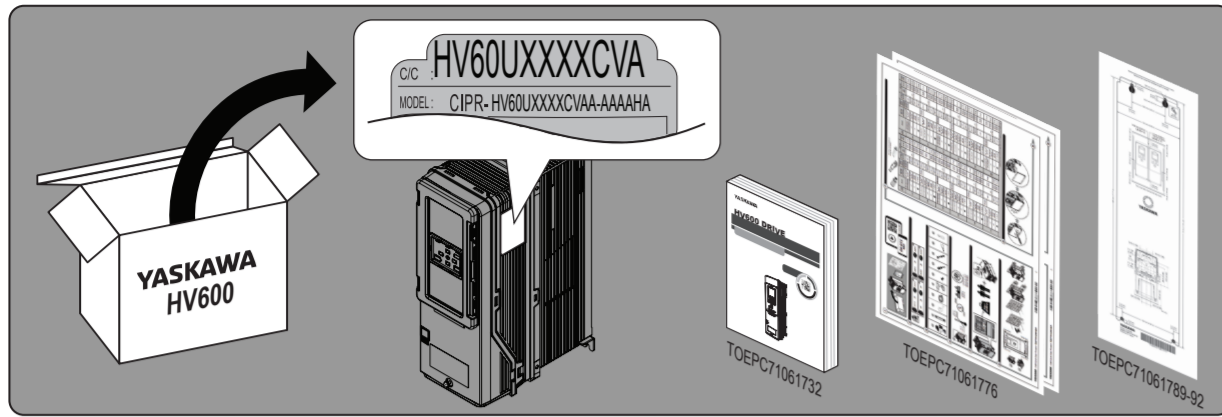
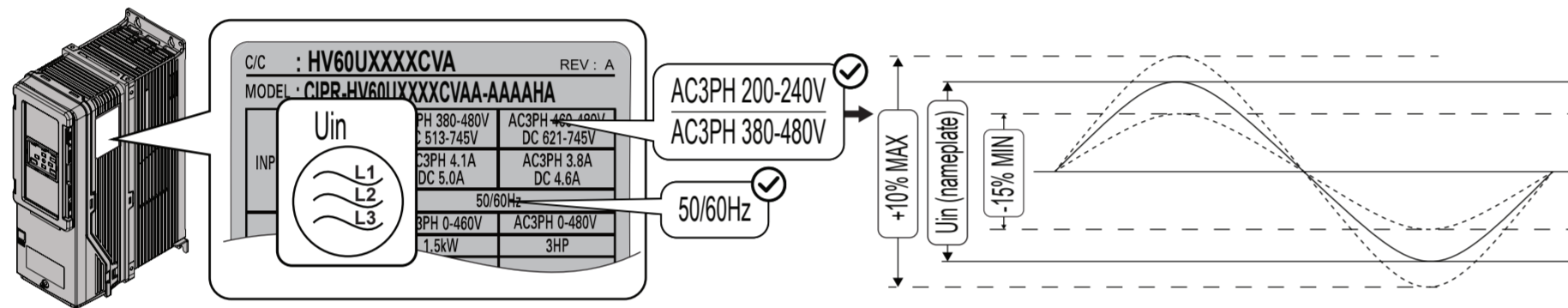
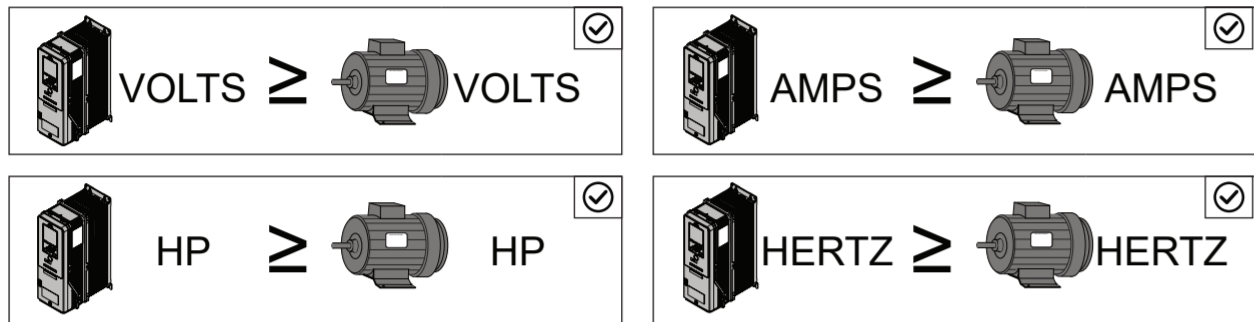


TOEPC71061776

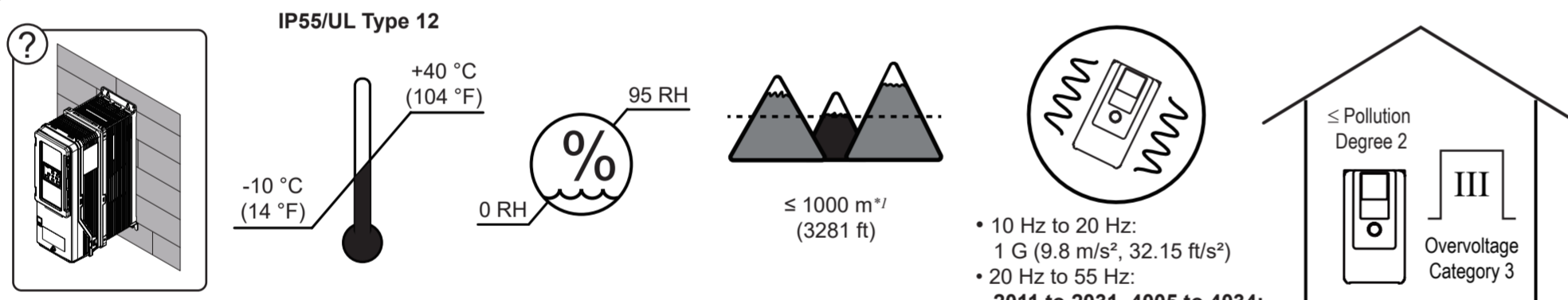


Read and follow the safety and installation procedures in the Installation & Primary Operation (TOEPC71061732) manual packaged with the drive.

