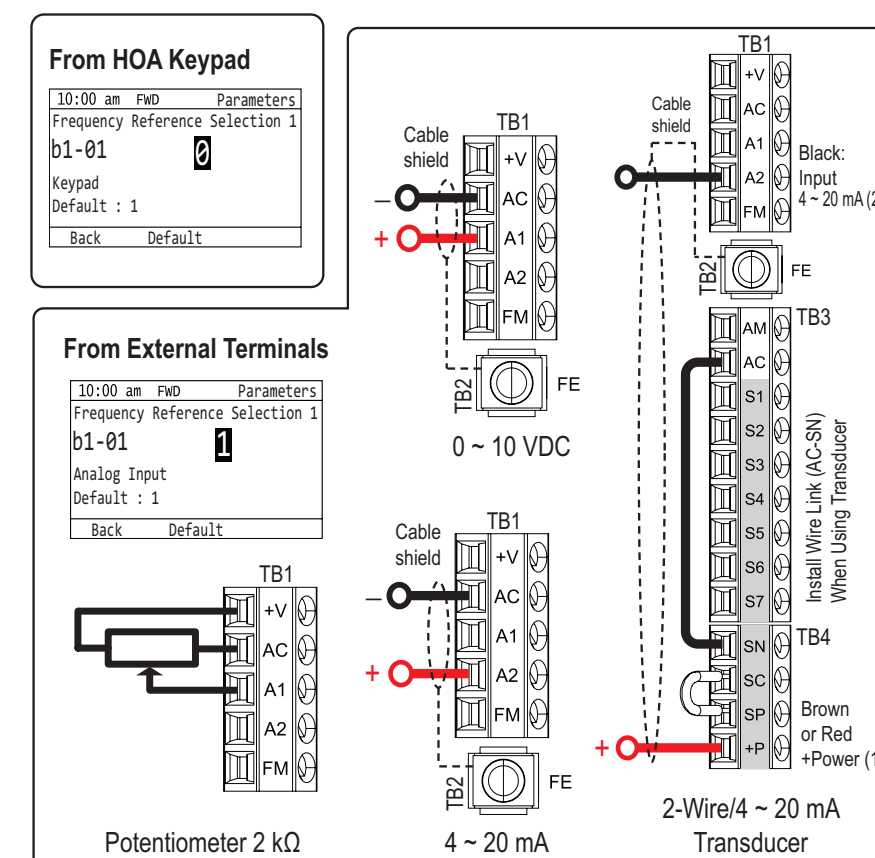
E Connection Diagram and Terminal Functions



