

YASKAWA AC Drive

P7 to P1000

Product Transition Guide

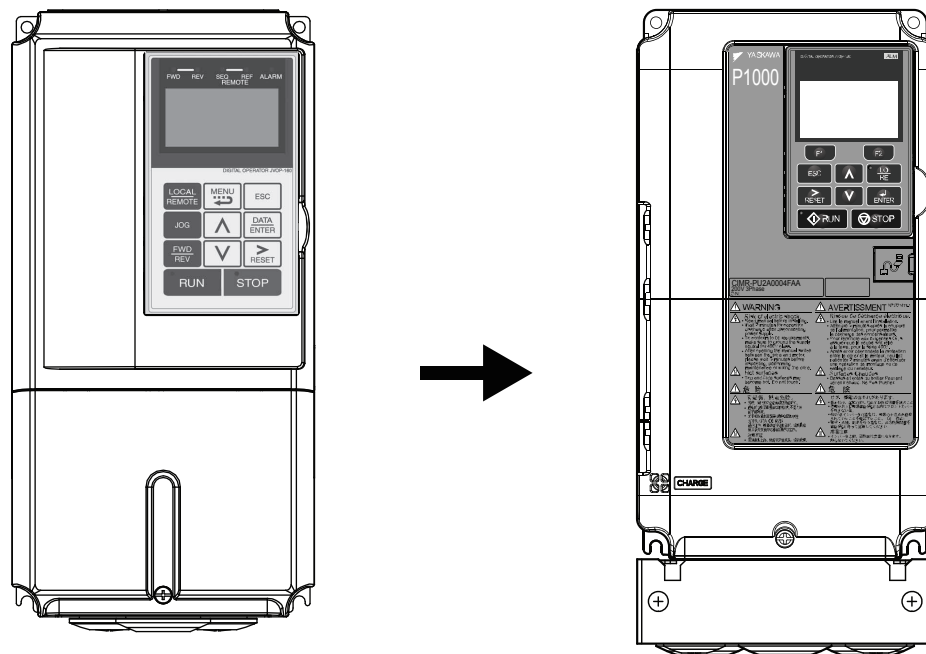
Type: CIMR-P7U

Models: 200 V Class, Three-Phase Input: 1/2 to 150 HP
400 V Class, Three-Phase Input: 1/2 to 500 HP

Type: CIMR-PU

Models: 200 V Class, Three-Phase Input: 3/4 to 175 HP
400 V Class, Three-Phase Input: 3/4 to 1000 HP

* Note: This guide lists only comparable models. Refer to the product catalog for a list of all available models.



Replacing P7 with P1000

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1 P7 and P1000 Feature Overview

This guide details differences between the P7 and P1000 products to assist in transition and new product introductions.



P7 Drive	P1000 Drive
<p>The P7 is an industrial drive used for fans and pumps up to 175 HP at 240 V, and 500 HP at 480 V. A single model supports both 6 and 12 pulse input applications.</p>	<p>The P1000 is an industrial drive used for fans and pumps up to 175 HP at 240 V, 1000 HP at 480 V, and 250 HP at 600 V. Specific models support either 6 or 12 pulse input applications.</p>
	

Table 1 Key P1000 Features and Functions

Key P1000 Features and Functions	
Application presets for fan and pump	Digital operator with real time clock function
Available communication options; Ethernet/IP, Modbus TCP, DeviceNet, ProfiNet, Profibus DP, Mechatrolink, EtherCAT	Dynamic audible noise control
Standard (embedded) Modbus RTU RS485	Removable control circuit terminal block
Preventive maintenance monitors	Programmable run timers
Easily replaceable cooling fans	Secondary PI
Removable I/O with back-up memory	Underload detection
24 Vdc auxiliary control power input	Emergency override function
Overload 120% for 60 seconds	Selectable user monitors
Available USB copy unit?	Custom frequency display units
Additional monitors	Easy PID setpoint adjustment from Home screen of digital operator
“Out of the box” sleep and wake up configuration with only a few easy adjustments	—

2 P7 to P1000 Model Number Cross-Reference

◆ Application Notes

■ Drive Selection and Motor Current Rating

Ensure the current rating of the replacement P1000 drive is sufficient for the motor installed in the application.

The cross-reference provided in [Table 2](#) provides recommendations based on National Electric Code Full-Load Currents for Three -Phase Squirrel Cage and Wound Rotor Motors.

Certain P1000 replacement drives have output current ratings that differ from P7 models. Verify output current capacity of the selected drive is appropriate for each specific application.

[Table 2](#) does not consider intermittent overload and output PWM carrier frequency in model selection.

Table 2 P7 to P1000 Model Number Cross-Reference

P7 Model CIMR-P7U (Output A)	P1000 Model CIMR-PU (Output A)	NEC Motor Amps	NEC Motor HP	Motor Voltage
20P4 (3.6)	2A0004 (3.5)	2.2	0.5	230 Vac
		3.2	0.75	
20P7 (4.6)	2A0006 (6.0)	4.2	1	
21P5 (7.8)	2A0008 (8.0)	6.8	2	
22P2 (10.8)	2A0010 (9.6)	9.6	3	
	2A0012 (12.0)			
23P7 (16.8)	2A0018 (17.5)	15.2	5	
25P5 (23.0)	2A0021 (21.0) </>	22	7.5	
27P5 (31.0)	2A0030 (30.0)	28	10	
2011 (46.2)	2A0040 (40.0) </>	42	15	
2015 (59.4)	2A0056 (56.0)	54	20	
2018 (74.8)	2A0069 (69.0)	68	25	
2022 (88.0)	2A0081 (81.0)	80	30	
2030 (115.0)	2A0110 (110.0)	104	40	
2037 (162.0)	2A0138 (138.0)	130	50	
	2A0169 (169.0)	154	60	
2045 (192.0) 2055 (215.0)	2A0211 (211.0)	192	75	
2075 (312.0)	2A0250 (250.0)	248	100	
	2A0312 (312.0)	312	125	
2090 (360.0)	2A0360 (360.0)	360	150	
2110 (415.0)	2A0415 (415.0)			
40P4 (1.8)	4A0002 (2.1)	1.1	0.5	460 Vac
		1.6	0.75	
40P7 (2.1)		2.1	1	
41P5 (3.7)	4A0004 (4.1)	3	1.5	
		3.4	2	
42P2 (5.3)	4A0005 (5.4)	4.8	3	
	4A0007 (6.9)			
43P7 (7.6) 44P0 (8.7)	4A0009 (8.8)	7.6	5.0	
45P5 (12.5)	4A0011 (11.1)	11	7.5	
47P5 (17.0)	4A0018 (17.5)	14	10	
49P0 (21.0)	4A0023 (23.0)	21	15	
4011 (27.0)	4A0031 (31.0)	27	20	
4015 (34.0)	4A0038 (38.0)	34	25	

2 P7 to P1000 Model Number Cross-Reference

P7 Model CIMR-P7U (Output A)	P1000 Model CIMR-PU (Output A)	NEC Motor Amps	NEC Motor HP	Motor Voltage
4018 (40.0) 4022 (50.4)	4A0044 (44.0)	40	30	460 Vac
4024 (52.0)	4A0058 (58.0)	52	40	
4030 (67.2)	4A0072 (72.0)	65	50	
4037 (77.0)	4A0088 (88.0)	77	60	
4045 (96.0)	4A0103 (103.0)	96	75	
4055 (125.0)	4A0139 (139.0)	124	100	
4075 (156.0)	4A0165 (165.0)	156	125	
4090 (180.0)	4A0208 (208.0)	180	150	
4110 (240.0) 4132 (260.0)	4A0250 (250.0)	240	200	
4160 (304.0)	4A0296 (296.0) <1>	302	250	
4185 (414.0)	4A0362 (362.0)	361	300	
	4A0414 (414.0)	414	350	
4220 (515.0)	4A0515 (515.0)	477	400	
		515	450	
4300 (675.0)	4A0675 (675.0)	590	500	
—	4A0930 (930)	Refer to motor nameplate.	800	
—	4A1200 (1200)	Refer to motor nameplate.	1000	

<1> Rated drive current is slightly less than NEC motor amps, refer to the motor nameplate in the application to ensure drive output current is sufficient for the application.