1 Confirm the Drive and Motor Specifications

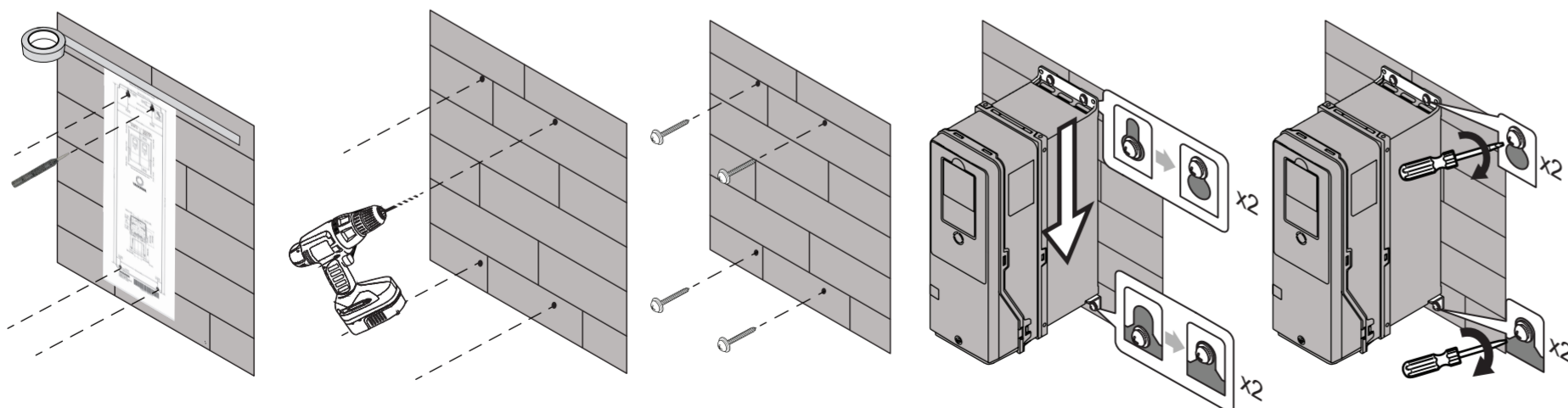


2 Confirm the Correct Drive Installation Environment



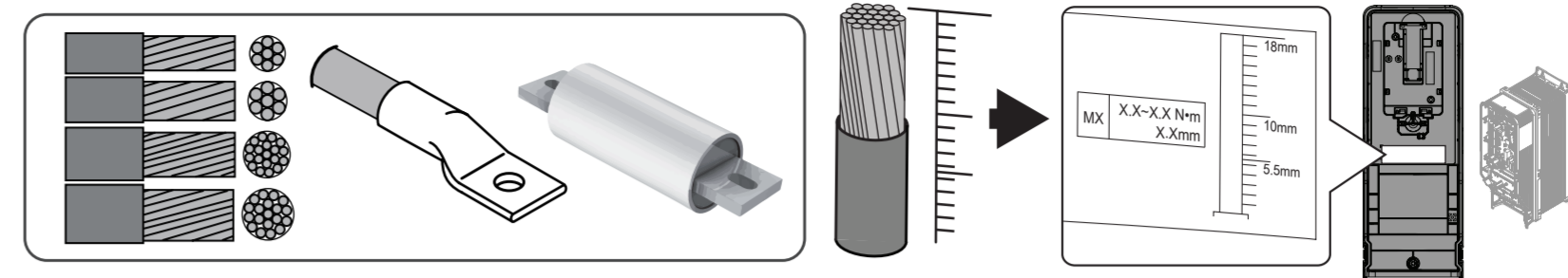
*1 Derate the output current by 1% for each 100 m (328 ft) to install the drive in altitudes between 1000 m to 4000 m (3281 ft to 13123 ft). Refer to the Technical Reference (SIEPC71061732) for derating information.

3 Use the Enclosed Drilling Template to 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.

4 Select the Motor and Power Wires, Wire Strip Length, Crimp Terminals, and Branch Circuit Protection



240 V Wires and Crimp Terminals

Drive Model [HV60UXXXX]	Terminal	Wire Range AWG, kcmil (Recommended)	Panduit Crimp Terminal Part Number ^{*1,*2}	Drive Model [HV60UXXXX]	Terminal	Wire Range AWG, kcmil (Recommended)	Panduit Crimp Terminal Part Number ^{*1,*2}	Drive Model [HV60UXXXX]	Terminal	Wire Range AWG, kcmil (Recommended)	Panduit Crimp Terminal Part Number ^{*1,*2}
2011	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 8 (14)	N/A	2031	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 8 (8)	N/A	2075	R/L1, S/L2, T/L3	8 - 2/0 (4)	LCA4-56-L
	-, +1	14 - 8 (14)	N/A		-, +1	14 - 8 (8)	N/A		U/T1, V/T2, W/T3	8 - 2/0 (3 or 2)	LCA4-56-L/LCA2-56-Q
	⊕	14 - 8 (12)	LCA10-14-L		⊕	14 - 8 (10)	LCA10-14-L		-, +1	8 - 2/0 (2)	LCA2-56-Q
2017	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 8 (12)	N/A	2046	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 4 (8)	N/A	2088	R/L1, S/L2, T/L3	8 - 2/0 (3 or 2)	LCA4-56-L/LCA2-56-Q
	-, +1	14 - 8 (10)	N/A		-, +1	14 - 4 (6)	N/A		U/T1, V/T2, W/T3	8 - 2/0 (2)	LCA2-56-Q
	⊕	14 - 8 (10)	LCA10-14-L		⊕	14 - 4 (8)	LCA8-14-L		-, +1	8 - 2/0 (1)	LCA1-56-E
2024	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 8 (10)	N/A	2059	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 4 (4)	N/A	2114	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	8 - 2/0 (1/0)	LCA1/0-56-X
	-, +1	14 - 8 (8)	N/A		-, +1	14 - 4 (6)	N/A		-, +1	8 - 2/0 (2/0)	LCA2/0-56-X
	⊕	14 - 8 (10)	LCA10-14-L		⊕	14 - 4 (8)	LCA6-14-L		⊕	8 - 2/0 (6)	LCA6-56-L

480 V Wires and Crimp Terminals

Drive Model [HV60UXXXX]	Terminal	Wire Range AWG, kcmil (Recommended)	Panduit Crimp Terminal Part Number ^{*1,*2}	Drive Model [HV60UXXXX]	Terminal	Wire Range AWG, kcmil (Recommended)	Panduit Crimp Terminal Part Number ^{*1,*2}	Drive Model [HV60UXXXX]	Terminal	Wire Range AWG, kcmil (Recommended)	Panduit Crimp Terminal Part Number ^{*1,*2}
4005 4008	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 8 (14)	N/A	4027	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 8 (8)	N/A	4065	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 4 (4)	N/A
	-, +1	14 - 8 (14)	N/A		-, +1	14 - 8 (8)	N/A		-, +1	14 - 4 (4)	N/A
	⊕	14 - 8 (14)	LCA10-14-L		⊕	14 - 8 (10)	LCA10-14-L		⊕	14 - 4 (6)	LCA6-14-L
4011	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 8 (14)	N/A	4034	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 8 (8)	N/A	4077	R/L1, S/L2, T/L3	8 - 2/0 (4)	LCA4-56-L
	-, +1	14 - 8 (14)	N/A		-, +1	14 - 8 (8)	N/A		U/T1, V/T2, W/T3	8 - 2/0 (3 or 2)	LCA4-56-L/LCA2-56-Q
	⊕	14 - 8 (12)	LCA10-14-L		⊕	14 - 8 (10)	LCA10-14-L		-, +1	8 - 2/0 (2)	LCA2-56-Q
4014	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 8 (14)	N/A	4040	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 4 (8)	N/A	4096	R/L1, S/L2, T/L3	8 - 2/0 (2)	LCA2-56-Q
	-, +1	14 - 8 (12)	N/A		-, +1	14 - 4 (6)	N/A		U/T1, V/T2, W/T3	8 - 2/0 (1)	LCA1-56-E
	⊕	14 - 8 (10)	LCA10-14-L		⊕	14 - 4 (8)	LCA8-14-L		-, +1	8 - 2/0 (1)	LCA1-56-E
4021	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 8 (10)	N/A	4052	R/L1, S/L2, T/L3 U/T1, V/T2, W/T3	14 - 4 (6)	N/A	4124	R/L1, S/L2, T/L3	8 - 2/0 (1/0)	LCA1/0-56-X
	-, +1	14 - 8 (10)	N/A		-, +1	14 - 4 (4)	N/A		U/T1, V/T2, W/T3	8 - 2/0 (2/0)	LCA2/0-56-X
	⊕	14 - 8 (10)	LCA10-14-L		⊕	14 - 4 (8)	LCA8-14-L		-, +1	8 - 2/0 (2/0)	LCA2/0-56-X
									⊕	8 - 2/0 (4)	LCA4-56-L

*1 For use with Panduit Corp. heat-shrinkable tubing HSTT series or an equivalent UL-recognized-heat shrinkable tubing rated 600 V minimum.
*2 Refer to the Installation & Primary Operation (TOEPC71061732) 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 HV600 AC Drives (Three-Phase 240 V)

