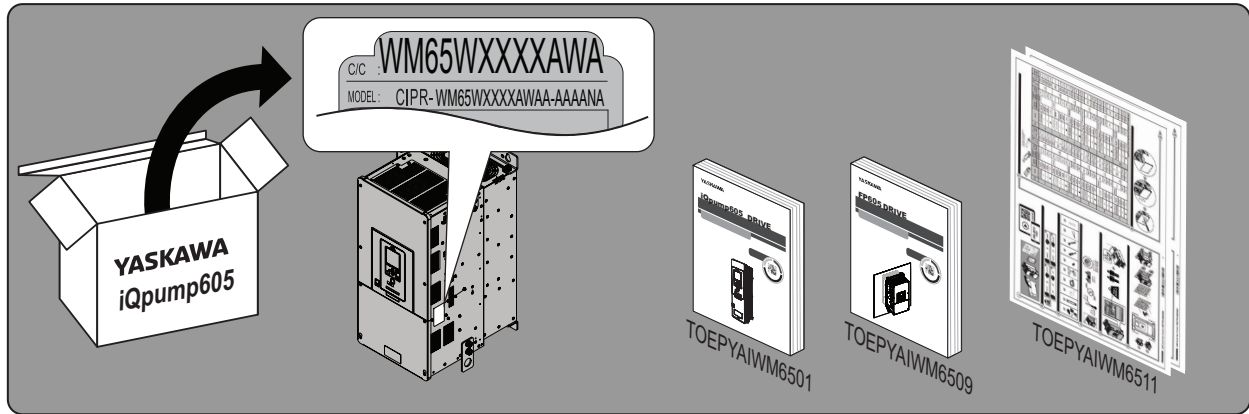


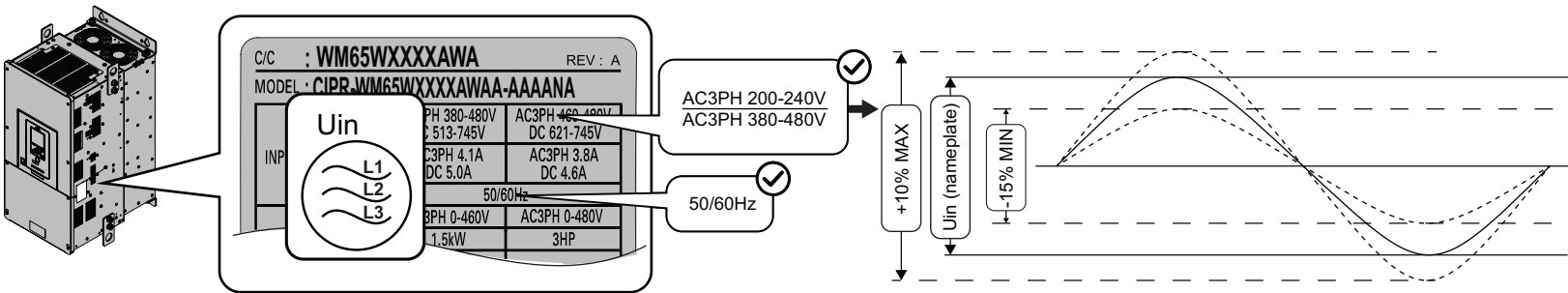
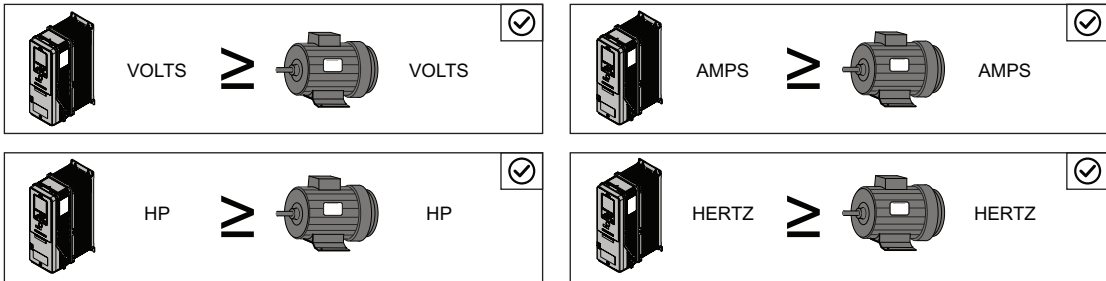
TOEPYAIWM6511



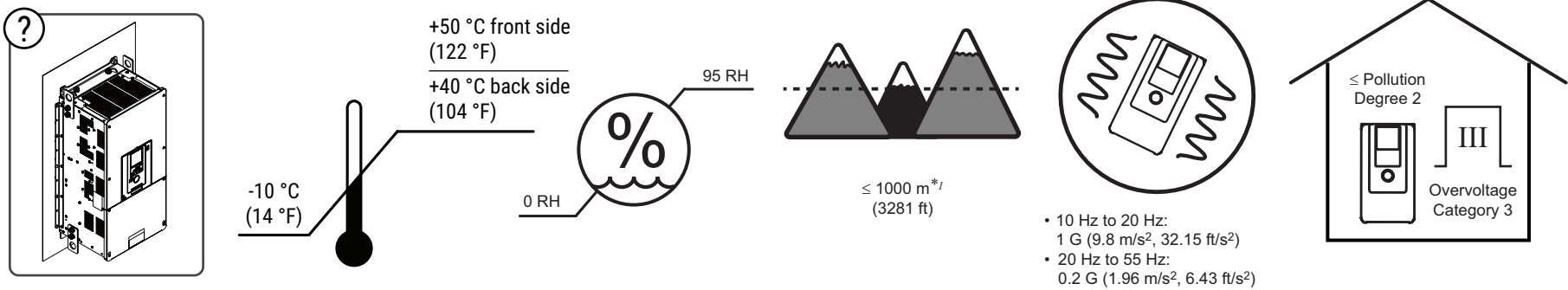
Read and follow the safety and installation procedures in the Installation & Primary Operation (TOEPYAIWM6501) manual packaged with the drive.



1 Confirm the Drive and Motor Specifications

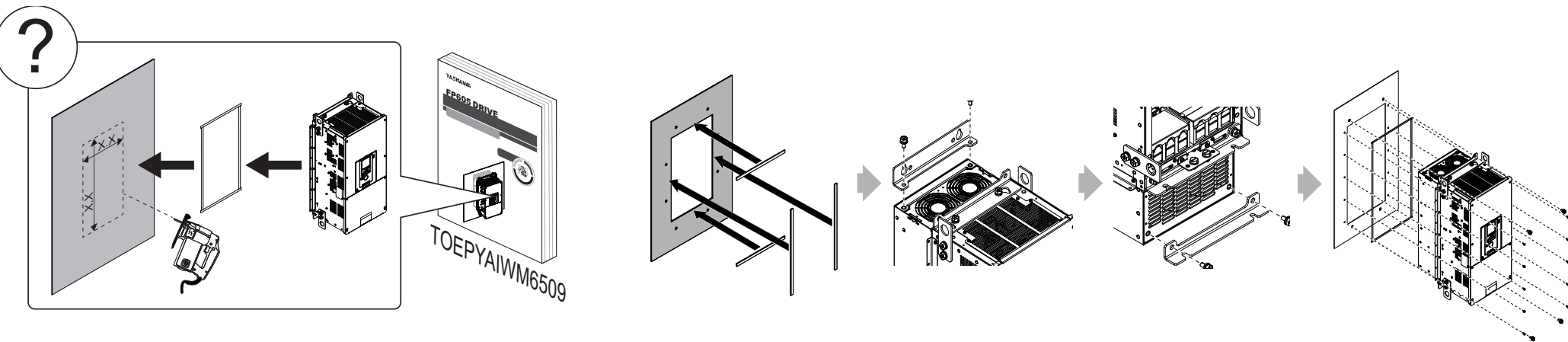


2 Confirm the Correct Drive Installation Environment



*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 (SIEPYAIWM6501) for derating information.