3 P7 to P1000 Feature Specifications

Table 3 P7 to P1000 Feature Specifications

Feature	Item	P7	P1000
HP Range	200 V	240V 0.5 to 150 HP	240 V 0.75 to 175 HP
	400 V	480V 0.5 to 500 HP	480 V 0.75 to 1000 HP
	600 V	—	600 V 1.0 to 250 HP
Input Voltage	Rated Voltage	3-phase, 200-240 Vac 3-phase, 380-480 Vac	3-phase, 200-240 Vac 3-phase, 380-480 Vac 3-phase, 500-600 Vac
Motor types	—	Induction	Induction
PWM Carrier Frequency	Range	<i>Refer to Appendix 1 P7 and P1000 Ratings on page 18</i>	<i>Refer to Appendix 1 P7 and P1000 Ratings on page 18</i>
Maximum Output Frequency	Hz	120 Hz	400 Hz
Keypad Design	Display	5 Line x 16 Character LCD	5 Line x 16 Character LCD
	Copy Function	Yes	Yes
Digital Input Terminal	NPN/PNP	Switchable NPN/PNP	Switchable NPN/PNP
Digital output Terminal	Open Collector	0	0
	Relay Output	2 x Form A, 1 x Form C	2 x Form A, 2 x Form C
Analog Output	Output Level	Two channels with independent level selections Channel 1: 0-10 V Resolution: 10-bit plus sign Channel 2: 0-10 V or -10 to +10 V Resolution: 10 bit plus sign, or 4-20 mA Resolution: 10-bit	Three channels with independent level selections Channels 1, 2 and 3: 0-10 V, or -10-+10 V Resolution: 11 bit plus sign or or 4-20 mA Resolution: 10-bit plus sign
Pulse Input	Qty:	—	1
	Input Frequency	—	1-32 kHz
Quick Disconnect Terminals	Type	Yes	Yes
Auto Tuning	Methods	Primary Resistance	Rotating, Stationary, Primary Resistance, Rotational V/f
Preset Speeds	Qty.	5	17
Speed Search	Bi/Uni-Directional	Bi-Directional	Bi-Directional
	Method	Current/Speed	Current/Speed Estimation
Auto Restart	Time Between Attempts	0.5 to 600.0 sec (selectable)	0.5 to 600.0 sec (selectable)
Energy Savings Mode	Man/Auto	Man/Auto	Man/Auto
DC Injection Function	At Start/At Stop	At Start/At Stop +HSB during stop	At Start/At Stop +HSB during stop
Braking Function	DB Transistor	Built-in to 25 HP (200 V Class), 30 HP (400 V Class)	Built-in to 50 HP
	Special	High Slip Braking	High Slip/Over-excitation Braking
Cooling Fan On/Off Control	Power/Run	Run Based	Selectable Always Active/During Run
Timer Function	On/Off Delay	On/Off Delay (0 to 3000 s)	On/Off Delay (0 to 3000 s)
Fault Code Additions	—	10 additional	10 with elapsed time stamp
Torque Limit/Current Limit/ Stall Prevention	—	Stall Prevention During Accel/Run/Decel (V/f) Software Current Limit (120%)	Stall Prevention During Accel/Run/Decel (V/f) Software Current Limit (120%)

3 P7 to P1000 Feature Specifications

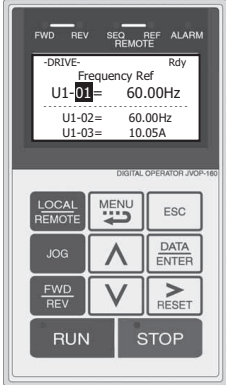

Feature	Item	P7	P1000
Harmonic Counter Measures	—	12 Pulse: 30 HP and Above Filters/Reactors (Options)	12 Pulse: 40 HP and Above (specific models) Filters/Reactors (Options)
	Built-In DC Bus Reactor	240 Vac: 30 to 150 HP 480 Vac: 30 to 500 HP	240 Vac: 30 to 175 HP 480 Vac: 30 to 1000 HP 600 Vac: 30 to 250 HP
Ambient Temperature	°C	-10°C to +40°C (IP21) -10°C to +45°C (IP00)	-10 to +40 °C (IP20/NEMA Type 1 Enclosure) -10 to +50 °C (IP00/Open-Chassis Enclosure)
Storage Temperature	°C	-20 °C to +60 °C	-20 °C to +60 °C
Network Communications	Standard	Modbus RTU via terminal I/O RS485/422	Modbus RTU via terminal I/O RS-485/RS-422
	Optional	DeviceNet, Profibus-DP, ControlNet, Ethernet	Ethernet/IP, Modbus TCP, DeviceNet, ProfiNet, Profibus DP, RS-485, Mechatrolink II, EtherCAT
Unique Feature/Function	—	HSB – High Slip Braking	Overexcitation Braking

4 P7 and P1000 Digital Operators

The P1000 digital operator JVOP-180C, has the following features:

- standard built-in Real Time Clock (RTC),
- built-in copy function and parameter verification,
- Soft keys to simplify operation and programming,
- LCD contrast adjustment,
- simplified parameter grouping for easier navigation and set-up,
- improved button layout for faster parameter selection,
- and a Quick Settings menu consisting of the most commonly edited parameters to aid in simple start up. The default quick setting menu carries 19 parameters. The total number of quick setting parameters is based on A1-03 (Initialization Parameter).

Table 4 P7 and P1000 Digital Operators

P7 Operator	P1000 Operator
<p>LCD Backlit Display 5 Line x 16 Characters</p>	<p>LCD Backlit Display 5 Line x 16 Characters New Button Layout Soft Keys (F1/F2)</p>
	

- P1000 copy function is capable of uploading all parameter settings from the P1000 drive memory.
- Uploading of P7 parameters to the P1000 is not available.
- To copy parameters between P1000 drives, all drives must be the same model, have the same software version, and be set to the same control mode A1-02. The P1000 motor control method is fixed at V/f mode.

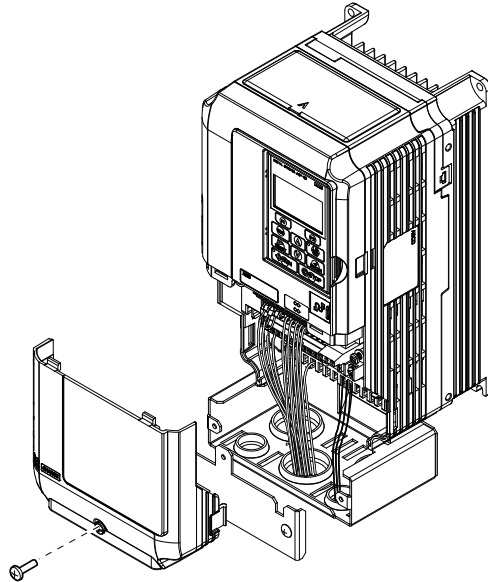
Table 5 P7 to P1000 Menu Structure Comparison

P7	P1000
Operation “DRIVE”	Operation
Quick Setting “QUICK”	Auto-Tuning
Programming “ADV”	Programming
Modified Constants “VERIFY”	Quick Settings
Auto-Tuning “A.TUNE”	Modified Constants
—	Monitor Menu

5 Front Cover & Cooling Fan

P1000 - Split Front Cover

The P1000 is provided with a split cover to allow terminal only access.
The split cover limits exposure to the control PCB and power structure during wiring.



P7 Modular Cooling Fan Replacement (certain models)
























- The P1000 features an easily removable top mounted heatsink fan.
- Fan operation is controlled by drive parameter settings.
- Fan operation time can be monitored for preventative maintenance.