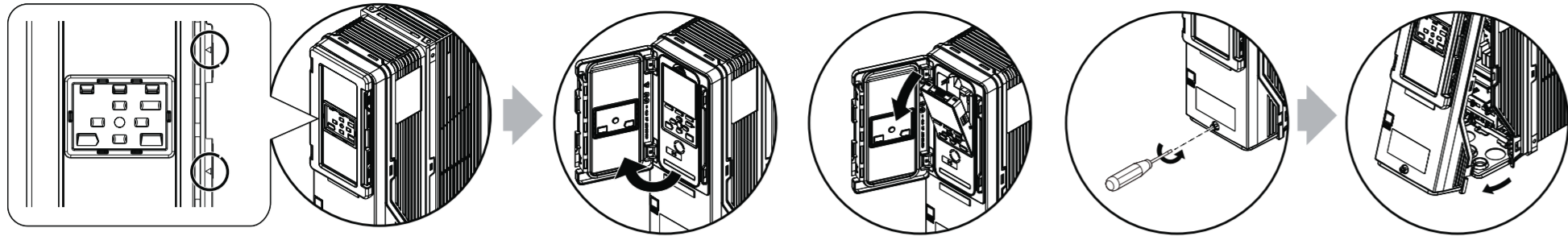
		2011	2017	2024	2031	2046	2059	2075	2088	2114
Protected Enclosure Not Required	Eaton/Bussman Semiconductor Fuse Part Number	FWH-40B	FWH-45B	FWH-80B	FWH-125B	FWH-125B	FWH-175B	FWH-200B	FWH-225A	FWH-225A
	Class CC, J, or T Fuse ^{*1} Maximum Amps	17.5	25	40	50	80	100	125	150	200
Ventilated Protected Enclosure Required	MCCB Maximum Amps	25	40	60	75	110	125	175	200	250
	Schneider MCP Part Number HLLxxxxxxx	36030M71	36030M71	36050M72	36050M72	36100M73	36100M73	36150M74	36150M74	36150M74
	Enclosure Volume Minimum (in ³)	3056	3056	3056	3056	5520	5520	5520	5520	5520

Required Short Circuit Protection for HV600 AC Drives (Three-Phase 480 V)

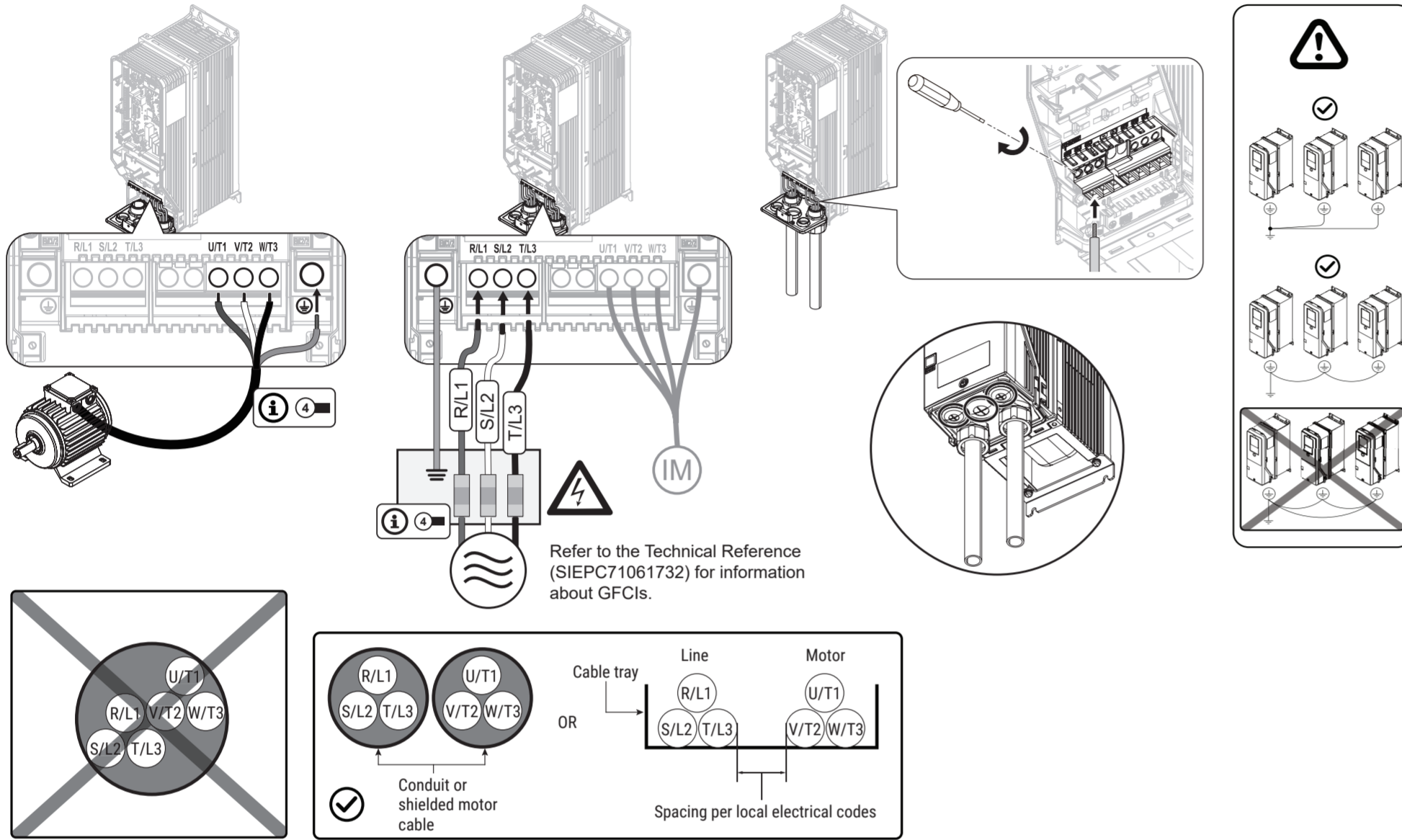
		4005	4008	4011	4014	4021	4027	4034	4040	4052	4065	4077	4096	4124
Protected Enclosure Not Required	Eaton/Bussman Semiconductor Fuse Part Number	FWH-25A14F	FWH-30A14F	FWH-40B	FWH-45B	FWH-60B	FWH-80B	FWH-100B	FWH-125B	FWH-150B	FWH-200B	FWH-225A	FWH-225A	FWH-225A
	Class CC, J, or T Fuse ^{*1} Maximum Amps	8	12	17.5	20	35	45	60	70	90	110	125	150	200
Ventilated Protected Enclosure Required	MCCB Maximum Amps	15	15	25	35	50	60	80	100	125	150	175	225	300
	Schneider MCP Part Number HLLxxxxxxx	36030M71	36030M71	36030M71	36030M71	36030M71	36050M72	36050M72	36100M73	36100M73	36100M73	36100M73	36150M74	36250M75 ^{*2}
	Enclosure Volume Minimum (in ³)	3056	3056	3056	3056	3056	3056	3056	5520	5520	5520	5520	5520	5520
	External Heatsink	3056	3056	3056	3056	3056	3056	3056	5520	5520	5520	5520	5520	5520
	Internal Heatsink	3056	3056	3056	3056	3056	3056	3056	5520	5520	5520	5520	5520	5520

*1 Class T fuses are fast-acting (non-time-delay) only. You can substitute a Class J time-delay fuse for a Class J non-time-delay fuse.
*2 The MCP part number for model 4124 is JLLxxxxxxx.