3 Cut a Panel Opening and Install the Drive



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

240 V Wires and Crimp Terminals

Drive Model [WM65WXXX]	Terminal	Wire Range AWG/kcmil (mm ²)* ₁	Recommended Wire Gauge AWG/kcmil	Panduit Crimp Terminal Part Number* _{2,3}	Drive Model [WM65WXXX]	Terminal	Wire Range AWG/kcmil (mm ²)* ₁	Recommended Wire Gauge AWG/kcmil	Panduit Crimp Terminal Part Number* _{2,3}
2211	R/L1, S/L2, T/L3	3 - 4/0 × 2P (25 - 95 × 2P)	1/0 × 2	LCA1/0-12-X	2343	R/L1, S/L2, T/L3	2/0 - 300 × 2P (70 - 150 × 2P)	4/0 × 2	LCA4/0-12-X
	U/T1, V/T2, W/T3	3 - 4/0 × 2P (25 - 95 × 2P)	1/0 × 2	LCA1/0-12-X		U/T1, V/T2, W/T3	2/0 - 300 × 2P (70 - 150 × 2P)	4/0 × 2	LCA4/0-12-X
	-, +1	2 - 250 × 2P (35 - 120 × 2P)	2/0 × 2	LCA2/0-12-X		-, +1	4/0 - 400 × 2P (95 - 185 × 2P)	250 × 2	LCA250-12-X
	⊕	4 - 350 (25 - 185)	3 or 2	LCA4-12-L/LCA2-12-Q		⊕	1 - 350 (50 - 185)	1/0	LCA1/0-12-X
2273	R/L1, S/L2, T/L3	3 - 4/0 × 2P (25 - 95 × 2P)	2/0 × 2	LCA2/0-12-X	2396	R/L1, S/L2, T/L3	2/0 - 300 × 2P (70 - 150 × 2P)	250 × 2	LCA250-12-X
	U/T1, V/T2, W/T3	3 - 4/0 × 2P (25 - 95 × 2P)	2/0 × 2	LCA2/0-12-X		U/T1, V/T2, W/T3	2/0 - 300 × 2P (70 - 150 × 2P)	250 × 2	LCA250-12-X
	-, +1	2 - 250 × 2P (35 - 120 × 2P)	4/0 × 2	LCA3/0-12-X		-, +1	4/0 - 400 × 2P (95 - 185 × 2P)	350 × 2	LCA350-12-X
	⊕	4 - 350 (25 - 185)	2	LCA2-12-Q		⊕	1 - 350 (50 - 185)	1/0	LCA1/0-12-X

480 V Wires and Crimp Terminals

Drive Model [WM65WXXX]	Terminal	Wire Range AWG/kcmil (mm ²)* ₁	Recommended Wire Gauge AWG/kcmil	Panduit Crimp Terminal Part Number* _{2,3}	Drive Model [WM65WXXX]	Terminal	Wire Range AWG/kcmil (mm ²)* ₁	Recommended Wire Gauge AWG/kcmil	Panduit Crimp Terminal Part Number* _{2,3}
4180	R/L1, S/L2, T/L3	3 - 4/0 × 2P (25 - 95 × 2P)	1/0 × 2	LCA1/0-12-X	4477	R/L1, S/L2, T/L3	2/0 - 300 × 4P (70 - 150 × 4P)	3/0 × 4	LCA3/0-12-X
	U/T1, V/T2, W/T3	3 - 4/0 × 2P (25 - 95 × 2P)	1/0 × 2	LCA1/0-12-X		U/T1, V/T2, W/T3	2/0 - 300 × 4P (70 - 150 × 4P)	3/0 × 4	LCA3/0-12-X
	-, +1	2 - 250 × 2P (35 - 120 × 2P)	1/0 × 2	LCA1/0-12-X		-, +1	3/0 - 400 × 4P (95 - 185 × 4P)	4/0 × 4	LCA4/0-12-X
	⊕	4 - 350 (25 - 185)	3 or 2	LCA4-12-L/LCA2-12-Q		⊕	2/0 - 300 (70 - 150)	2/0	LCA2/0-12-X
4240	R/L1, S/L2, T/L3	3 - 4/0 × 2P (25 - 95 × 2P)	1/0 × 2	LCA1/0-12-X	4515	R/L1, S/L2, T/L3	2/0 - 300 × 4P (70 - 150 × 4P)	4/0 × 4	LCA4/0-12-X
	U/T1, V/T2, W/T3	3 - 4/0 × 2P (25 - 95 × 2P)	1/0 × 2	LCA1/0-12-X		U/T1, V/T2, W/T3	2/0 - 300 × 4P (70 - 150 × 4P)	4/0 × 4	LCA4/0-12-X
	-, +1	2 - 250 × 2P (35 - 120 × 2P)	3/0 × 2	LCA3/0-12-X		-, +1	3/0 - 400 × 4P (95 - 185 × 4P)	250 × 4	LCA250-12-X
	⊕	4 - 350 (25 - 185)	2	LCA2-12-Q		⊕	2/0 - 300 (70 - 150)	2/0	LCA2/0-12-X
4302	R/L1, S/L2, T/L3	3 - 4/0 × 2P (25 - 95 × 2P)	3/0 × 2	LCA3/0-12-X	4590	R/L1, S/L2, T/L3	2/0 - 300 × 4P (70 - 150 × 4P)	4/0 × 4	LCA4/0-12-X
	U/T1, V/T2, W/T3	3 - 4/0 × 2P (25 - 95 × 2P)	3/0 × 2	LCA3/0-12-X		U/T1, V/T2, W/T3	2/0 - 300 × 4P (70 - 150 × 4P)	250 × 4	LCA250-12-X
	-, +1	2 - 250 × 2P (35 - 120 × 2P)	4/0 × 2	LCA4/0-12-X		-, +1	3/0 - 400 × 4P (95 - 185 × 4P)	300 × 4	LCA300-12-X
	⊕	1 - 350 (50 - 185)	1/0	LCA1/0-12-X		⊕	2/0 - 300 (70 - 150)	3/0	LCA3/0-12-X
4361	R/L1, S/L2, T/L3	2/0 - 300 × 2P (70 - 150 × 2P)	4/0 × 2	LCA4/0-12-X	4720	R/L1, S/L2, T/L3	2/0 - 300 × 4P (70 - 150 × 4P)	300 × 4	LCA300-12-X
	U/T1, V/T2, W/T3	2/0 - 300 × 2P (70 - 150 × 2P)	4/0 × 2	LCA4/0-12-X		U/T1, V/T2, W/T3	2/0 - 300 × 4P (70 - 150 × 4P)	300 × 4	LCA300-12-X
	-, +1	4/0 - 400 × 2P (95 - 185 × 2P)	300 × 2	LCA300-12-X		-, +1	3/0 - 400 × 4P (95 - 185 × 4P)	400 × 4	LCA400-12-6
	⊕	1 - 350 (50 - 185)	1/0	LCA1/0-12-X		⊕	2/0 - 300 (70 - 150)	4/0	LCA4/0-12-X
4414	R/L1, S/L2, T/L3	2/0 - 300 × 2P (70 - 150 × 2P)	250 × 2	LCA250-12-X					
	U/T1, V/T2, W/T3	2/0 - 300 × 2P (70 - 150 × 2P)	300 × 2	LCA300-12-X					
	-, +1	4/0 - 400 × 2P (95 - 185 × 2P)	350 × 2	LCA350-12-X					
	⊕	1 - 350 (50 - 185)	1/0	LCA1/0-12-X					

*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 values. 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 (TOEPYAIWM6501) for possible Panduit Type P and Type S crimp terminal alternatives.

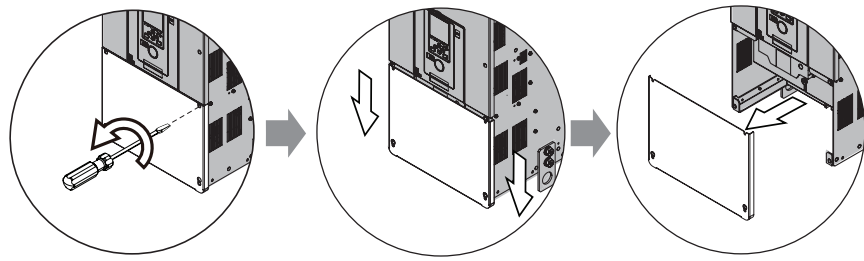
Required Short Circuit Protection

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.