P1000 Modular Top-Mounted Cooling Fan (certain models)

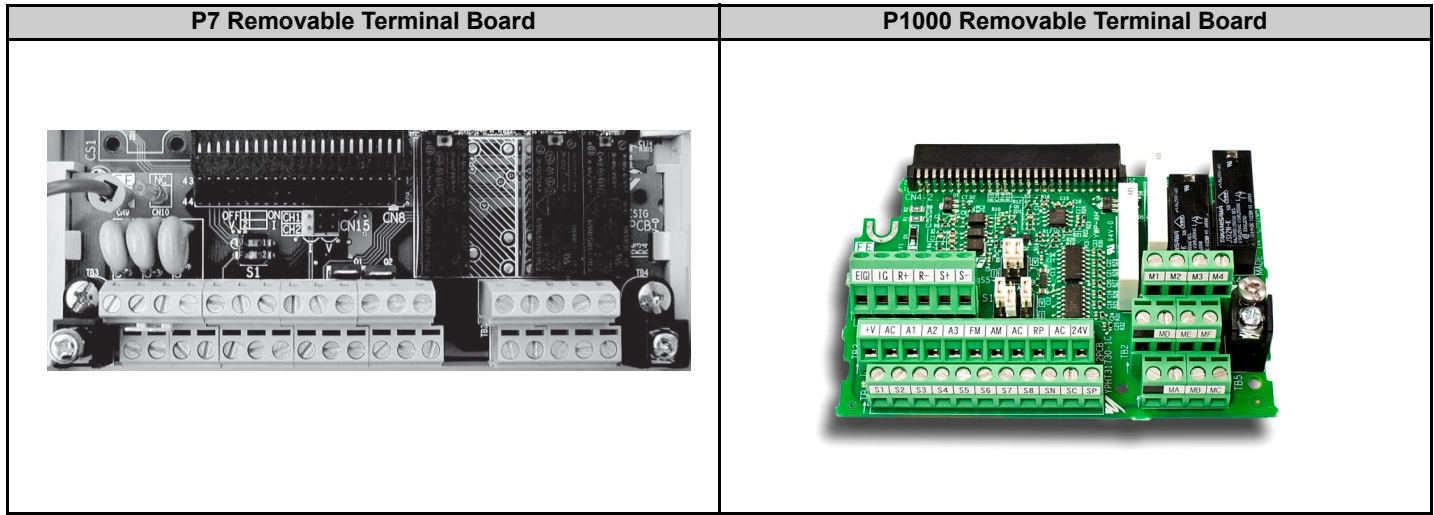


6 Nameplate

Table 6 Nameplate Comparison

P7 Nameplate	P1000 Nameplate																																											
<table border="1" data-bbox="168 380 737 600"> <tr> <td>MODEL: CIMR-P7U2011</td> <td>SPEC: 20111A</td> </tr> <tr> <td>INPUT: AC3PH 200-240V 50/60Hz 52A</td> <td></td> </tr> <tr> <td>OUTPUT: AC3PH 0-240V 0-120Hz 45A 17kVA</td> <td></td> </tr> <tr> <td>O/N:</td> <td>MASS: 7.0kg</td> </tr> <tr> <td>S/N:</td> <td>PRG:</td> </tr> <tr> <td colspan="2">  </td> </tr> <tr> <td colspan="2">FILE: E131457</td> </tr> </table>	MODEL: CIMR-P7U2011	SPEC: 20111A	INPUT: AC3PH 200-240V 50/60Hz 52A		OUTPUT: AC3PH 0-240V 0-120Hz 45A 17kVA		O/N:	MASS: 7.0kg	S/N:	PRG:			FILE: E131457		<table border="1" data-bbox="922 331 1393 646"> <tr> <td>MODEL : CIMR-PU2A0004FAA</td> <td>REV : A</td> <td rowspan="2">  </td> </tr> <tr> <td colspan="2">C/C CIMR-PU2A0004FAA</td> </tr> <tr> <td>INPUT : AC3PH 200-240V 50/60Hz 3.9A</td> <td></td> <td rowspan="2"> IND.CONT.EQ. 7J48® </td> </tr> <tr> <td>OUTPUT : AC3PH 0-240V 0-400Hz 3.5A</td> <td></td> </tr> <tr> <td>MASS : 3.3 kg</td> <td>PRG : 0000</td> <td rowspan="2">  </td> </tr> <tr> <td>O / N : 6W3050-2-100</td> <td>VAJ123456</td> </tr> <tr> <td>S / N : JCC73D207410100</td> <td></td> <td></td> </tr> <tr> <td colspan="3">  </td> </tr> <tr> <td>FILE NO : E131457</td> <td>IP20</td> <td rowspan="2">  </td> </tr> <tr> <td colspan="2">TYPE 1 ENCLOSURE</td> </tr> <tr> <td colspan="2">  </td> <td>  </td> </tr> </table>	MODEL : CIMR-PU2A0004FAA	REV : A		C/C CIMR-PU2A0004FAA		INPUT : AC3PH 200-240V 50/60Hz 3.9A		IND.CONT.EQ. 7J48®	OUTPUT : AC3PH 0-240V 0-400Hz 3.5A		MASS : 3.3 kg	PRG : 0000		O / N : 6W3050-2-100	VAJ123456	S / N : JCC73D207410100						FILE NO : E131457	IP20		TYPE 1 ENCLOSURE				
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TYPE 1 ENCLOSURE																																												
																																												

7 P7 to P1000 Removable Terminal Board Comparison



◆ Removable Terminal Board Details

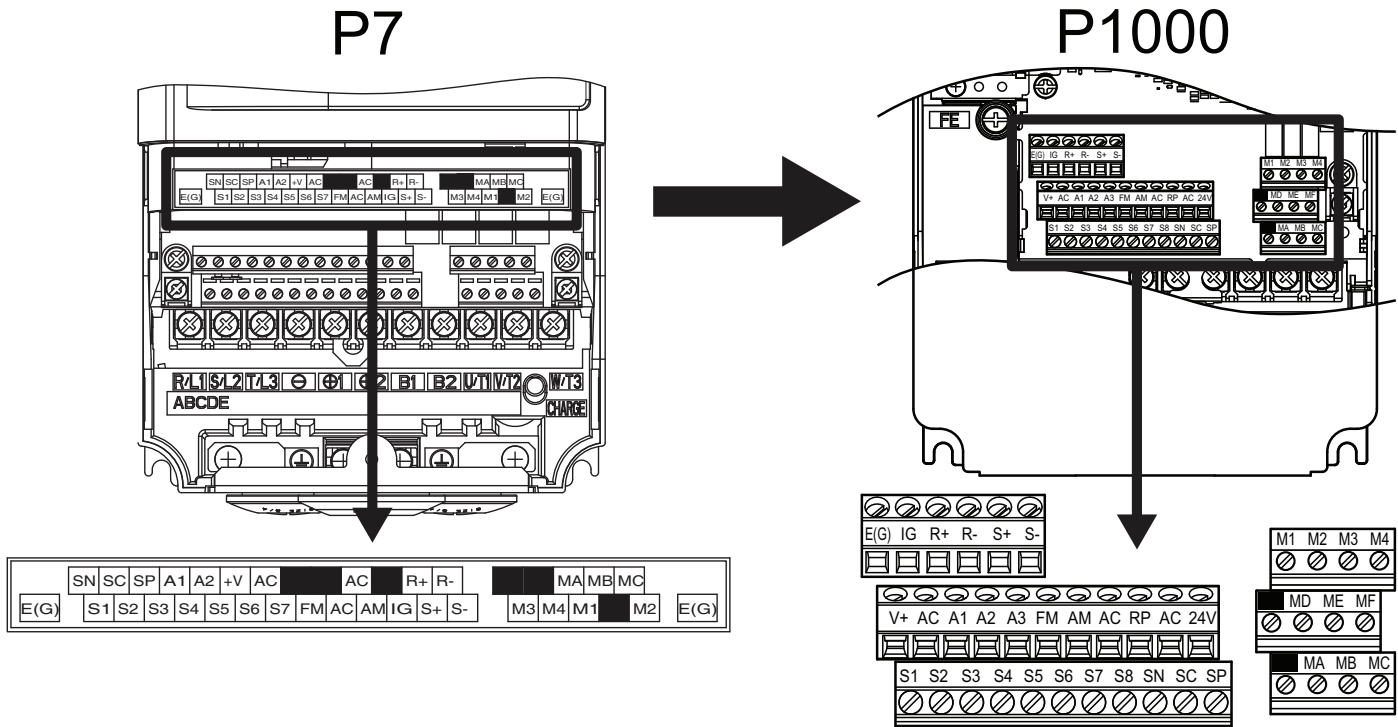


Figure 1 P7 to P1000 Terminal Board Comparison

8 P7 to P1000 Terminal Cross Reference

Table 7 Terminal Functions, 2-Wire Control (default)