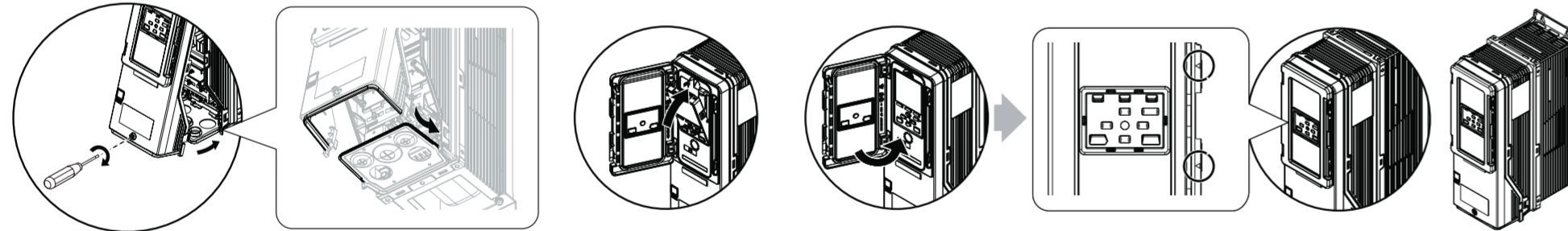
5 Remove the Front Cover and Keypad



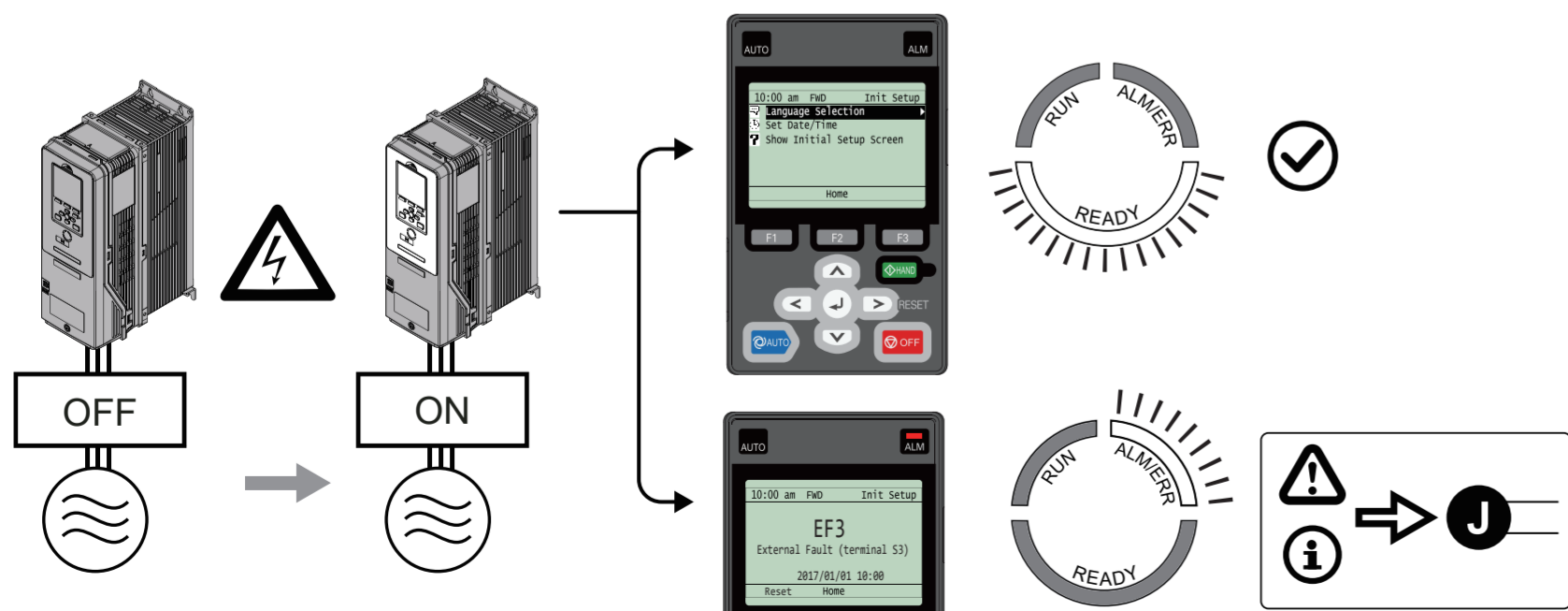
6 Install the Motor Wiring and Power Wiring