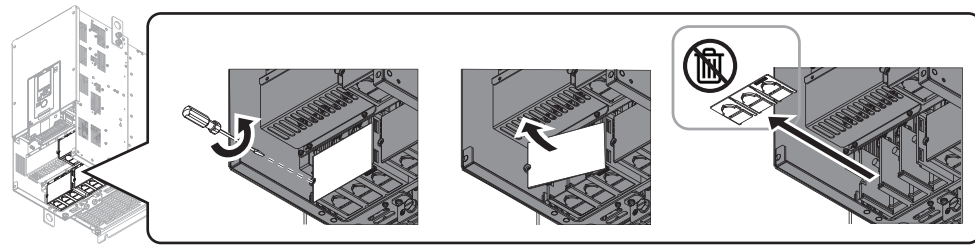
			Three-Phase 240 V				Three-Phase 480 V									
			2211	2273	2343	2396	4180	4240	4302	4361	4414	4477	4515	4590	4720	
Drive Mounted without Supplemental Enclosure (Using Type 1 Kit)	Eaton/Bussmann Semiconductor Fuse ^{*1} Part Number (Permitted Only in Type 1 Kit)		Not allowed. Does not support internal fuses for these drive models.							FWH-800A	FWH-1000A or FWH-1000B	FWH-1200A or FWH-1200B	FWH-1200A or FWH-1200B	FWH-1400A	FWH-1400A	
	Class CC, J, or T Fuse ^{*2} Maximum Amps		350	450	600	700	300	400	500	Not allowed. Must use semiconductor fuses.						
Drive Mounted in Supplemental Enclosure	Any Size Protected Enclosure (Ventilated or Non-Ventilated)	Eaton/Bussmann Semiconductor Fuse ^{*1} Part Number	FWH-600A	FWH-800A	FWH-1000A or FWH-1000B	FWH-1000A or FWH-1000B	FWH-500A	FWH-600A	FWH-700A	FWH-800A	FWH-1000A or FWH-1000B	FWH-1200A or FWH-1200B	FWH-1200A or FWH-1200B	FWH-1400A	FWH-1400A	
		Class CC, J, or T Fuse ^{*2,*3} Maximum Amps	350	450	600	700	300	400	500	Not allowed. Must use minimum enclosure volume requirements.						
	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.								600	700	800	900	1000	1200
		MCCB ^{*3} Maximum Amps	500	600	700	800	450	600	700	700	800	900	1000	1200	1400	
		Schneider MCP ^{*1} Part Number	LAL3640036M or LLL36400M37X	LAL3640036M or LLL36400M37X	PLL34060M68	PLL34060M68	JLL36250M75	LAL3640036M or LLL36400M37X	LAL3640036M or LLL36400M37X	PLL34060M68	PLL34060M68	PLL34080M68	PLL34080M68	PLL34080M68	PLL34100M69	
		Enclosure Volume Minimum (in ³)	External Heatsink	52800	52800	52800	52800	52800 ^{*4}	52800 ^{*4}	52800 ^{*4}	52800 ^{*4}	52800 ^{*4}	52800 ^{*4}	52800 ^{*4}	52800 ^{*4}	52800 ^{*4}
			Internal Heatsink	14657	14657	52800	52800	14657	14657	14657	52800	52800	52800	52800	52800	52800

*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.
*4 External heatsink installation on these models requires a heatsink shroud and filter.

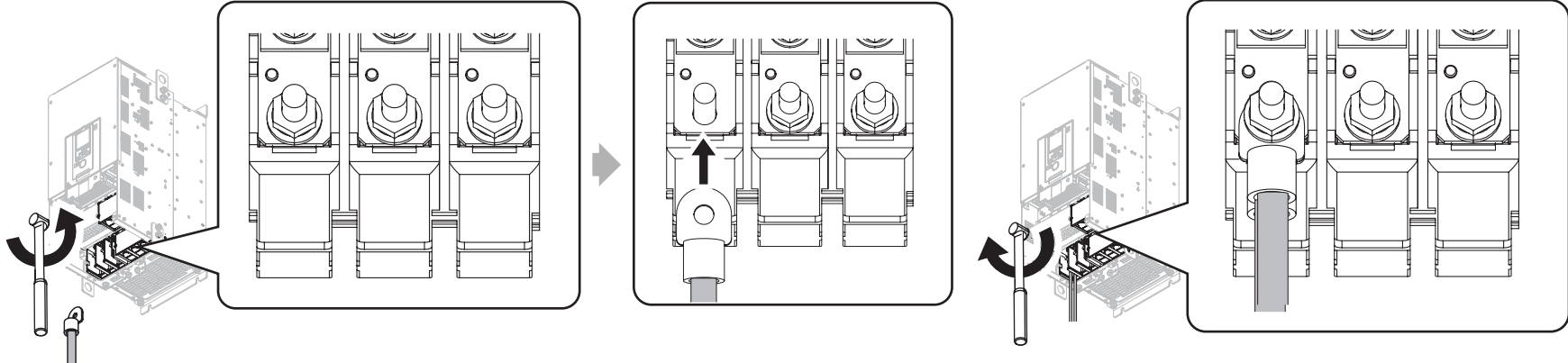
5 Remove the Terminal Cover



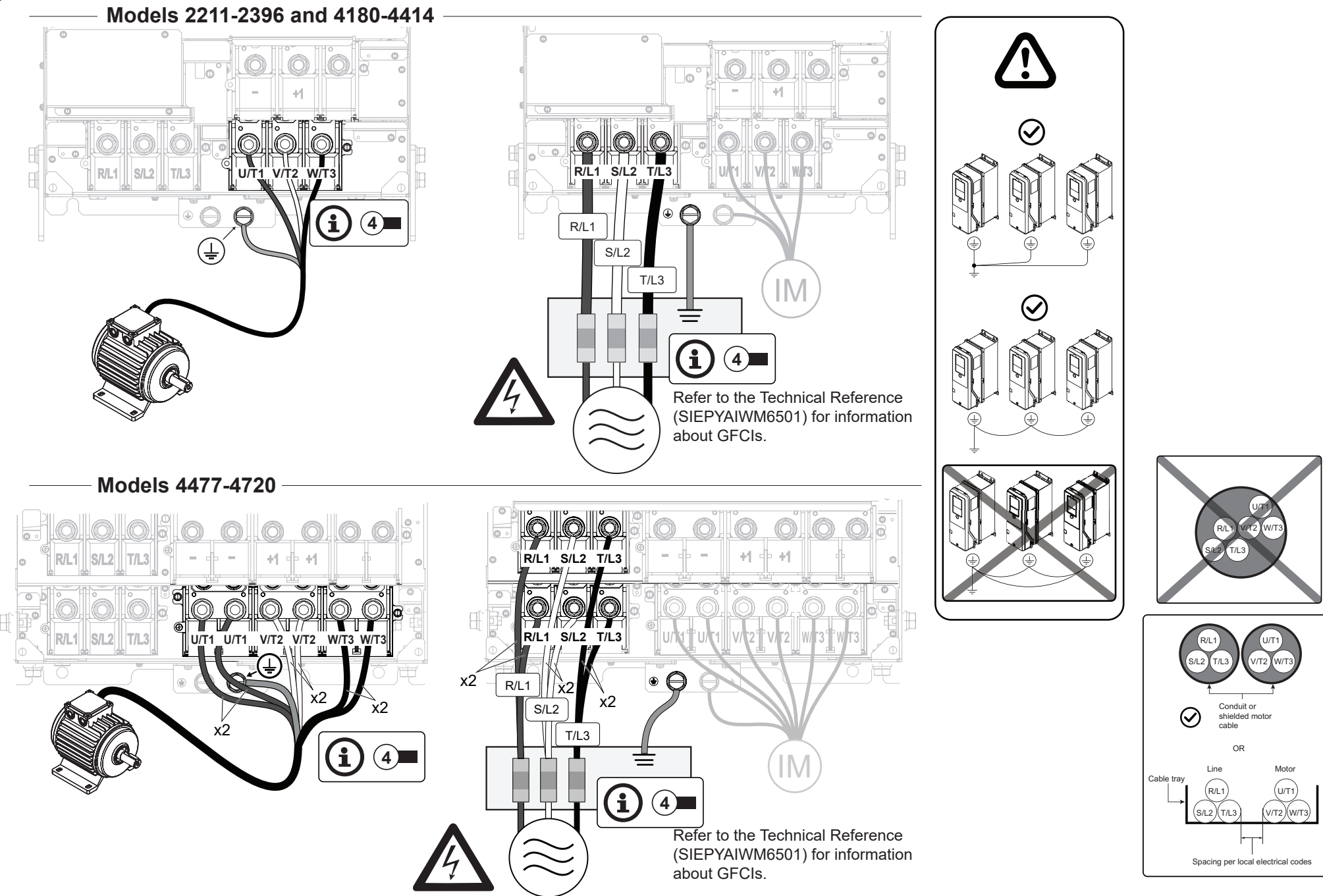
6 Remove the Terminal Block Cover and Wiring Cover