Type	P7 Terminal		P1000 Terminal (Designations similar to P7)		
	P7 Terminal	Default Function	P1000 Terminal	Default Function	P1000 Description
Digital Input Signals	S1	Forward run/stop command	S1	Forward run/stop	Multi-function inputs 1-8 Photocoupler 24 Vdc, 8 mA Set the S3 jumper to select between sinking, sourcing mode, and the power supply.
	S2	Reverse run/stop command	S2	Reverse run/stop	
	S3	External fault input	S3	External fault, N.O.	
	S4	Fault reset	S4	Fault reset	
	S5	Multi-step speed reference 1 (Master/auxiliary switch)	S5	Multi-step speed reference 1	
	S6	Multi-step speed reference 2	S6	Multi-step speed reference 2	
	S7	Jog frequency reference	S7	Jog reference	
	—	—	S8	External baseblock	
	SC	Digital input photocoupler, (Factory connected to SP)	SC	Multi-function input common	—
	SN	Digital input common	SN	Digital input power supply 0 V	24 Vdc power supply for digital inputs, 150 mA max (only when not using digital input option DI-A3)
SP	Digital input supply +24Vdc (Factory connected to SC)	SP	Digital input power supply +24 Vdc		
Analog Input Signals	+V	+15 Vdc power output	+V	Power supply for analog inputs	10.5 Vdc (max allowable current 20 mA)
	-V	-15 Vdc power output	N/A	—	—
	—	—	24V	+24 Vdc transducer power supply	+24 Vdc (max. 150 mA)
	—	—	RP	Multi-function pulse train input (frequency reference)	Input frequency range: 0 to 32 kHz Signal Duty Cycle: 30 to 70% High level: 3.5 to 13.2 Vdc, low level: 0.0 to 0.8 Vdc Input impedance: 3 k Ω
	A1	Analog input or speed command	A1	Multi-function analog input 1 (Frequency reference bias)	-10 to 10 Vdc, 0 to 10 Vdc (input impedance: 20 k Ω), 4 to 20 mA, 0 to 20 mA (input impedance: 250 Ω) Voltage and current inputs must be selected by Jumper S1 and H3-01.
	A2	Multi-function analog input, Add to terminal A1	A2	Multi-function analog input 2 (Frequency reference bias)	-10 to 10 Vdc, 0 to 10 Vdc (input impedance: 20 k Ω), 4 to 20 mA, 0 to 20 mA (input impedance: 250 Ω) Voltage and current inputs must be selected by Jumper S1 and H3-09.
	—	—	A3	Multi-function analog input 3 (Auxiliary frequency reference)	-10 to 10 Vdc, 0 to 10 Vdc (input impedance: 20 k Ω), 4 to 20 mA, 0 to 20 mA (input impedance: 250 Ω) Voltage and current inputs must be selected by Jumper S1 and H3-05.
AC	Analog common	AC	Analog frequency reference common	0 V	
E(G)	Shield wire, optional ground line connection point	E(G)	Ground for shielded lines and option cards	—	

8 P7 to P1000 Terminal Cross Reference

Type	P7 Terminal		P1000 Terminal (Designations similar to P7)			
	P7 Terminal	Default Function	P1000 Terminal	Default Function	P1000 Description	
Digital Output Signals	M1	During run (N.O. contact)	M1	During run (N.O. contact)	Normally Open Multi-Function Digital Output Contacts (Programmable): 30 Vdc (10 mA to 1 A) 250 Vac (10 mA to 1 A) Minimum Load: 5 Vdc	
	M2		M2			
	M3	Remote/Auto Operation (N.O. contact)	M3	Zero speed (N.O. contact)		
	M4		M4			
	M5	Frequency agree (N.O. contact)	MD	N.O.		Speed Agree 1 (Programmable): 30 Vdc, 10 mA to 1 A 250 Vac, 10 mA to 1 A Minimum Load: 5 Vdc (10 mA)
	N/A		ME	N.C. output		
M6	MF		Output common			
Fault Relay	MA	Fault output signal (SPDT)	MA	Fault Output N.O.	Fault Output 30 Vdc (10 mA to 1 A) 250 Vac (10 mA to 1 A) Minimum Load: 5 Vdc (10 mA)	
	MB		MB	N.C. output		
	MC		MC	Fault output common		
Analog Output Signals	FM	Multi-function analog output (Output frequency)	FM	Analog monitor output 1 (Output frequency)	-10 to +10 Vdc (2 mA) 0 to +10 Vdc (2 mA), or 4-20 mA Voltage or current output must be selected by Jumper S5 and H4-07 (FM) or H4-08 (AM)	
	AM	Multi-function analog output (Output current)	AM	Analog monitor output 2 (Output current)		
	AC	Analog common	AC	Monitor common		0 V
RS-485/ RS-422	R+	Modbus communication	R+	Communications input (+)	MEMOBUS/Modbus communication: Use an RS-485 or RS-422 cable to connect the drive. RS-485/RS-422 MEMOBUS/Modbus comm. protocol: 115.2 kbps (max.)	
	R-	Differential input, PHC isolation	R-	Communications input (-)		
	S+	Modbus communication	S+	Communications output (+)		
	S-	Differential output, PHC isolation	S-	Communications output (-)		
	IG	Signal common	IG	Shield ground		