7 Install the Front Cover and Keypad

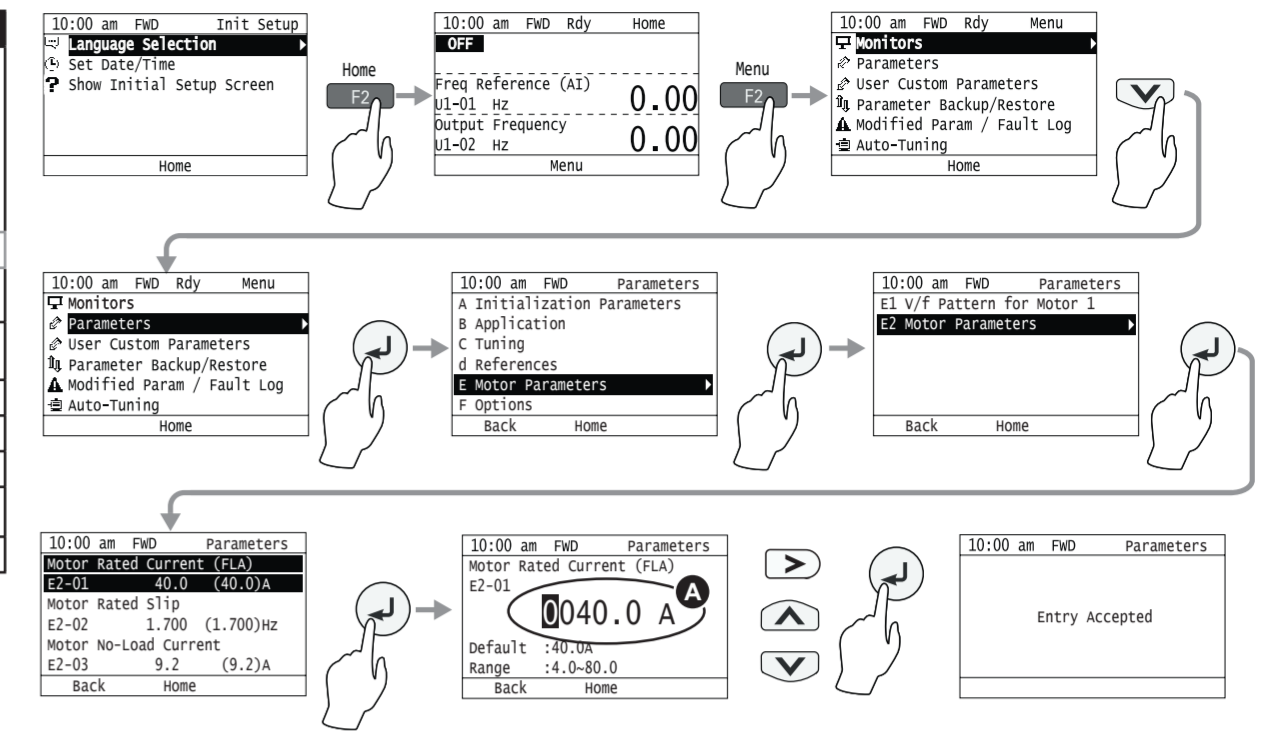


8 Energize the Drive and Confirm It Is Ready

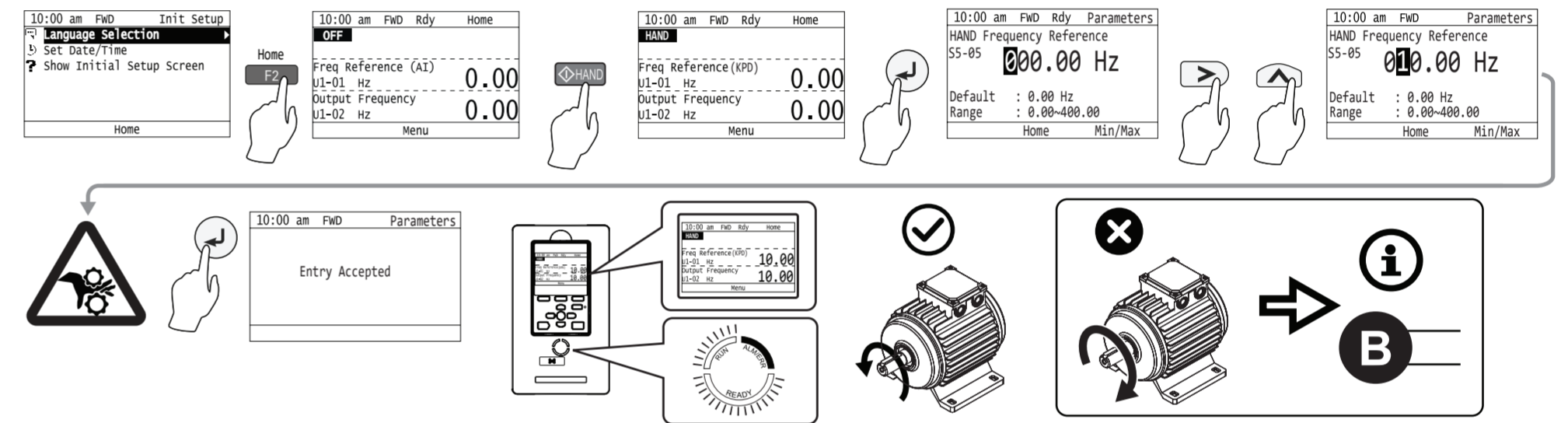


9 Set the Motor Rated Current (FLA) from the Motor Nameplate in E2-01

3 PHASE INVERTER DUTY AC INDUCTION MOTOR NAMEPLATE EXAMPLE					
MODEL	XX	123AAA123XX-X0		DES A	X FRAME 123AX
POLES	X	ENC XXX	CODE X		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.	XXX	ROTOR WK? X.X
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	X3: XX.X
P/N XXXXXXX					

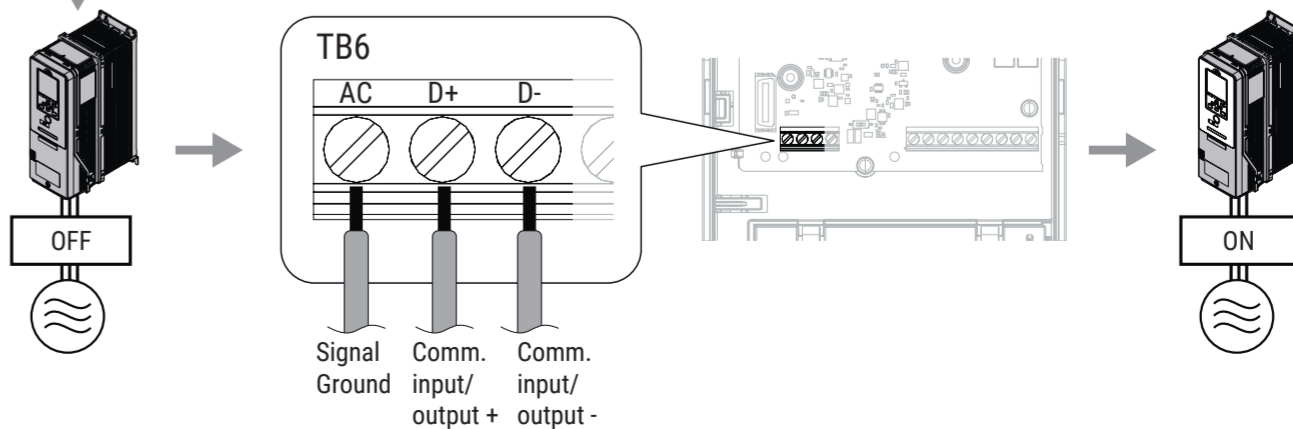
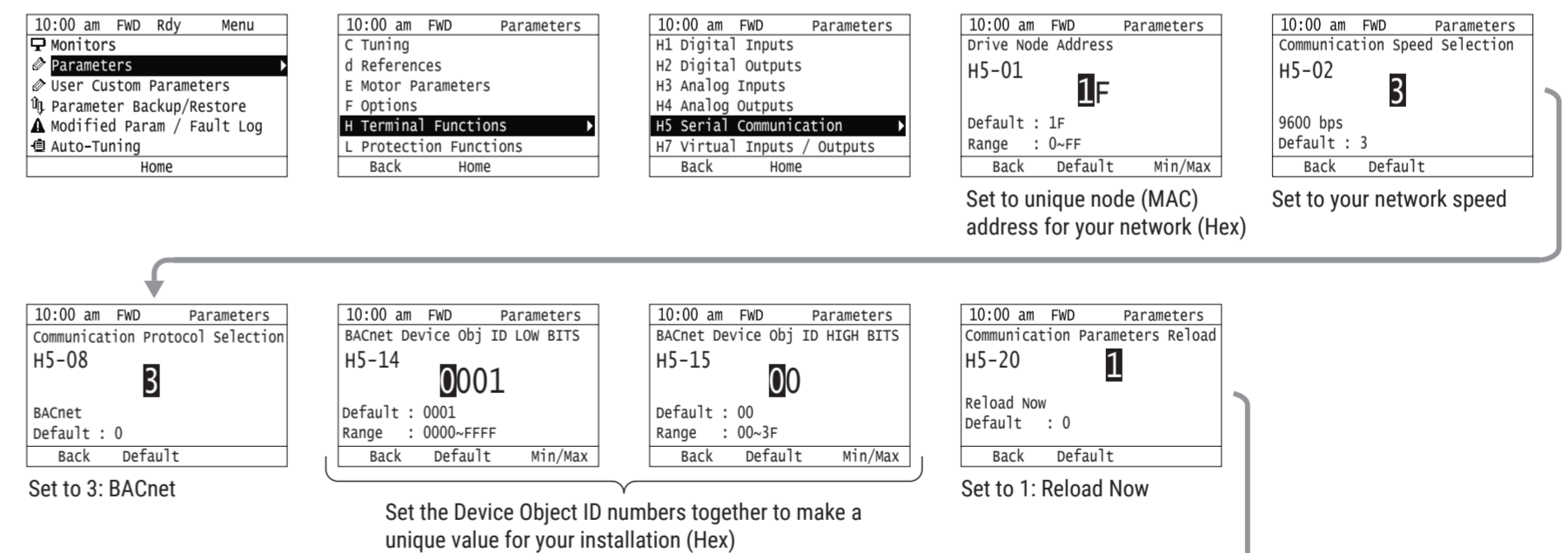