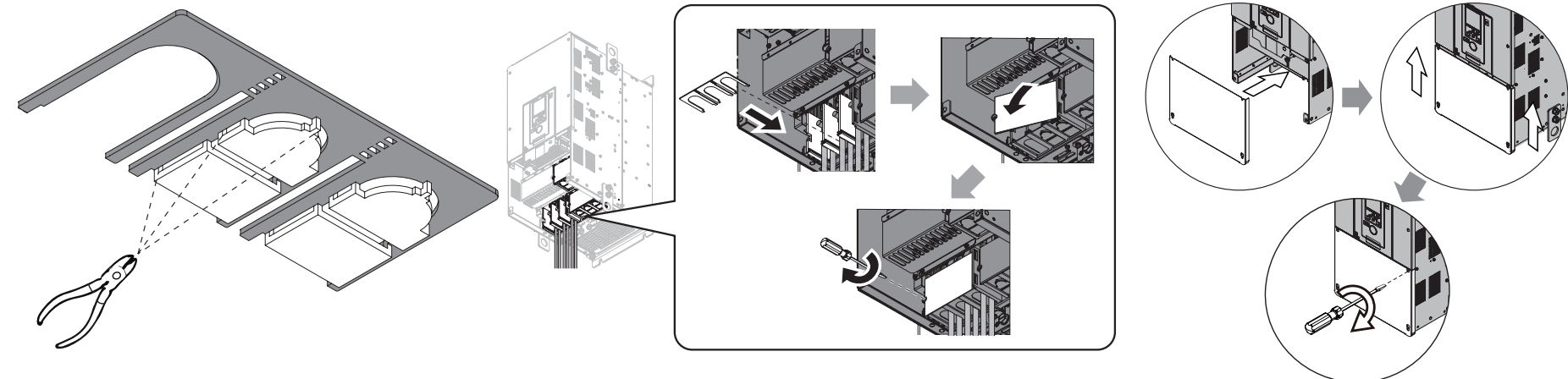
7 Remove Terminal Block Nut to Attach Crimp Terminals



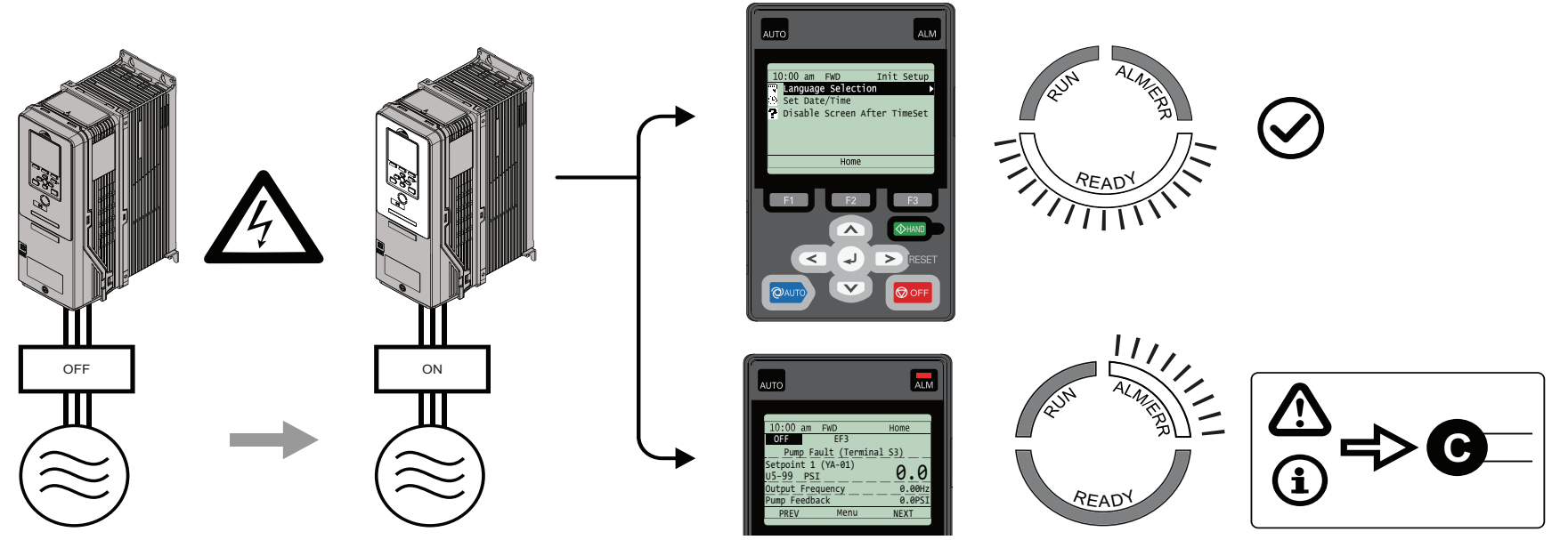
8 Install the Motor Wiring and Power Wiring



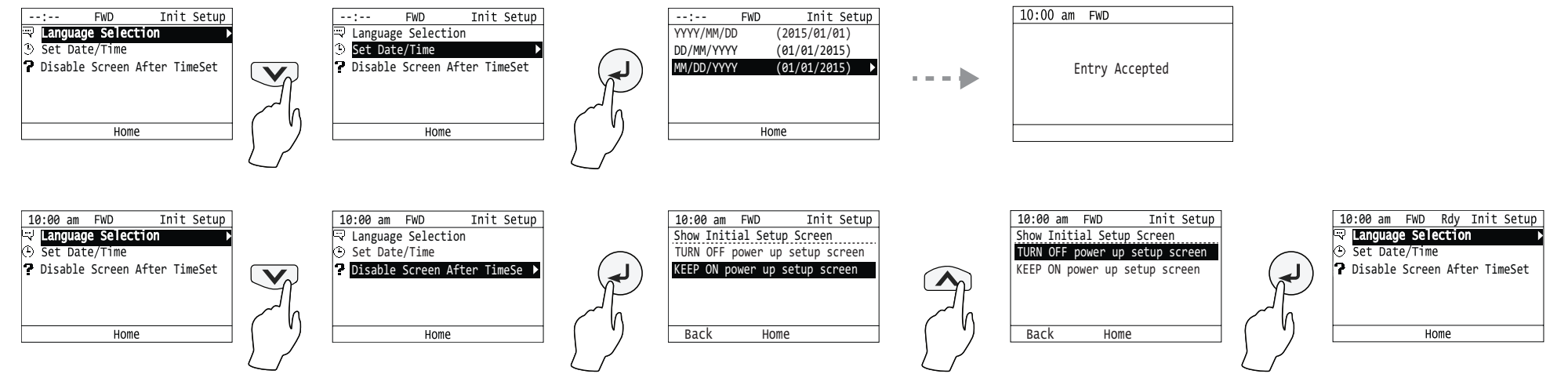
9 Remove the Tabs and Install the Wiring Cover, Terminal Block Cover, and Terminal Cover



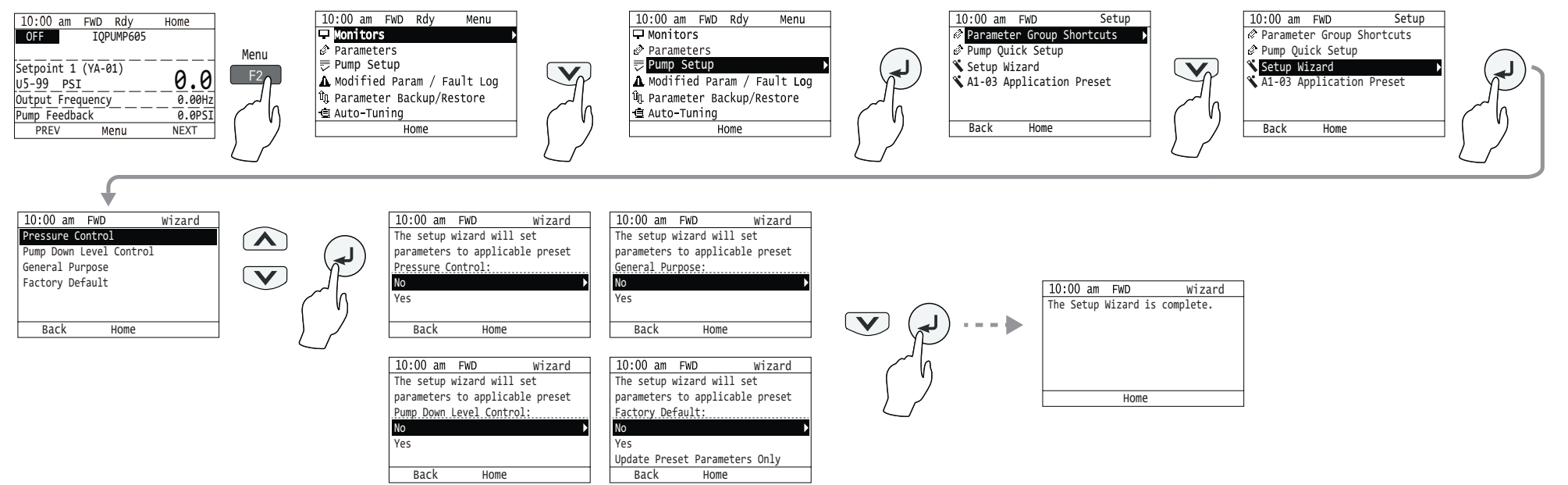
10 Energize the Drive and Confirm It Is Ready