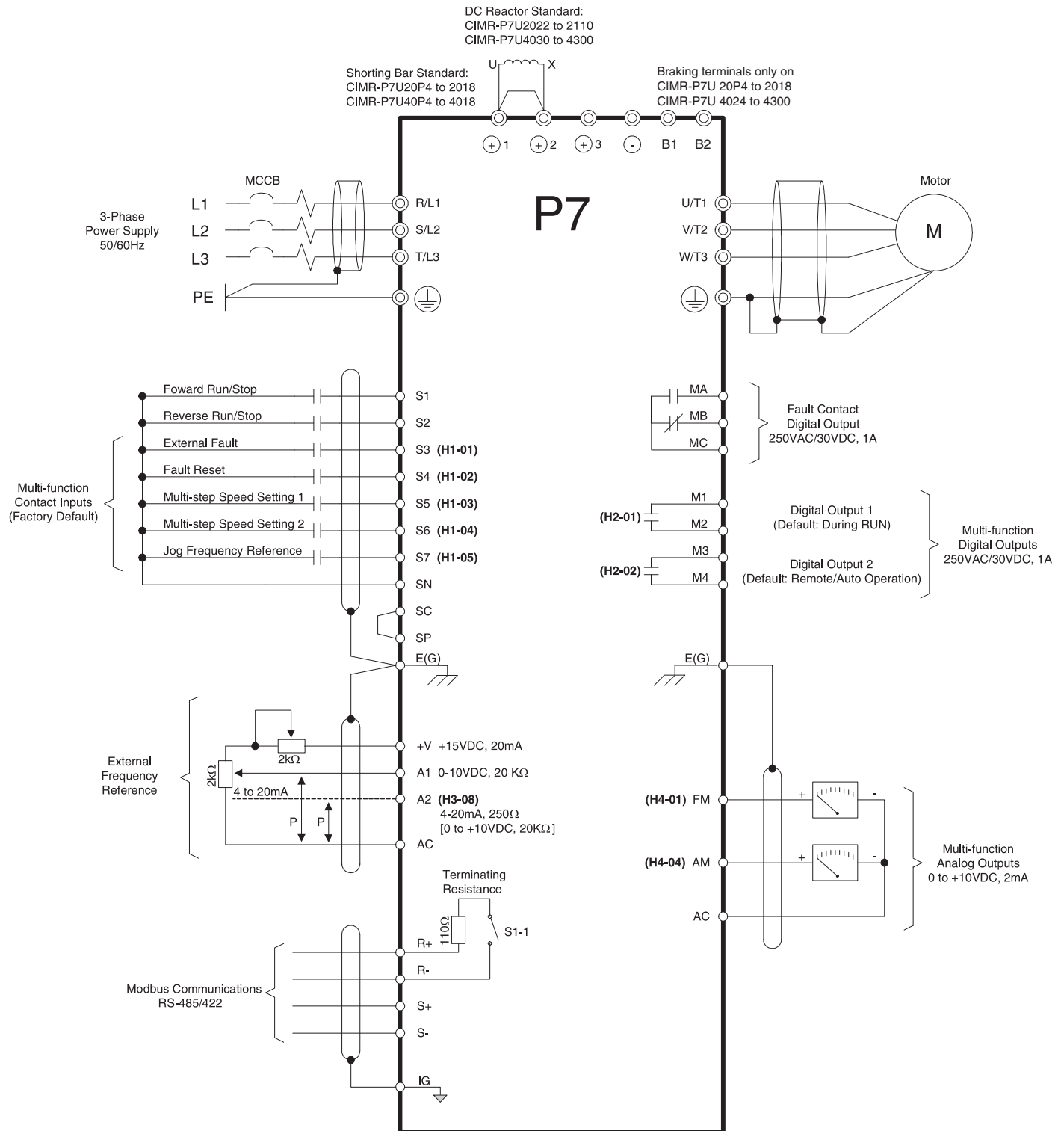


Figure 2 P7 Connection Diagram

8 P7 to P1000 Terminal Cross Reference

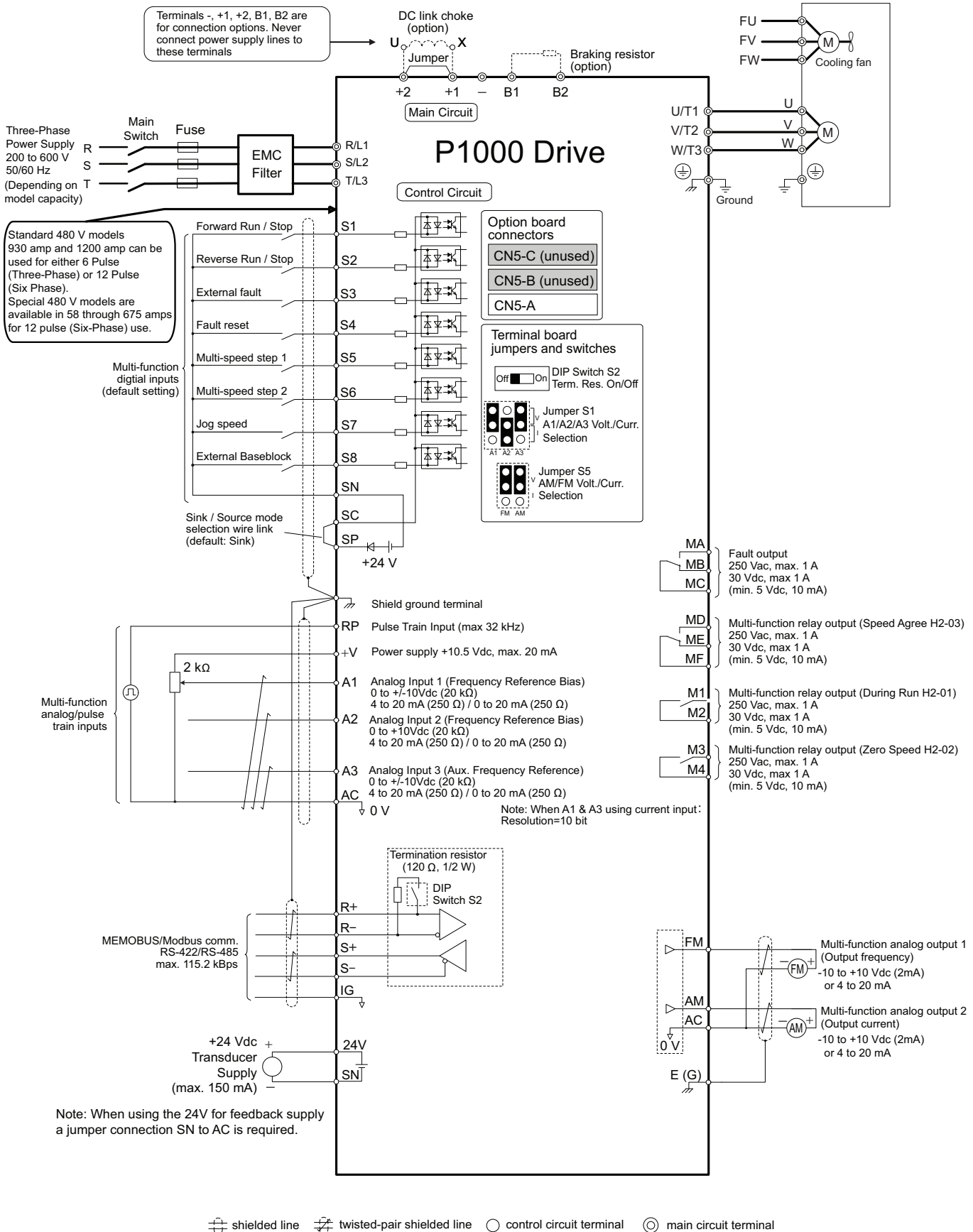


Figure 3 P1000 Connection Diagram

9 P1000 Drive Options

Category	Option Name	Model Number
Network Communication	PROFIBUS-DP	SI-P3
	DeviceNet	SI-N3
	Mechatrolink	SI-T3
	EtherNet/IP	SI-EN3
	Modbus TCP/IP	SI-EM3
	ProfiNET	SI-EP3
	EtherCat	SI-ES3
Input/Output	120 Vac Interface Board	DI-101
Keypad	LCD Keypad w/ RTC	JVOP-180C
	Remote Mount Keypad Kit - Blank	UUX000526
	Remote Mount Keypad Kit - YEA	UUX000527
	LCD Operator Extension Cable, 1 m	UWR0051
	LCD Operator Extension Cable, 3 m	UWR0052
Control Power Unit	24 V Control Power Unit	PS-A10H for 400 V and 600 V class
		PS-A10L for 200 V class
Parameter Management	Y-Stick USB Copy Unit	JVOP-181
	DriveWizard Industrial	—
	PC Support Tool Cable	UWR0638 USB Cable, 10 ft, male A-type to male B-type

10 Appendix 1 P7 and P1000 Ratings

◆ P7 and P1000 Output Amps, Carrier, and Overload

■ Drive Selection and Motor Current Rating

Ensure the current rating of the replacement P1000 drive is sufficient for the motor installed in the application.

The cross-reference provided in [Table 2](#) provides recommendations based on National Electric Code Full-Load Currents for Three -Phase Squirrel Cage and Wound Rotor Motors.

Certain P1000 replacement drives have output current ratings that differ from P7 models. Verify output current capacity of the selected drive is appropriate for each specific application.

Table 8 P7 and P1000 Drive Output Amps, Carrier and Overload Cross Referencee

P7 Model CIMR-P7U (Output Amps)	Default Fc (kHz)	Intermittent Overload %	P1000 Model CIMR-PU (Output Amps)	Default Fc (kHz) SPWM	Intermittent Overload %	NEC Motor Amps	NEC Motor HP	Motor Vac
20P4 (3.6)	10	107	2A0004 (3.5)	SPWM	120	2.2	0.5	230
20P7 (4.6)			2A0006 (6.0)			3.2	0.75	
21P5 (7.8)			2A0008 (8.0)			4.2	1	
22P2 (10.8)	8	107	2A0010 (9.6) 2A0012 (12.0)			9.6	3	
23P7 (16.8)	10	107	2A0018 (17.5)			15.2	5	
25P5 (23.0)	15	120	2A0021 (21.0) <-I>			22	7.5	
27P5 (31.0)			2A0030 (30.0)			28	10	
2011 (46.2)	8	117	2A0040 (40.0) <-I>			42	15	
2015 (59.4)	10		2A0056 (56.0)			54	20	
2018 (74.8)		2A0069 (69.0)	68			25		
2022 (88.0)		2A0081 (81.0)	80			30		
2030 (115.0)		2A0110 (110.0)	104			40		
2037 (162.0)		5	107			2A0138 (138.0)	130	
2045 (192.0)	107		2A0169 (169.0)			154	60	
2055 (215.0)	8	113	2A0211 (211.0)			192	75	
2075 (312.0)	2	109	2A0250 (250.0)			248	100	
2090 (360.0)			2A0312 (312.0)			312	125	
2110 (415.0)		115	2A0360 (360.0)			360	150	
		120	2A0415 (415.0)					
40P4 (1.8)	15	120	4A0002 (2.1)	SPWM	120	1.1	0.5	460
40P7 (2.1)			4A0004 (4.1)			1.6	0.75	
41P5 (3.7)			4A0005 (5.4)			2.1	1	
42P2 (5.3)			4A0007 (6.9)			3	1.5	
43P7 (7.6)			4A0009 (8.8)			3.4	2	
44P0 (8.7)			4A0011 (11.1)			4.8	3	
45P5 (12.5)			4A0018 (17.5)			7.6	5.0	
47P5 (17.0)			4A0023 (23.0)			11	7.5	
49P0 (21.0)			4A0018 (17.5)			14	10	
4011 (27.0)			8			107	4A0031 (31.0)	
4015 (34.0)	10	109	4A0038 (38.0)	27	20			
				34	25			