10 Set the Drive for HAND Operation and Check the Motor Rotation Direction

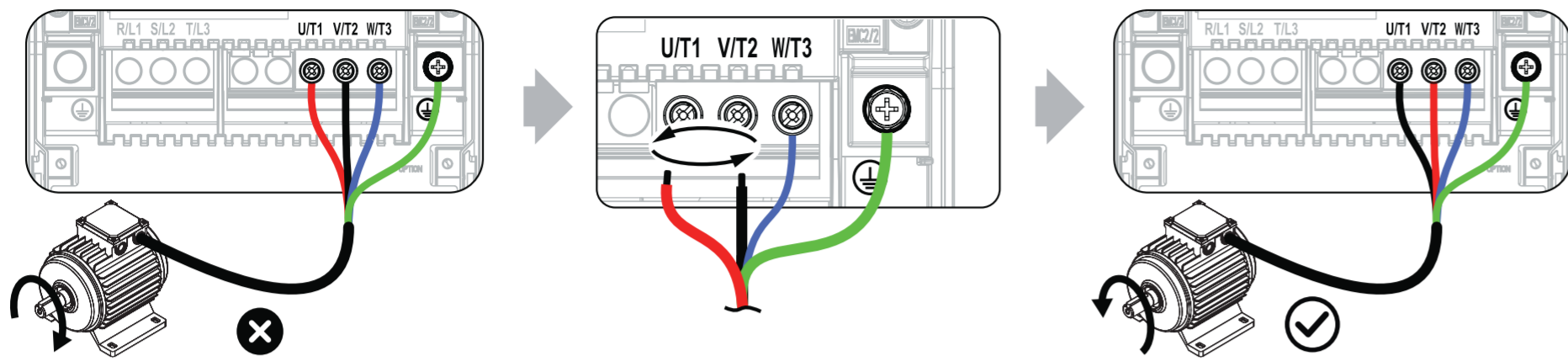


Additional Information for Installation and Primary Operation

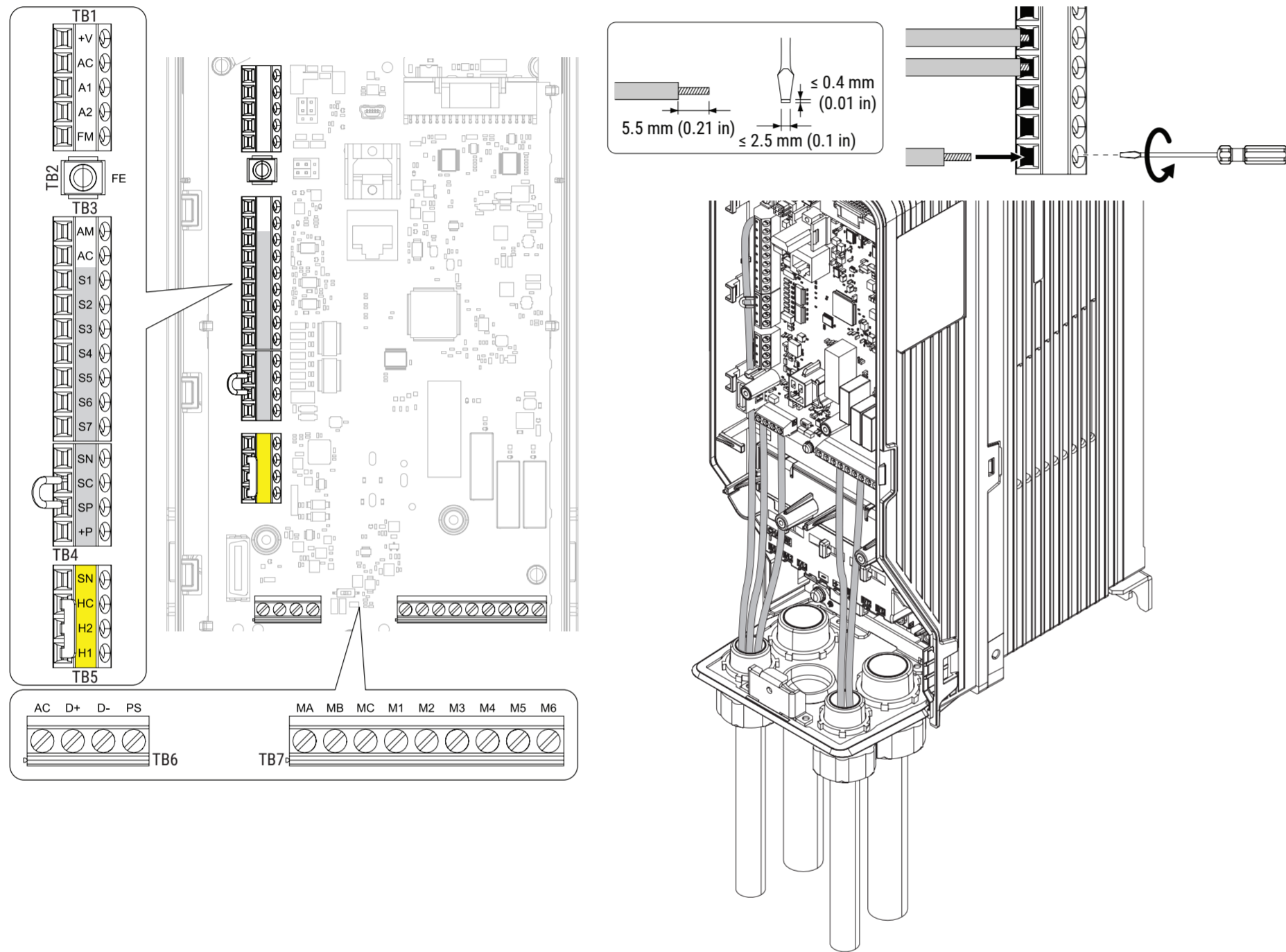
A How to Set Up the Drive for Monitoring via BACnet MS/TP



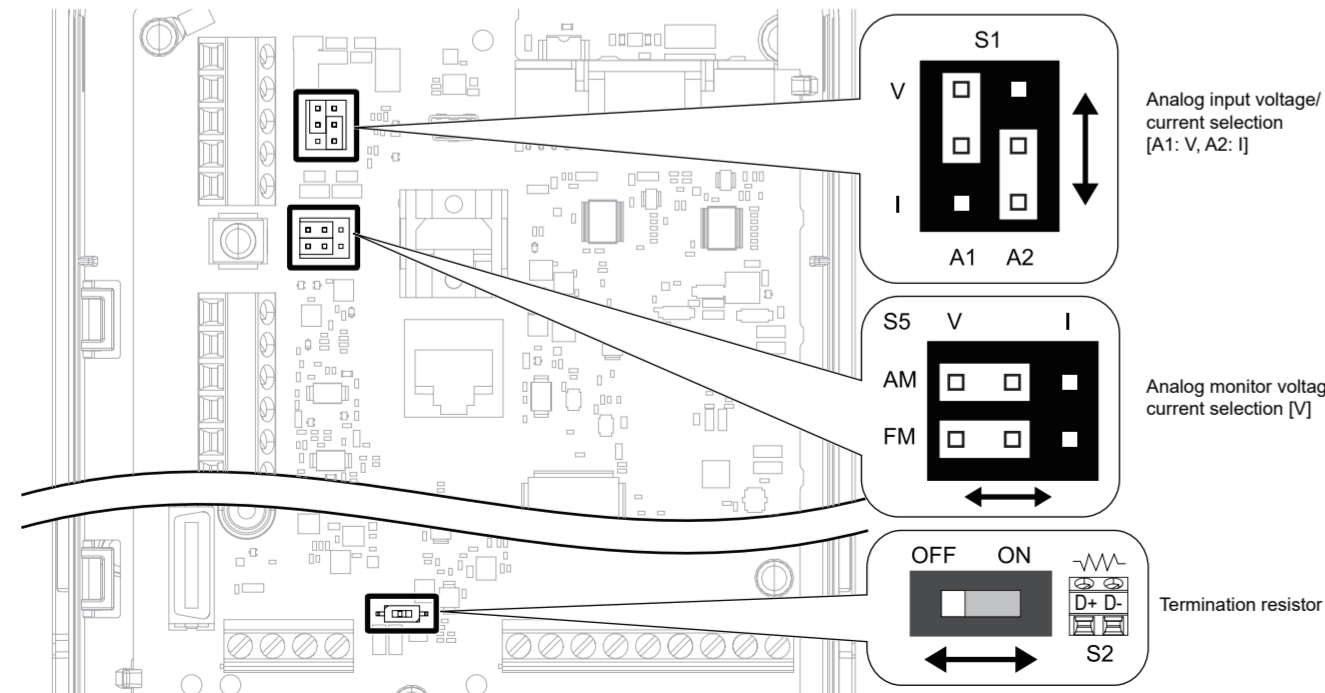
B If the Motor Does Not Rotate in the Correct Direction