11 Set the Real-Time Clock and Disable the Initial Setup Screen

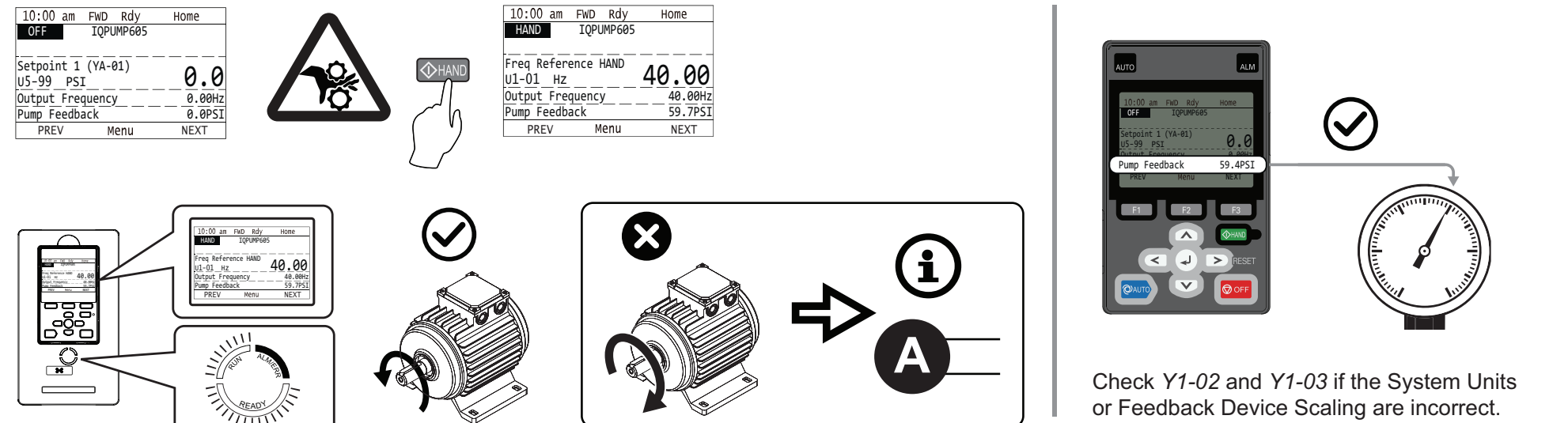


12 Run the Setup Wizard



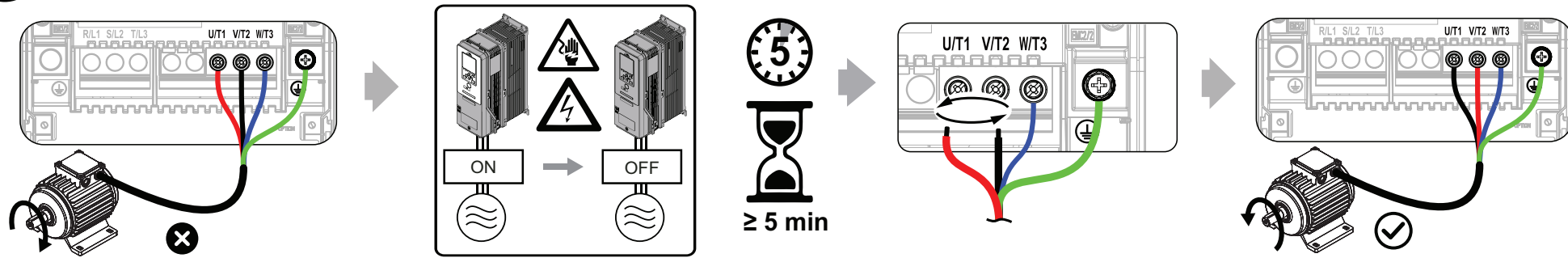
If you will not use one of the Setup Wizard applications, refer to B Application Presets and Pump Quick Setup