P7 Model CIMR-P7U (Output Amps)	Default Fc (kHz)	Intermittent Overload %	P1000 Model CIMR-PU (Output Amps)	Default Fc (kHz) SPWM	Intermittent Overload %	NEC Motor Amps	NEC Motor HP	Motor Vac
4018 (40.0)	10	117	4A0044 (44.0)	SPWM	120	40	30	460
4022 (50.4)		107						
4024 (52.0)		120						
4030 (67.2)	8	107	4A0072 (72.0)					
4037 (77.0)		117	4A0088 (88.0)					
4045 (96.0)		114	4A0103 (103.0)					
4055 (125.0)	5	108	4A0139 (139.0)					
4075 (156.0)		115	4A0165 (165.0)					
4090 (180.0)	8	120	4A0208 (208.0)					
4110 (240.0)	5	108	4A0250 (250.0)					
4132 (260.0)		120	4A0296 (296.0) <I>					
4160 (304.0)			4A0362 (362.0)					
4185 (414.0)	2	107	4A0414 (414.0)					
4220 (515.0)		118	4A0515 (515.0)					
4300 (675.0)			120			4A0675 (675.0)		
—	—	—	4A0930 (930)			Refer to motor nameplate.	800	
—	—	—	4A1200 (1200)	Refer to motor nameplate.	1000			

<I> Rated drive current is slightly less than NEC motor amps, refer to the motor nameplate in the application to ensure drive output current is sufficient for the application.

◆ P1000 Drive Derating Data

■ P1000 Carrier Frequency Derating

Consult factory for carrier frequency derating data for P1000 drives.

■ P1000 Temperature Derating

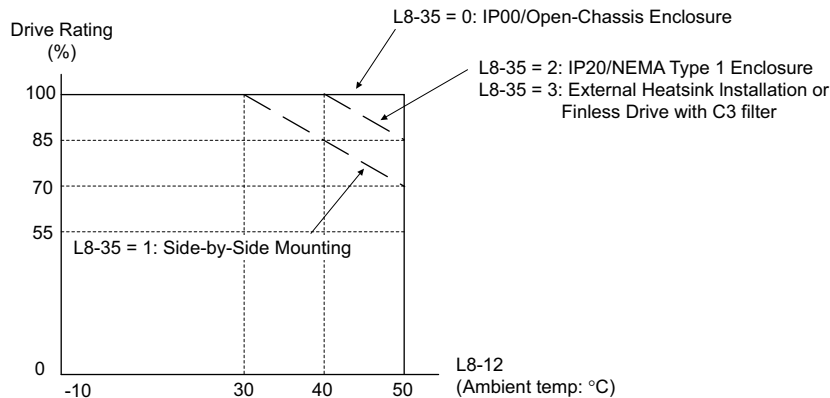


Figure 4 Ambient Temperature and Installation Method Derating

■ P1000 Altitude Derating

The drive standard ratings are valid for installation altitudes up to 1000 m. For installations from 1000 m to 3000 m, the drive rated output current must be derated for 1% per 100 m above 1000 m.

11 P7 and P1000 Dimensions

The information contained in [Table 9](#) and [Table 10](#) is not to be used for drive selection. To select the proper drive, refer to [Table 2](#).

Dimensions shown in [Table 9](#) and [Table 10](#) are for general drive dimensional cross-reference purposes. For exact drive dimensions, use the dimension diagrams located at www.yaskawa.com (ex: DD.P1K.FRxx.xxx).

◆ IP00/Open-Chassis Enclosures

Cells that are not shaded show drive models that are provided as standard with IP20/NEMA Type 1 enclosures. Remove the bottom conduit bracket and top protective cover to convert these drives to IP00/Open-Chassis enclosures, then use the Open-Chassis dimensions provided in this table.

Table 9 P7 and P1000 IP00/Open-Chassis Outer Dimensions, inches (mm)

P7			
Model CIMR-P7U	W	H	D
20P4	5.51 (140)	11.02 (280)	7.09 (180)
20P7			
21P5			
22P2			
23P7			
25P5	7.87 (200)	11.81 (300)	7.87 (200)
27P5			
2011	7.87 (200)	12.2 (310)	7.87 (200)
2015	9.45 (240)	13.78 (350)	8.27 (210)
2018	9.45 (240)	14.96 (380)	8.27 (210)
2022	10.20 (259)	15.75 (400)	10.24 (260)
2030	10.83 (275)	17.72 (450)	10.24 (260)
2037	14.76 (375)	23.62 (600)	11.81 (300)
2045			12.99 (330)
2055	17.72 (450)	28.54 (725)	13.78 (350)
2075			
2090	19.69 (500)	33.46 (850)	14.22 (361)
2110	22.64 (575)	34.84 (885)	14.96 (380)
40P4	5.51 (140)	11.02 (280)	7.09 (180)
40P7			
41P5			
42P2			
43P7			
44P0			
45P5	7.87 (200)	11.81 (300)	7.87 (200)
47P5			
49P0			
4011	9.45 (240)	13.78 (350)	8.27 (210)
4015			
4018			
4022			

P1000			
Model CIMR-PU	W	H	D
2A0004	5.51 (140)	10.24 (260)	5.79 (147)
2A0006			
2A0008			
2A0010			
2A0012			
2A0018			6.46 (164)
2A0021			
2A0030			6.57 (167)
2A0040			
2A0056	7.09 (180)	11.81 (300)	7.36 (187)
2A0069	8.66 (220)	13.78 (350)	7.76 (197)
2A0081			
2A0110	10.00 (254)	15.75 (400)	10.16 (258)
2A0138	10.98 (279)	17.72 (450)	
2A0169	12.95 (329)	21.65 (550)	11.14 (283)
2A0211			
2A0250	17.95 (456)	27.76 (705)	12.99 (330)
2A0312			
2A0360	19.69 (500)	31.5 (800)	13.78 (350)
2A0415			
4A0002	5.51 (140)	10.24 (260)	5.79 (147)
4A0004			
4A0005			
4A0007			
4A0009			
4A0011			6.46 (164)
4A0018			
4A0023			6.57 (167)
4A0031			
4A0038	7.09 (180)	11.81 (300)	7.36 (187)
4A0044	8.66 (220)	13.78 (350)	7.76 (197)

P7			
Model CIMR-P7U	W	H	D
4024	10.83 (275)	17.72 (450)	10.24 (260)
4030			
4037			
4045	12.8 (325)	21.65 (550)	11.22 (285)
4055			
4075	17.72 (450)	28.54 (725)	13.78 (350)
4090			
4110	19.69 (500)	33.46 (850)	14.17 (360)
4132			
4160	22.64 (575)	36.06 (916)	14.88 (378)
4185	37.40 (950)	57.09 (1450)	17.13 (435)
4220			
4300	36.06 (916)	58.07 (1475)	16.34 (415)
---	—	—	—
---	—	—	—

P1000			
Model CIMR-PU	W	H	D
4A0058	10.00 (254)	15.75 (400)	10.16 (258)
4A0072	10.98 (279)	17.72 (450)	
4A0088	12.95 (329)	20.08 (510)	
4A0103		21.65 (550)	11.14 (283)
4A0139			
4A0165	17.72 (450)	27.76 (705)	12.99 (330)
4A0208			
4A0250	19.69 (500)	31.5 (800)	13.78 (350)
4A0296			
4A0362			
4A0414		37.40 (950)	14.57 (370) This dimension applies to all larger models.
4A0515	26.38 (670)	44.88 (1140)	
4A00675			
4A0930	49.21 (1250)	54.33 (1380)	14.57 (370) This dimension applies to all larger models.
4A1200			

◆ IP20/NEMA Type 1 Enclosure Drives

Models with and data in shaded cells are provided as standard with IP00/Open-Chassis enclosures. Order the appropriate IP20/NEMA Type 1 end cap kit when IP20/NEMA Type 1 protection is required for these models.