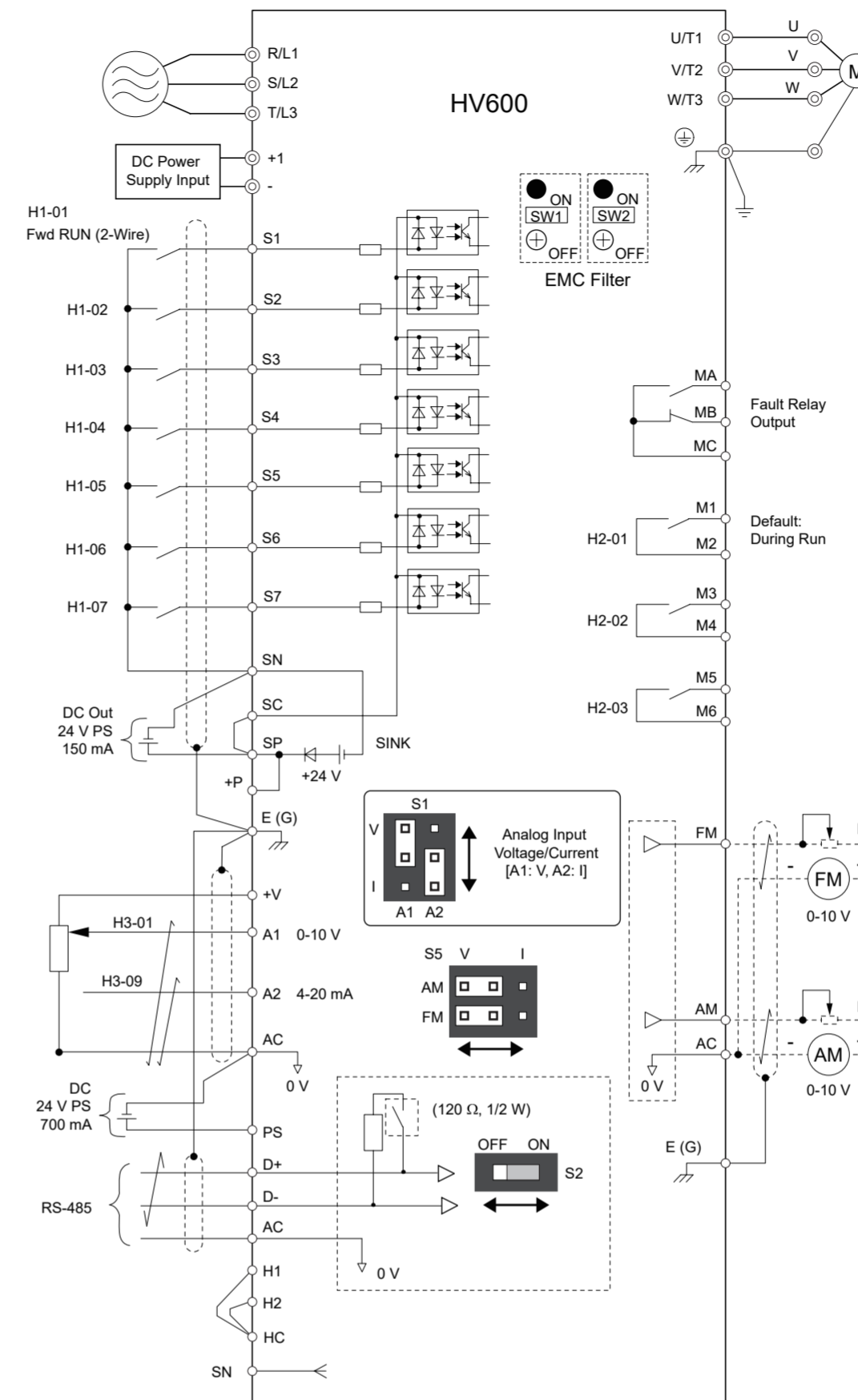
C Control Circuit Configuration



D Switches and Jumpers on the Control Board

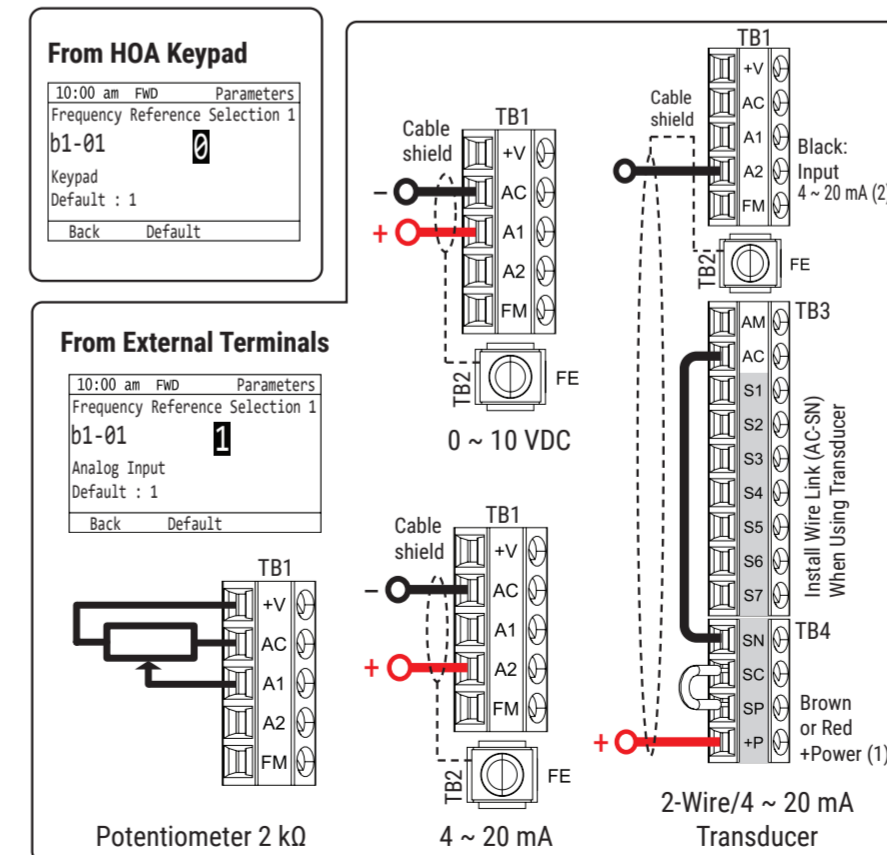


E Connection Diagram and Terminal Functions

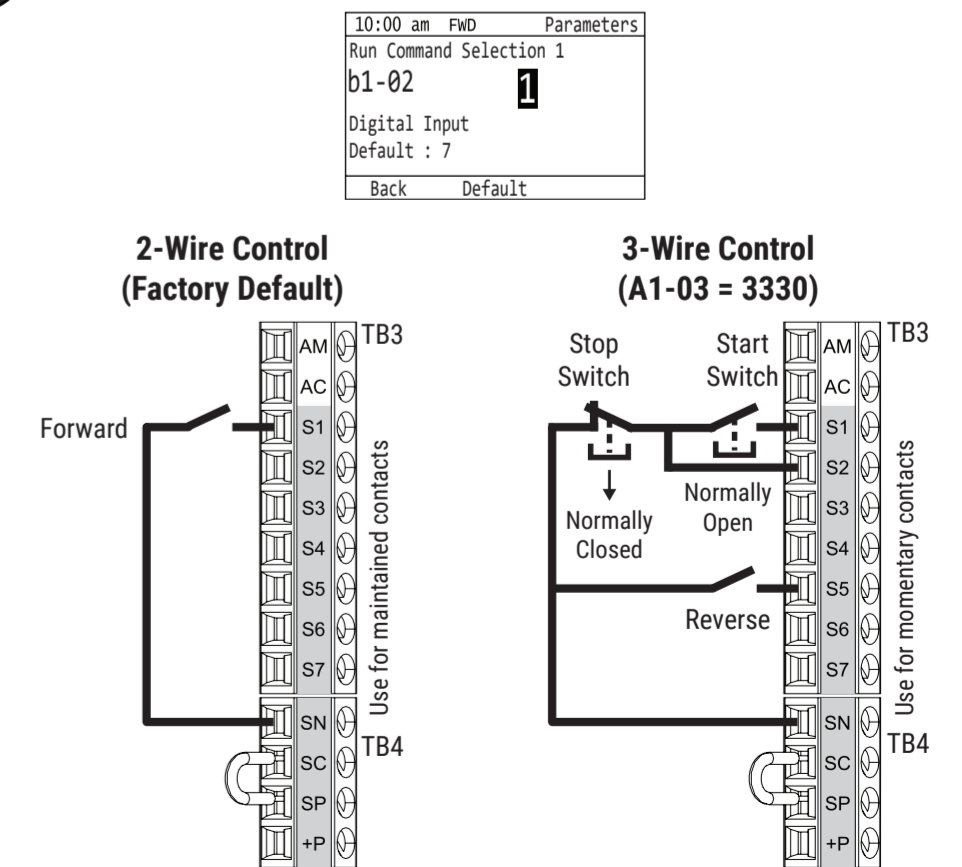


Terminal	Type	Signal Level	Default	Parameter Default
S1	MFDI 1	Photocoupler 24 V, 6 mA Internal impedance: 4.7 kΩ	Forward RUN (2-Wire)	H1-01 40
S2	MFDI 2		Not Used	H1-02 F
S3	MFDI 3		External Fault (NO-Always-Coast)	H1-03 24
S4	MFDI 4		Fault Reset	H1-04 14
S5	MFDI 5		Multi-Step Speed Reference 1	H1-05 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		-	-
SC	MFDI common	24 V, 150 mA maximum	-	-
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%	Frequency Reference	H3-01 0
A2	MFAI 2	0 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	Fault (N.O)	Fault
MB	Fault relay output		Fault (N.C)	Fault
MC	Common		-	-
M1	MFDO		During Run	H2-01 0
M2	MFDO		Zero Speed	H2-02 1
M3	MFDO	30 VDC, 10 mA ~ 2 A 250 VAC, 10 mA ~ 2 A Minimum load: 5 V, 10 mA		
M4	MFDO		Speed Agree 1	H2-03 2
M5	MFDO			
M6	MFDO			
FM	MFAO 1	0 V ~ 10 V/0% ~ 100% 4 mA ~ 20 mA	Output Frequency	H4-01 102
AM	MFAO 2		Output Current	H4-04 103
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 RS-485	-	-
D-	Communication -	115.2 kbps maximum	-	-
AC	Common	0 V	-	-

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

The diagram illustrates the troubleshooting process for a motor that does not spin after pressing the HAND button. It shows the following steps:

- Initial state: The drive is in the Home position. The keypad shows 'HAND' and 'Menu' options. The motor is not spinning.
- Pressing the HAND button: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button again: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a third time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a fourth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a fifth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a sixth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a seventh time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button an eighth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a ninth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a tenth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button an eleventh time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a twelfth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a thirteenth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a fourteenth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a fifteenth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a sixteenth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a seventeenth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button an eighteenth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a nineteenth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.
- Pressing the F2 button a twentieth time: The drive displays 'HAND' and 'Menu' options. The motor is still not spinning.