13 Use HAND Operation to Check the Motor Rotation Direction and Check the Feedback Signal

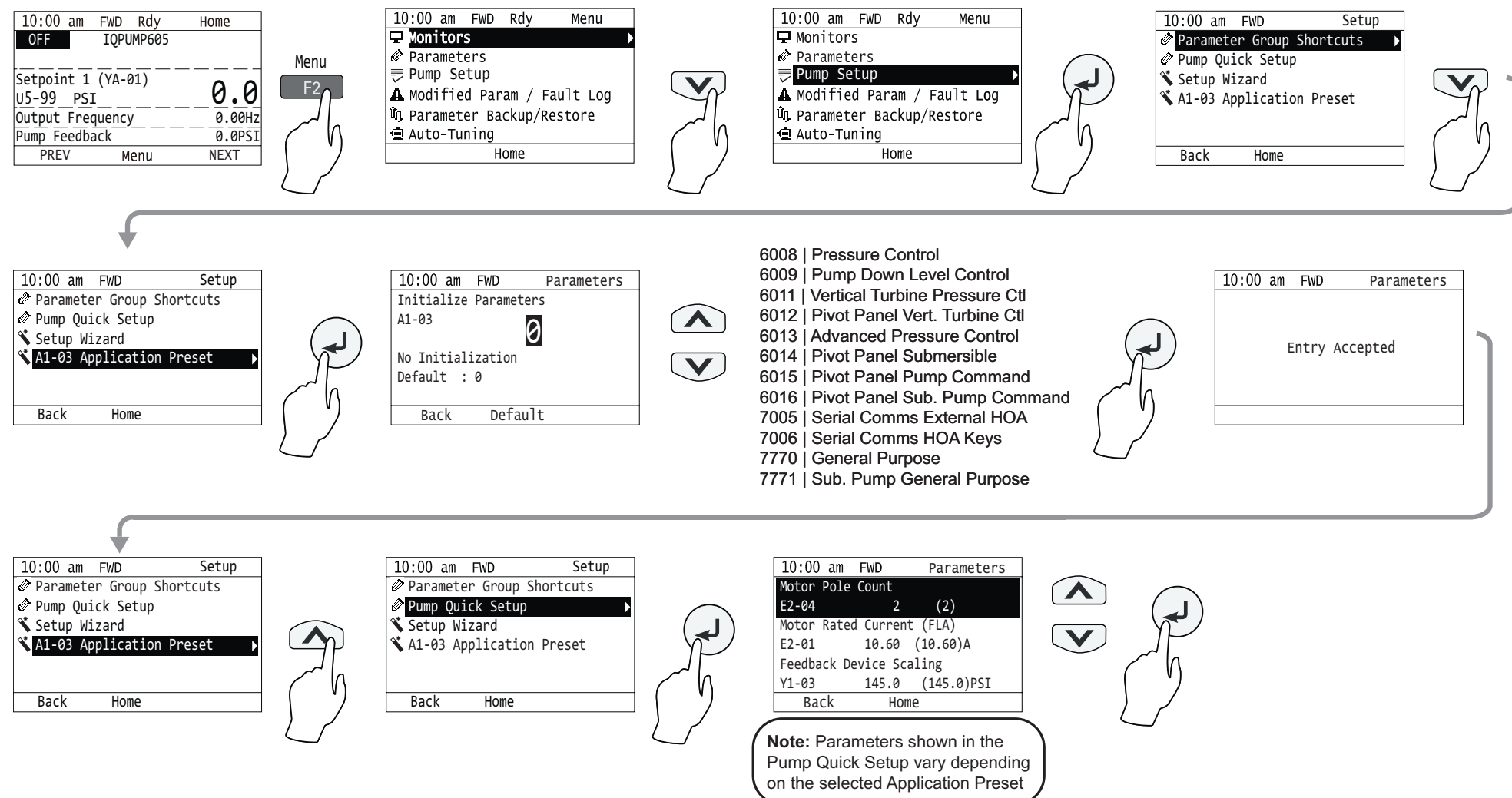


Additional Information for Installation and Primary Operation

A If the Motor Does Not Rotate in the Correct Direction



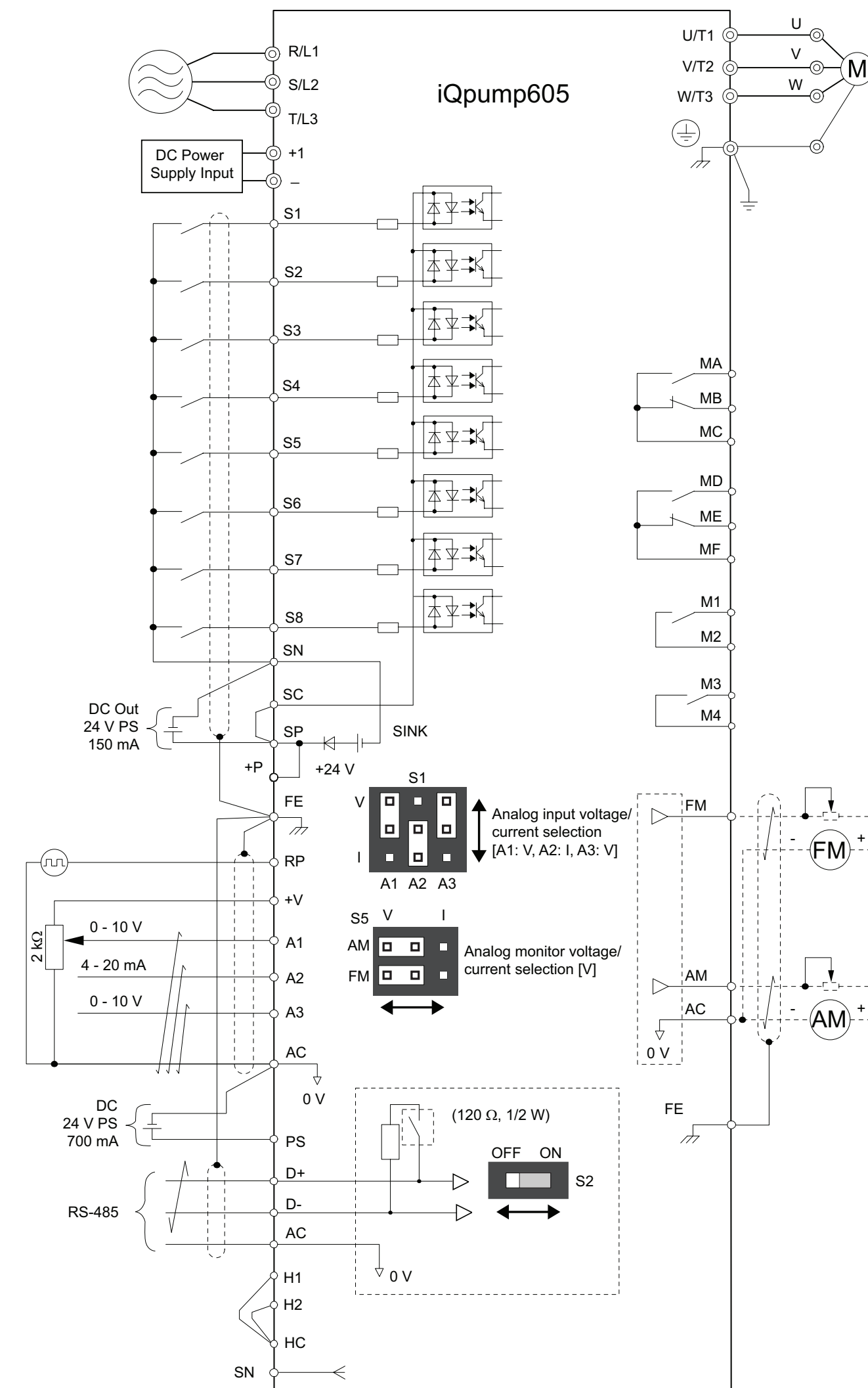
B Application Presets and Pump Quick Setup



C Troubleshooting Resources for Drive Faults and Alarms

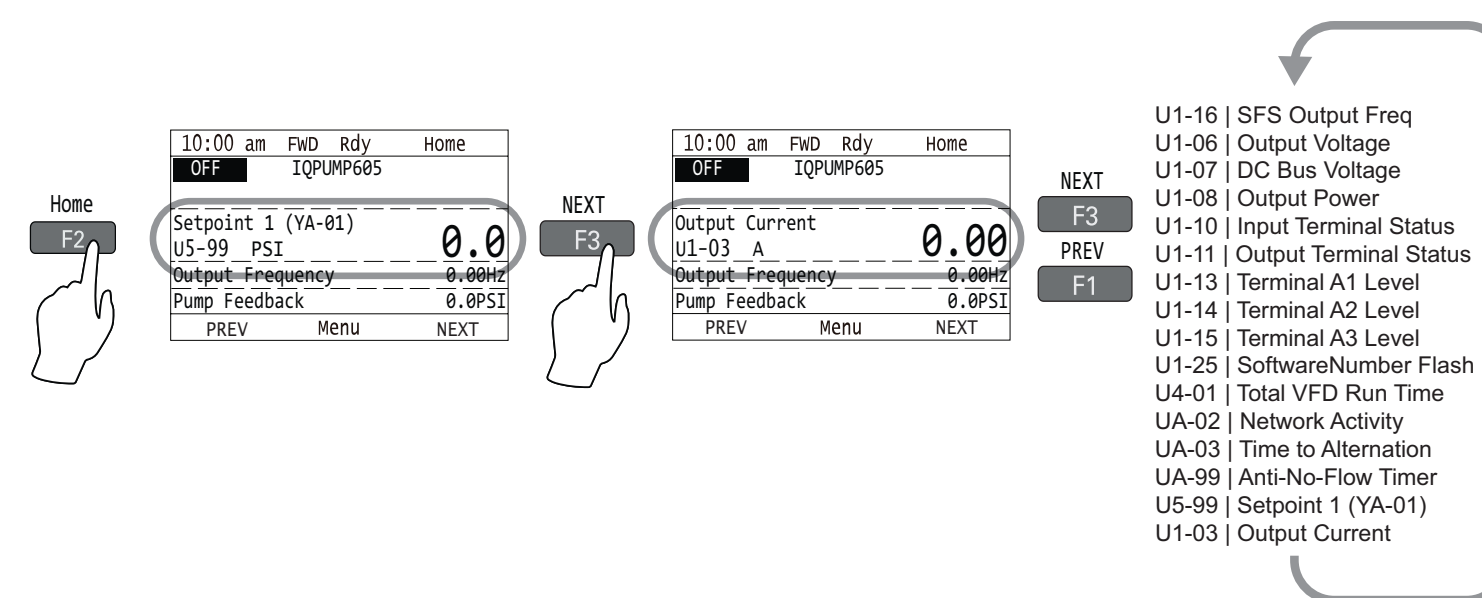
Resource	Choose This When:	URL	QR Code
Installation & Primary Operation	You have access to the paper copy of the manual that was packaged with the drive. This manual lists all drive faults and alarms, and offers a selection of causes and solutions.	https://www.yaskawa.com/toepyaiwm6501	 PDF download
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/toepyaiwm6503	 PDF download