Table 10 IP20/NEMA Type 1 Outer Dimensions, inches (mm)

P7			
Model CIMR-P7U	W	H	D
20P4	5.51 (140)	11.02 (280)	6.30 (160)
20P7			
21P5			
22P2			
23P7	7.87 (200)	11.81 (300)	7.87 (200)
25P5			
27P5			
2011	7.87 (200)	12.20 (310)	7.87 (200)
2015	9.45 (240)	13.78 (350)	8.27(210)
2018		14.96 (380)	
2022	10 (254)	21.06 (535)	10.24 (260)
2030	10.98 (279)	24.21 (615)	10.24 (260)
2037	14.76 (375)	31.85 (809)	11.74 (300)
2045			12.99 (330)
2055	17.72 (450)	40.44 (1027)	13.78 (350)
2075			
2090	19.69 (500)	48.92 (1243)	14.22 (361)
2110	—	—	—

P1000			
Model CIMR-PU	W	H	D
2A0004	5.51 (140)	11.81(300)	5.79 (147)
2A0006			
2A0008			
2A0010			6.46 (164)
2A0012			
2A0018			6.57 (167)
2A0021			
2A0030			
2A0040	7.09 (180)	13.39 (340)	7.36 (187)
2A0056			
2A0069	8.66 (220)	15.75(400)	7.76 (197)
2A0081			
2A0110	10.00 (254)	21.02 (534)	10.16 (258)
2A0138	10.98 (279)	24.17 (614)	
2A0169	12.95 (329)	28.74 (730)	11.14 (283)
2A0211			
2A0250	17.95 (456)	37.80 (960)	12.99 (330)
2A0312			
2A0360	19.69 (500)	45.98 (1168)	13.78 (350)
2A0415	—	—	—

11 P7 and P1000 Dimensions

P7			
Model CIMR-P7U	W	H	D
40P4	5.51 (140)	11.02 (280)	7.09 (180)
40P7			
41P5			
42P2			
43P7			
44P0			
45P5			
47P5	7.87 (200)	11.81 (300)	7.87 (200)
49P0			
4011			
4015	9.45 (240)	13.78 (350)	8.27 (210)
4018			
4022	10.98 (279)	21.06 (535)	10.24 (260)
4024			
4030			
4037	12.95 (329)	25 (635)	11.22 (285)
4045		28.15 (715)	
4055			
4075	17.72 (450)	40.44 (1027)	13.78 (350)
4090			
4110	19.69 (500)	48.92 (1243)	14.22 (361)
4132			
4160	23.12 (587)	52.13 (1324)	14.96 (380)
4185	28.43 (722)	70 (1778)	16.34 (415)
4220			
4300	36.54 (928)	76 (1930)	
—	—	—	—
—	—	—	—

P1000					
Model CIMR-PU	W	H	D		
4A0002	5.51 (140)	11.81 (300)	5.79 (147)		
4A0004					
4A0005					
4A0007			7.09 (180)	13.39 (340)	6.46 (164)
4A0009					
4A0011					
4A0018					
4A0023	7.09 (180)	13.39 (340)	6.57 (167)		
4A0031					
4A0038	8.66 (220)	15.75 (400)	7.36 (187)		
4A0044					
4A0058	10.00 (254)	18.31 (465)	10.16 (258)		
4A0072	10.98 (279)	20.28 (515)			
4A0088	12.95 (329)	24.80 (630)			
4A0103		28.74 (730)	11.14 (283)		
4A0139					
4A0165	17.95 (456)	37.80 (960)	12.99 (330)		
4A0208					
4A0250	19.69 (500)	45.98 (1168)	13.78 (350)		
4A0296					
4A0362					
4A0414	26.38 (670)	48.3 (1227)	14.57 (370)		
4A0515		61.3 (1557)			
4A0675	50.2 (1276)			80.4 (2042)	
4A0930					
4A1200					

12 P7 and P1000 Watts Loss Data

Table 11 P7 and P1000 Drive Watts Loss Data

P7			
P7 Model CIMR-P7U	Heatsink Loss (W)	Interior Unit Loss (W)	Total Loss (W)
20P4	19	39	58
20P7	26	42	68
21P5	48	50	98
22P2	59	68	127
23P7	110	74	184
23P7	110	74	184
25P5	164	84	248
27P5	219	113	332
2011	357	168	525
2015	416	182	598
2018	472	208	680
2022	583	252	835
2030	883	333	1216
2037	1010	421	1431
2045	1228	499	1727
2055	1588	619	2207
2075	1956	844	2800
2090	2194	964	3158
2110	2733	1234	3967
40P4	14	39	53
40P7	17	41	58
41P5	36	48	84
42P2	59	56	115
43P7	80	68	148
44P0	90	70	160
45P5	127	81	208
47P5	193	114	307
49P0	232	158	390
4011	232	158	390
4015	296	169	465
4018	389	201	590
4022	420	233	653
4024	691	297	988
4030	691	297	988
4037	801	332	1133
4045	901	386	1287
4055	1204	478	1682
4075	1285	562	1847
4090	1614	673	2287
4110	1889	847	2736
4132	2388	1005	3393
4160	2791	1144	3935
4185	2636	1328	3964
4220	3797	1712	5509
4300	5838	2482	8320
—	—	—	—
—	—	—	—

P1000			
P1000 Model CIMR-PU	Heatsink Loss (W)	Interior Unit Loss (W)	Total Loss (W)
2A0004	18.4	47	66
2A0006	31	51	82
2A0008	43	52	95
2A0010	57	58	115
2A0012	77	64	141
2A0018	101	67	168
2A0021	138	83	221
2A0030	262	117	379
2A0040	293	145	438
2A0056	371	175	546
2A0069	491	205	696
2A0081	527	257	784
2A0110	719	286	1005
2A0138	842	312	1154
2A0169	1014	380	1394
2A0211	1218	473	1691
2A0250	1764	594	2358
2A0312	2020	655	2675
2A0360	2698	894	3592
2A0415	2672	954	3626
4A0002	20	48	68
4A0004	32	49	81
4A0005	45	53	98
4A0007	62	59	121
4A0009	66	60	126
4A0011	89	73	162
4A0018	177	108	285
4A0023	216	138	354
4A0031	295	161	456
4A0038	340	182	522
4A0044	390	209	599
4A0058	471	215	686
4A0072	605	265	870
4A0088	684	308	992
4A0103	848	357	1205
4A0139	1215	534	1749
4A0165	1557	668	2225
4A0208	1800	607	2407
4A0250	2379	803	3182
4A0296	2448	905	3353
4A0362	3168	1130	4298
4A0414	3443	1295	4738
4A0515	4850	1668	6518
4A0675	4861	2037	6898
4A0930	8476	2952	11428
4A1200	8572	3612	12184

13 Appendix 2 Parameter Cross Reference

◆ Parameter Setting Procedure

1. **Table 12** lists the parameter setting information needed to upgrade from P7 to a new P1000 drive.
2. Check all P7 parameters that have been changed from their default settings by using the Modified Constants Menu.
3. Set parameters as described in this section.

Note: Default values in **Table 12** are listed for P1000 200 V Class 0.4 kW Drive Using V/f Control Mode.