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/toepec71061732	 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/toepeiavh6001	 PDF download

I Parameter Groups

A: Initialization	d: Reference Settings	H: Terminal Functions	n: Special Adjustment	T: Auto-Tuning
A1 Initialization	d1 Frequency Reference	H1 Digital Inputs	n1 Hunting Prevention	T0 Tuning Mode Selection
A2 User Parameters	d2 Reference Limits	H2 Digital Outputs	n3 High Slip/Overexcite Braking	T1 Induction/Motor Auto-Tuning
b: Application	d3 Jump Frequency	H3 Analog Inputs	n7 EZ Drive	T2 PM Motor Auto-Tuning
b1 Operation Mode Selection	d4 Freq. Ref. Up/Down & Hold	H4 Analog Outputs	n8 PM Motor Control Tuning	T4 EZ Tuning
b2 DC Injection Braking and Short Circuit Braking	d6 Field Weakening	H5 Serial Communication	o: Keypad-Related Settings	Y: Application Features
b3 Speed Search	d7 Offset Frequency	H7 Virtual Inputs/Outputs	o1 Keypad Display	Y1 Application Basics
b4 Timer Function	E: Motor	L: Protection Functions	o2 Keypad Operation	Y2 PID Sleep and Protection
b5 PID Control	E1 V/f Pattern for Motor 1	L1 Motor Protection	o3 Copy Keypad Function	Y4 Application Advanced
b8 Energy Saving	E2 Motor 1 Parameters	L2 Power Loss Ride Through	o4 Maintenance Monitors	Y9 Network Multiplex Options
C: Tuning	E3 V/f Pattern for Motor 2	L3 Stall Prevention	o5 Log Function	YA Preset Setpoint
C1 Accel & Decel Time	E4 Motor 2 Parameters	L4 Speed Detection	q: DriveWorksEZ Parameters	YC Feedback Features
C2 S-Curve Characteristics	E5 PM Motor Settings	L5 Fault Restart	r: DriveWorksEZ Connections	YF PI Auxiliary Control
C3 Slip Compensation	E9 Motor Setting	L6 Torque Detection	S: Special Applications	
C4 Torque Compensation	F: Options	L7 Torque Limit	S1 Dynamic Noise Control	
C5 Auto Speed Regulator (CSR)	F6 Communication Option	L8 Drive Protection	S2 Sequence Run Timers	
C6 Carrier Frequency	F7 Ethernet Options	L9 Drive Protection 2	S3 PI2 Control	
			S5 HAND/OFF/AUTO Operation	
			S6 Protection	

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

K Additional Resources



Mobile App



DriveWizard® Mobile Commissioning Smartphone App
<https://www.yaskawa.com/dwm>

Product Manuals



•PDFs
•Online HTML5-Searchable
•Manuals App
<https://www.yaskawa.com/hv600manuals>

DriveWizard is a registered trademark of Yaskawa America, Inc. and is registered in the U.S. Patent and Trademark Office.

L Customer Feedback

Comments or questions about this document? Fill out our online form:



or
Email us: technical_documentation@yaskawa.com
Call us: 1-800-YASKAWA (927-5292)
www.yaskawa.com/DRV-F-0006

Please consider following us on social media:

www.youtube.com/yaskawayea

www.linkedin.com/company/18822

www.twitter.com/yaskawa

Headquarters Address:

YASKAWA AMERICA, INC.
2121 Norman Drive South
Waukegan, IL 60085
USA
© 2020 YASKAWA Electric Corporation
MANUAL NO. TOEP C710617 76D <3>-1
Published in Japan October 2022