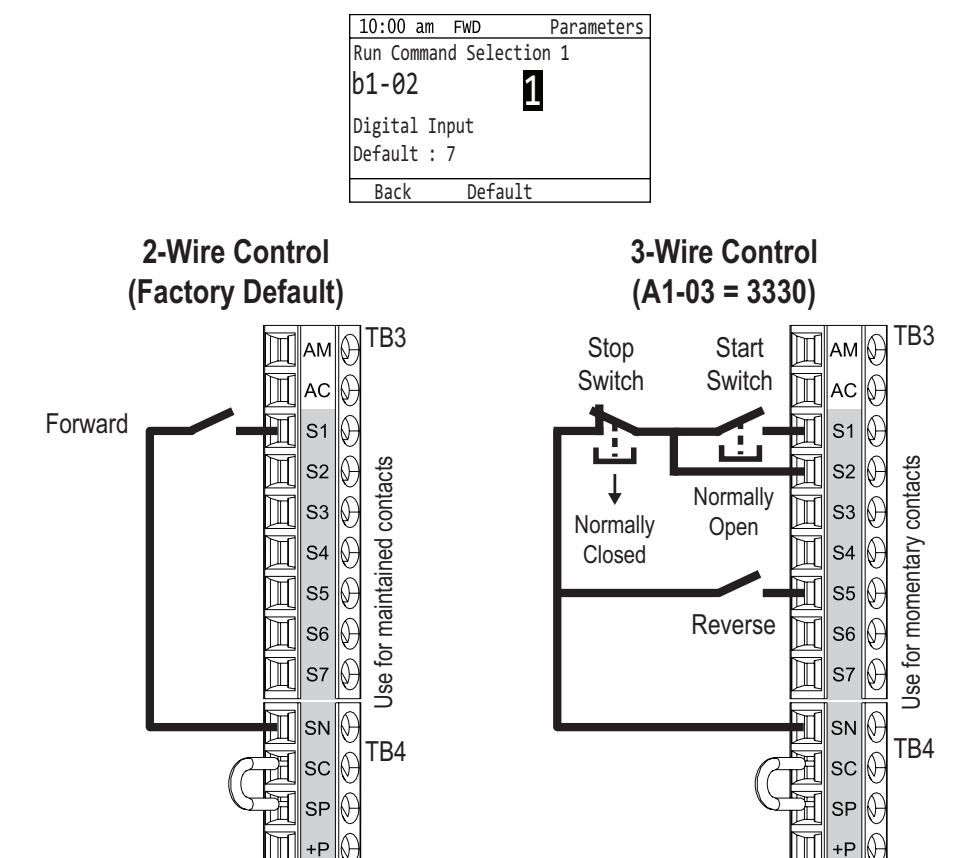
Terminal	Type	Signal Level	Default	Parameter Default
S1	MFDI 1	Photocoupler 24 V, 6 mA Internal impedance: 4.7 kΩ	Forward RUN (2-Wire)	H1-01 40
S2	MFDI 2		Not Used	H1-02 F
S3	MFDI 3		External Fault (NO-Always-Coast)	H1-03 24
S4	MFDI 4		Fault Reset	H1-04 14
S5	MFDI 5		Multi-Step Speed Reference 1	H1-05 3
S6	MFDI 6		Multi-Step Speed Reference 2	H1-06 4
S7	MFDI 7		Jog Reference Selection	H1-07 6
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		-	-
+V	Frequency setting power supply	10.5 V (20 mA maximum)	-	-
A1	MFAI 1	0 V ~ 10 V/100% (input impedance 20 kΩ) 4 mA ~ 20 mA/100% (input impedance 250 Ω)	Frequency Reference	H3-01 0
A2	MFAI 2	0 V ~ 10 V/100% (input impedance 20 kΩ) 4 mA ~ 20 mA/100% (input impedance 250 Ω)	Frequency Reference	H3-09 2
AC	Common	0 V	-	-
E (G)	Connect shielded cable	-	-	-
MA	Fault relay output	30 Vdc, 10 mA ~ 2 A 250 Vac, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	Fault (N.O)	Fault
MB	Fault relay output	30 Vdc, 10 mA ~ 2 A 250 Vac, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	Fault (N.C)	Fault
MC	Common	-	-	-
M1	MFDO	30 Vdc, 10 mA ~ 2 A 250 Vac, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	During Run	H2-01 0
M2	MFDO		Zero Speed	H2-02 1
M3	MFDO		Speed Agree 1	H2-03 2
M4	MFDO	30 Vdc, 10 mA ~ 2 A 250 Vac, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	Output Frequency	H4-01 102
M5	MFDO		Output Current	H4-04 103
M6	MFDO		-	-
FM	MFAO 1	0 V ~ 10 V/0% ~ 100% 4 mA ~ 20 mA	-	-
AM	MFAO 2	0 V ~ 10 V/0% ~ 100% 4 mA ~ 20 mA	-	-
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	0 V	-	-
D+	Communication +	APOGEE FLN, BACnet, MEMOBUS/Modbus, Metasys N2	-	-
D-	Communication -	RS-485 115.2 kbps maximum	-	-
AC	Common	0 V	-	-

MFDI: Multi-Function Digital Input
MFAI: Multi-Function Analog Input
MFDO: Multi-Function Digital Output
MFAO: Multi-Function Analog Output