D Connection Diagram and Terminal Functions

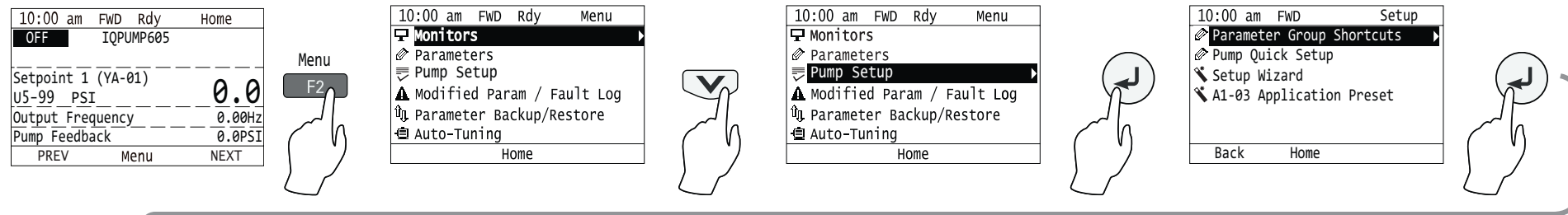


Terminal	Type	Signal Level	Default
S1	MFDI 1	Photocoupler 24 V, 6 mA Internal impedance: 4.7 kΩ	Forward RUN (2-Wire)
S2	MFDI 2		Not Used
S3	MFDI 3		External Pump Fault (NO-@Run-Coast)
S4	MFDI 4		Fault Reset
S5	MFDI 5		PID Setpoint Selection 1
S6	MFDI 6		HAND Mode
S7	MFDI 7		HAND Mode 2
S8	MFDI 8		Not Used
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	• 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)	Frequency Reference
A2	MFAI 2	4 mA ~ 20 mA/100% (input impedance 250 Ω)	PID Feedback
A3	MFAI 3	0 mA ~ 20 mA/100% (input impedance 250 Ω)	HAND Frequency Reference
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	Fault relay out	30 VDC, 10 mA ~ 2 A 250 VAC, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	Inverse Fault
MC	Common	-	-
MD	MFO	30 VDC, 10 mA ~ 2 A 250 VAC, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	Fault
ME	MFO	30 VDC, 10 mA ~ 2 A 250 VAC, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	Fault
MF	Common	-	-
M1	MFO	30 VDC, 10 mA ~ 2 A 250 VAC, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	During Frequency Output
M2	MFO	30 VDC, 10 mA ~ 2 A 250 VAC, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	Pressure Reached
M3	MFO	30 VDC, 10 mA ~ 2 A 250 VAC, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	Pressure Reached
M4	MFO	30 VDC, 10 mA ~ 2 A 250 VAC, 10 mA ~ 2 A Minimum load: 5 V, 10 mA	Pressure Reached
FM	MFAO 1	0 V ~ +10 V/0% ~ 100% 4 mA ~ 20 mA	Output Frequency
AM	MFAO 2	0 V ~ +10 V/0% ~ 100% 4 mA ~ 20 mA	Output Current
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 -	MEMOBUS/Modbus 115.2 kbps maximum	-
AC	Common	0 V	-

E Quick Monitor View



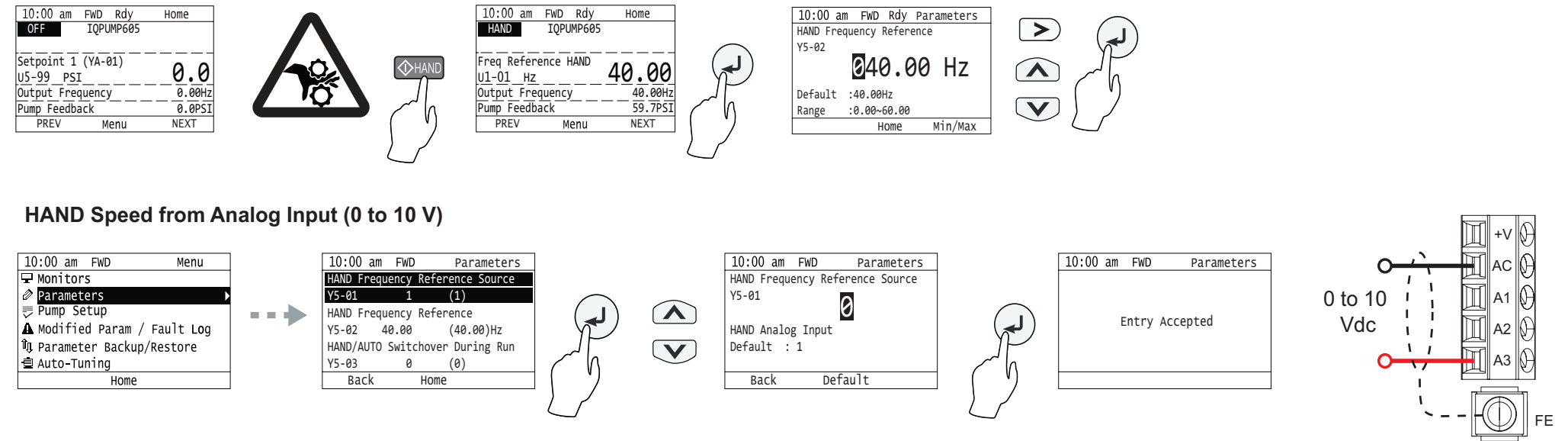
F Parameter Group Shortcuts



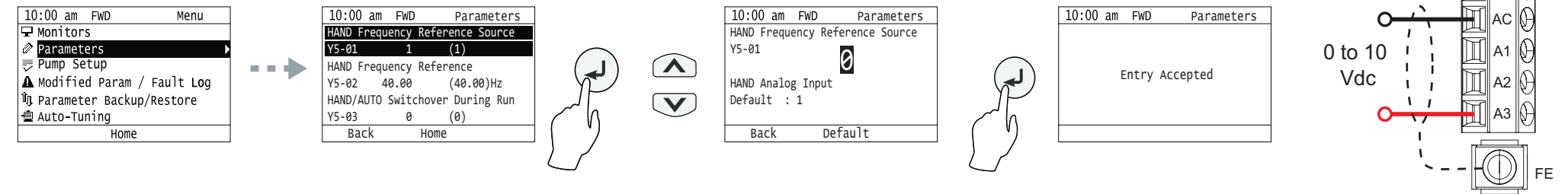
Parameter Group Shortcut	Parameter Number Name	Default Description
Pump HAND Mode Selection	Y5-01 HAND Frequency Reference Source	1 HAND Reference 1 (Y5-02)
	Y5-02 HAND Frequency Reference	40.00 Hz
	Y5-03 HAND/AUTO Switchover During Run	0 Disabled
	Y5-04 Operation HAND Key	1 Enabled
	Y5-05 HAND Frequency Reference 2	0.00 Hz
	Y5-06 HAND Reference Prime Loss Level	0.0 A
	Y5-07 HAND Reference Prime Loss Level2	0.0 A
	Y5-09 HAND MOP Selection	0 ENTER Key Required
	Y4-10 AUTO Key Memory at Power Down	0 Disabled
	Y4-17 Utility Start Delay	0.2 min
Run/Stop Control Operation	b1-01 Frequency Reference Selection 1	0 Keypad
	b1-02 Run Command Selection 1	0 Keypad
	b1-03 Stopping Method Selection	1 Coast to Stop
	b1-04 Reverse Operation Selection	1 Reverse Disabled
	b1-11 Run Delay @ Stop (Backspin)	0.0 sec
Pump (PID) Tuning	b5-01 PID Mode Setting	1 Standard
	b5-02 Proportional Gain (P)	2.00
	b5-03 Integral Time (I)	3.0 sec
Accel/Decel/Thrust	C1-01 Acceleration Time 1	20.0 sec
	C1-02 Deceleration Time 1	10.0 sec
	Y4-11 Thrust Acceleration Time	1.0 sec
	Y4-12 Thrust Frequency	30.0 Hz
Start & Sleep Level	Y4-13 Thrust Deceleration Time	2.5 sec
	Y1-04 Sleep Wake-Up Level	0.0 PSI
	Y1-05 Sleep Wake-up Level Delay Time	1.0 sec
	Y1-06 Minimum Speed	40.0 Hz
	Y2-03 Sleep Delay Time	5 sec
	Y2-05 Sleep Boost Level	0.0 PSI
	Y2-06 Sleep Boost Hold Time	5.0 sec
Low Feedback	Y2-07 Sleep Boost Max Time	20.0 sec
	Y1-08 Low Feedback Level	0.0 PSI
	Y1-09 Low Feedback Lvl Fault Dly Time	10 sec
	Y1-10 Low Feedback Selection	0 Fault (and Digital Output)
High Feedback	L5-40 Low Feedback Flt Retry Selection	0 No Retry
	L5-43 LowFeedback Fault Retry Attempts	3
	L5-46 Low Feedback Fault Restart Time	20.0 sec
	Y1-11 High Feedback Level	0.0 PSI
	Y1-12 High Feedback Lvl Fault Dly Time	5 sec
Multiple Setpoints	YA-01 Setpoint 1	0.0 PSI
	YA-02 Setpoint 2	0.0 PSI
	YA-03 Setpoint 3	0.0 PSI
Edit Default Drive Name	o1-83 Drive Name	1 IQPUMP605
	o1-84 Drive Name Unit Number	0

Parameter Group Shortcut	Parameter Number Name	Default Description
Setpoint Not Met	Y1-15 Maximum Setpoint Difference	0.0 PSI
	Y1-16 Not Maintaining Setpoint Time	60 sec
	Y1-17 Not Maintaining Setpoint Sel	0 Fault (and Digital Output)
	L5-50 Setpoint Not Met Fault Retry Sel	0 No Retry
	L5-54 Setpoint Not Met Retry Attempts	3
Dry Run/Loss of Prime	L5-58 Setpoint Not Met Restart Time	20.0 sec
	Y1-18 Prime Loss Detection Method	0 Current (A)
	Y1-19 Prime Loss Level	0.0 A
	Y1-20 Prime Loss Time	20 sec
	Y1-22 Prime Loss Selection	0 Fault (and Digital Output)
Pre-Charge	Y1-23 Prime Loss Max Restart Time	0.2 min
	L5-51 Loss of Prime Fault Retry Select	0 No Retry
	L5-55 Loss of Prime Flt Retry Attempts	3
	Y4-01 Pre-Charge Level	0.0 PSI
	Y4-02 Pre-Charge Frequency	0.0 Hz
Output Current Limit	Y4-03 Pre-Charge Time	0.0 min
	Y4-05 Pre-Charge Loss of Prime Level	0.0 A
	Y4-06 Pre-Charge Frequency 2	0.0 Hz
Pump Over Cycle	Y4-07 Pre-Charge Time 2	0.0 min
	Y4-08 Pre-Charge Loss of Prime Level 2	0.0 A
	YC-01 Output Current Limit Select	0 Disabled
	YC-02 Current Limit	0.0 A
Auto-Restart	Y2-10 Max Cycling Protection Allowed	0
	Y2-11 Cycling Count Decrement Time	300 sec
	Y2-12 Over Cycle Mode	0 Disabled
	L5-52 Over Cycle Fault Retry Selection	0 No Retry
Single Phase Foldback	L5-56 Over Cycle Fault Retry Attempts	3
	L5-59 Over Cycle Fault Restart Time	20.0 sec
Multiple Setpoints	L5-01 Number of Auto-Restart Attempts	5
	L5-04 Interval Method Restart Time	20.0 sec
Edit Default Drive Name	YC-10 Single Phase Foldback Sel	1 Enabled
	YC-11 Ripple Regulator Setpoint	95.0%
Multiple Setpoints	YA-01 Setpoint 1	0.0 PSI
	YA-02 Setpoint 2	0.0 PSI
	YA-03 Setpoint 3	0.0 PSI
	YA-04 Setpoint 4	0.0 PSI
Edit Default Drive Name	o1-83 Drive Name	1 IQPUMP605
	o1-84 Drive Name Unit Number	0

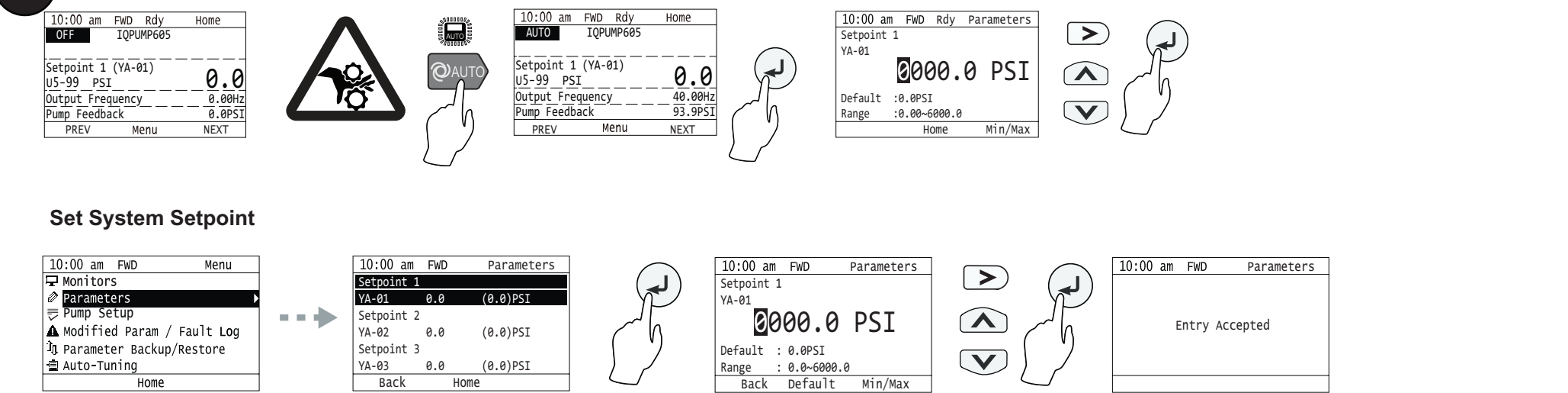
G HAND Mode Operation



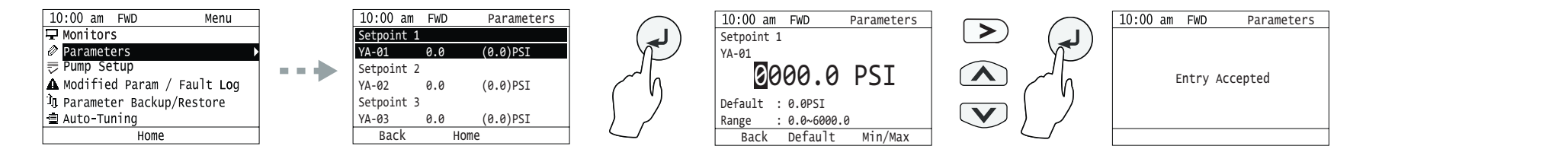
HAND Speed from Analog Input (0 to 10 V)



H AUTO Mode Operation

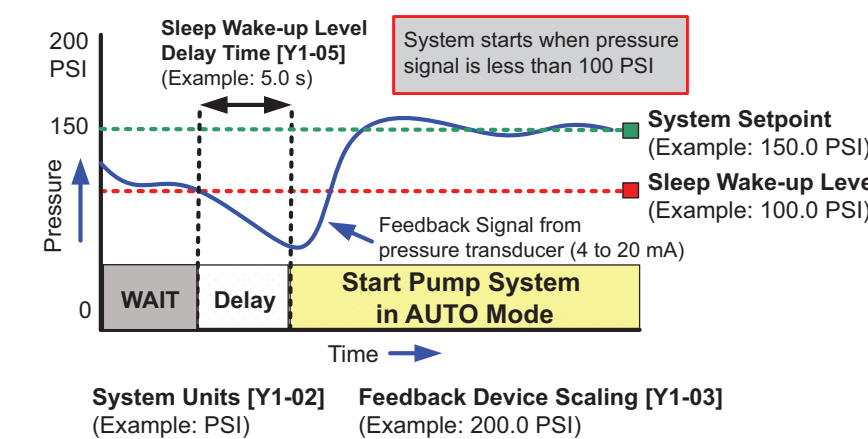


Set System Setpoint



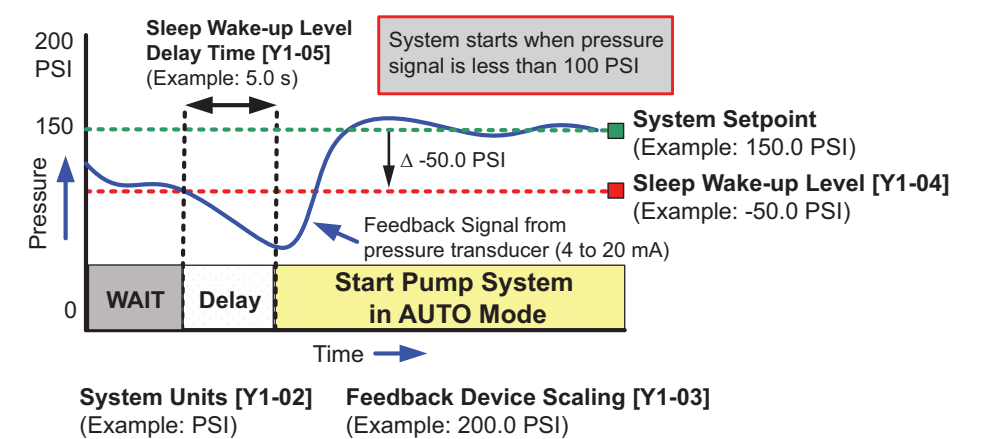
Sleep Wake-up Level

Example: Absolute Level (Positive Start Level)



Sleep Wake-up Level

Example: Delta Level (Negative Start Level)



I Select Start/Stop Control Method and Wire Feedback Signal