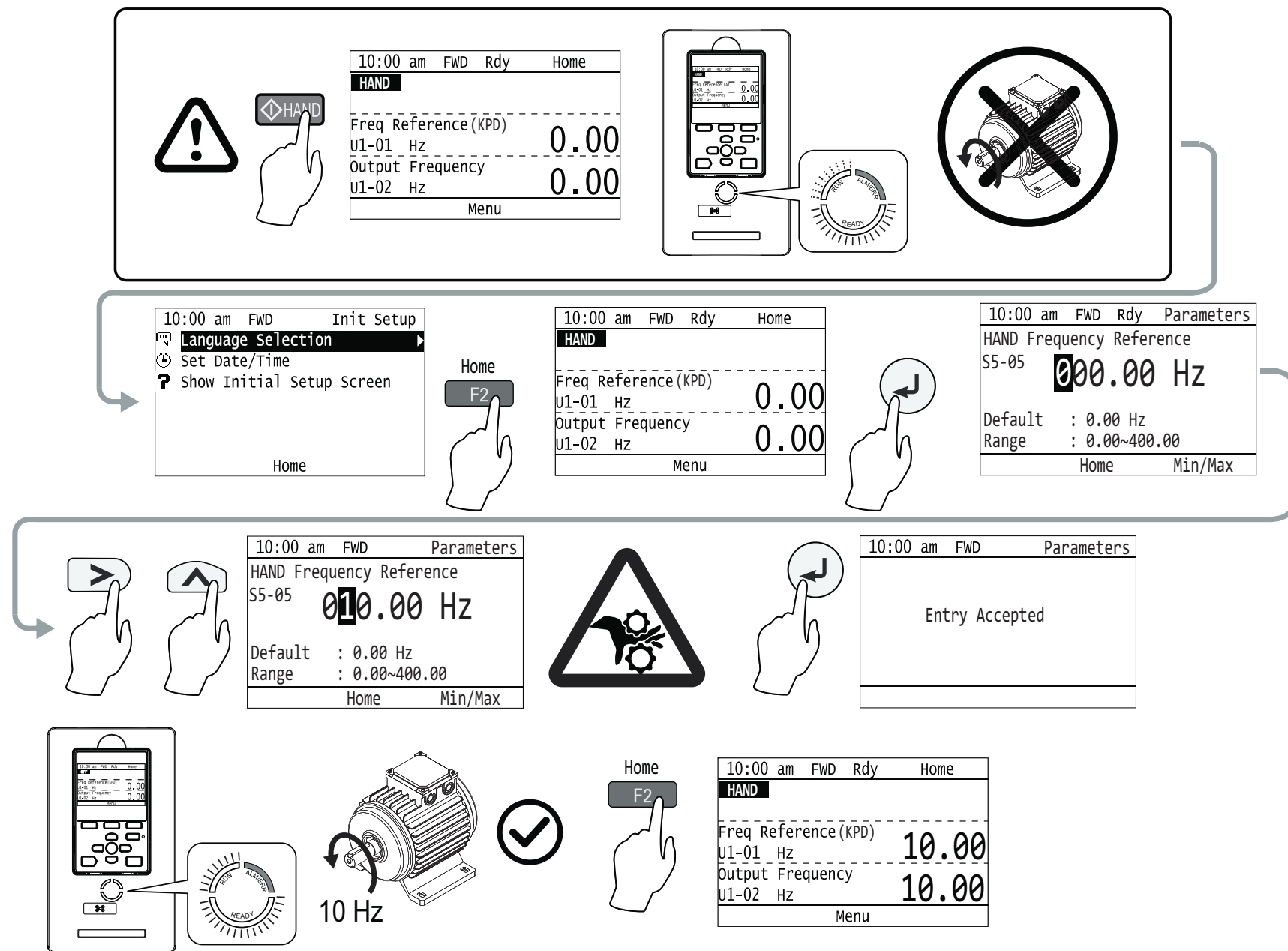
F Set Frequency Reference Source



G Set Start/Stop Control Method from External Terminals



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



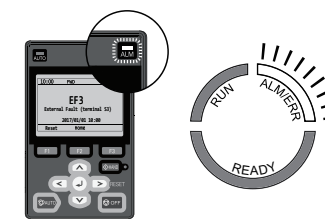
I Parameter Groups

A: Initialization Parameters		d: Reference Settings		H: Terminal Functions		o: Keypad-Related Settings		U: Monitors	
A1	Initialization	d1	Frequency Reference	H1	Digital Inputs	o1	Keypad Display	U1	Operation Status Monitors
A2	User Parameters	d2	Reference Limits	H2	Digital Outputs	o2	Keypad Operation	U2	Fault Trace
b: Application		d3	Jump Frequency	H3	Analog Inputs	o3	Copy Keypad Function	U3	Fault History
b1	Operation Mode Selection	d4	Frequency Ref Up/Down & Hold	H4	Analog Outputs	o4	Maintenance Monitors	U4	Maintenance Monitors
b2	DC Injection Braking and Short Circuit Braking	d6	Field Weakening	H5	Serial Communication	o5	Log Function	U5	PID Monitors
b3	Speed Search	d7	Offset Frequency	H7	Virtual Inputs/Outputs	q: DriveWorksEZ Parameters		U6	Operation Status Monitors
b4	Timer Function	E: Motor Parameters		L: Protection Functions		r: DWEZ Connection 1-20		U8	DriveWorksEZ Monitors
b5	PID Control	E1	V/f Pattern for Motor 1	L1	Motor Protection	S: Special Applications		UA	Network Multiplexing
b8	Energy Saving	E2	Motor Parameters	L2	Power Loss Ride Through	S1	Dynamic Noise Control	UC	BACnet Diagnostic Monitors
C: Tuning		E3	V/f Pattern for Motor 2	L3	Stall Prevention	S2	Sequence Run Timers	Y: Application Features	
C1	Accel & Decel Time	E4	Motor 2 Parameters	L4	Speed Detection	S3	PI2 Control	Y1	Application Basics
C2	S-Curve Characteristics	E5	PM Motor Settings	L5	Fault Restart	S5	Hand/Off/Auto Operation	Y2	PID Sleep and Protection
C3	Slip Compensation	E9	Motor Setting	L6	Torque Detection	S6	Protection	Y4	Application Advanced
C4	Torque Compensation	F: Options		L7	Torque Limit	Y9			
C5	Auto Speed Regulator (ASR)	F6	Communication Options	L8	Drive Protection	YA			
C6	Carrier Frequency	F7	Ethernet Options	L9	Drive Protection 2	YC			
				n: Special Adjustment		YF			
				n1	Hunting Prevention				
				n3	High Slip/Overexcite Braking				
				n7	EZ Drive				
				n8	PM Motor Control Tuning				

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 Selected	b3-24 Speed Search Method Selection	2 Current Detection 2	E1-01 Input AC Supply Voltage	- User-Defined
b1-01 Frequency Reference Selection 1	1 Analog Input	C1-01 Acceleration Time 1	30.0 s	E2-01 Motor Rated Current (FLA)	- User-Defined
b1-02 Run Command Selection 1	7 AUTO Command + Term Run	C1-02 Deceleration Time 1	30.0 s	L5-01 Number of Auto-Restart Attempts	0 No Restart Attempts
b1-03 Stopping Method Selection	1 Coast to Stop	d2-01 Frequency Reference Upper Limit	100.0%	L5-04 Interval Method Restart Time	10.0 s
b3-01 Speed Search at Start Selection	0 Disabled	d2-02 Frequency Reference Lower Limit	0.0%	S1-01 Dynamic Noise Control	1 Enabled

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/toepc71061793	 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/toepyaihv6001	 PDF download

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