Table 12 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
Environment Settings	Language Selection	A1-00	0	A1-00	0	A1-00	A1-00
						0: English	0: English
						1: Japanese	1: Japanese
						2: German	2: German
						3: French	3: French
						4: Italian	4: Italian
						5: Spanish	5: Spanish
						6: Portuguese	6: Portuguese
	—	7: Chinese					
	Access Level Selection	A1-01	2	A1-01	2	A1-01	A1-01
						0: Operation only (monitors only)	0: Operation only (monitors only)
						1: User Parameters	1: User Parameters Set parameters A2-01 to A2-32
	Control Method Selection	N/A	0	A1-02	0	N/A	N/A
						V/f Control	V/f Control
						—	—
						—	—
						—	—
						—	—
	Initialize Parameters	A1-03	0	A1-03	0	A1-03	A1-03
						0: No initialization	0: No initialization
						1110: User initialize	1110: User initialize
						2220: 2-wire sequence	2220: 2-wire sequence
						3330: 3-wire sequence	3330: 3-wire sequence
						—	5550: Reset oPE04
						—	8008: Pump
						—	8009: Pump w/ PI
						—	8010: Fan
—						8011: Fan w/ PI	
Password	A1-04	0	A1-04	0000	—	—	
Password Setting	A1-05	0	A1-05	0000	—	—	
User Parameters	A2-01 to A2-32	—	A2-01 to A2-32	—	If setting A1-01 to 1, refer to the manual and set parameters A2-01 through A2-32.		

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
Operation Mode Selection	Frequency Reference Selection	b1-01	1	b1-01	1	b1-01	b1-01
						0: Operator	0: Operator
						1: Control circuit terminal (analog input)	1: Control circuit terminal (analog input)
						2: MEMOBUS comm.	2: MEMOBUS comm.
						3: Option card	3: Option card
	—	4: Pulse train input					
	Operation Method Selection	b1-02	1	b1-02	1	b1-02	b1-02
						0: Operator	0: Operator
						1: Control circuit terminal	1: Control circuit terminal
						2: MEMOBUS comm.	2: MEMOBUS comm.
	Stopping Method Selection	b1-03	0	b1-03	0	b1-03	b1-03
						0: Ramp to stop	0: Ramp to stop
1: Coast to stop						1: Coast to stop	
2: DC Injection Braking						2: DC Injection Braking	
Operation Mode Selection	Reverse Operation Selection	b1-04	1	b1-04	0	b1-04	b1-04
						0: Reverse enabled	0: Reverse enabled
						1: Reverse disabled	1: Reverse disabled
						2: Exchange Phase	0: Reverse enabled and set b1-14 to 1
	Operation Selection After Switching to Remote Mode	b1-07	0	b1-07	0	b1-07	b1-07
						0: Cycle Run command	0: Cycle Run command
	Run Command Selection while in Programming Mode	b1-08	0	b1-08	0	b1-08	b1-08
						0: Disabled	0: Disabled
						1: Enabled - Run cmd always accepted	1: Enabled - Run cmd always accepted
	Drive Delay Time Setting	b1-11	0	b6-01	0.0 Hz	—	
				b6-02	0.0 s		
	Hand Frequency Reference	b1-12	0	—	—	b1-12	—
0: Operator - Digital Preset d1-01							
HAND/AUTO During Run Selection	b1-13	0	—	—	b1-13	—	
					0: Disabled		
					1: Enabled		
Operation Mode Selection	Emergency Override Speed	b1-14	0.00 Hz	S6-01	0.00 Hz	—	
	Emergency Override Reference Selection	b1-15	0	S6-02	0	b1-15	S6-02
						0: Use B1-14 Ref	0: Use S6-01 Ref
						1: Use AUTO Ref	1: Use Freq Ref

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting		
		Parameter	Default	Parameter	Default	P7	P1000	
DC Injection Braking	DC Injection Braking Start Frequency	b2-01	0.5 Hz	b2-01	0.5 Hz	—		
	DC Injection Braking current	b2-02	50%	b2-02	50%	—		
	DC Injection Braking Time at Start	b2-03	0.00 s	b2-03	0.00 s	—		
	DC Injection Braking Time at Stop	b2-04	0.00 s	b2-04	0.50 s	—		
	Motor Pre-Heat Current	b2-09	0%	b2-02	50%	The same current setting is used for DC injection at start and stop. Default current is 50%		
	Motor Pre-Heat Current 2	b2-10	5%	b2-02	50%			
Speed Search	Speed Search Selection	b3-01	2	b3-01	0	b3-01	b3-01	b3-24
						0: Disabled (Speed Estimation)	0: Disabled	1: Speed Estimation
				1: Enabled (Speed Estimation)	1: Enabled	1: Speed Estimation		
				b3-24	0	2: Disabled (Current Detection)	0: Disabled	0: Current Detection
	3: Enabled (Current Detection)	1: Enabled	0: Current Detection					
	Speed Search Operating Current	b3-02	120%*	b3-02	120%	*Determined by parameter A1-02, Control Method Selection		
	Speed Search Deceleration Time	b3-03	2.0 s	b3-03	2.0 s	—		
	Speed Search Delay Time	b3-05	0.2 s	b3-05	0.2 s	—		
Bi-Directional Speed Search Selection	b3-14	1	b3-14	1	b3-14	b3-14		
					0: Disabled	0: Disabled		
						1: Enabled	1: Enabled	
Timers	Timer Function On-Delay Time	b4-01	0.0 s	b4-01	0.0 s	—		
	Timer Function Off-Delay Time	b4-02	0.0 s	b4-02	0.0 s	—		

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
PID Control	PID Control Method Selection	b5-01	0	b5-01	0	b5-01	b5-01
						0: Disabled	0: Disabled
						1: D = feedback	1: Enable
						2: D = feed-forward	—
						3: Ref. + PI	—
	—	—					
	Proportional Gain Setting (P)	b5-02	1.00	b5-02	1.00	—	—
	Integral Time Setting (I)	b5-03	1.0 s	b5-03	1.0 s	—	—
	Integral Limit Setting	b5-04	100.0%	b5-04	100.0%	—	—
	PID Output Limit	b5-06	100.0%	b5-06	100.0%	—	—
	PID Offset Tuning	b5-07	0.0%	b5-07	0.0%	—	—
	PID Primary Delay Time	b5-08	0.00 s	b5-08	0.00 s	—	—
	PID Output Level Selection	b5-09	0	b5-09	0	b5-09	b5-09
						0: Normal	0: Normal
						1: Reverse	1: Reverse
	PID Output Gain Setting	b5-10	1.0	b5-10	1.00	Minimum setting units vary.	
	PID Output Reverse Selection	b5-11	0	b5-11	0	b5-11	b5-11
						0: Negative PID output triggers zero limit	0: Negative PID output triggers zero limit
1: Rotation direction reverses with negative PID output.						1: Rotation direction reverses with negative PID output.	
PID Feedback Reference Missing Detection Selection	b5-12	0	b5-12	0	b5-12	b5-12	
					0: No Detection	0: No Detection	
					1: Alarm	1: Alarm and MFO (@PID enable only)	
					2: Fault	2: Fault and MFO (@PID enable only)	
					—	3: Multi-function output only (no display indication, @ PID enable/disable)	
					—	4: An alarm is triggered and the drive continues running, @ PID enable/disable.	
—	5: Fault is triggered and output is shut off, @ PID enable/disable.						
PID Feedback Loss Detection Level	b5-13	0%	b5-13	0%	—	—	
PID Feedback Loss Detection Time	b5-14	1.0 s	b5-14	1.0 s	—	—	
PID Sleep Function Start Level	b5-15	0.0 Hz	b5-15	0.0 Hz	—	—	
PID Sleep Delay Time	b5-16	0.0 s	b5-16	0.0 s	—	—	

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
PID Control	PID Accel/Decel Time	b5-17	0.0 s	b5-17	0.0 s	—	
	PI Setpoint Selection	b5-18	0	b5-18	0	b5-18	
						0: Disabled	
						1: Enabled	
	PI Setpoint Value	b5-19	0.00%	b5-19	0.00%	—	
	PI Setpoint Display Scaling	b5-20	1	b5-20	1	b5-20	
						0: 0.01 Hz Units	
						1: 0.01% Units	
						2: RPM	
						40 through 39999: Engineering Units	
						3: User Set (Refer to b5-38, b5-39, and b5-46 for details)	
	PI Sleep Input Source	b5-21	1	—	—	b5-21	
						0: SFS Input (This is near the PI Output)	
						1: PI Setpoint	
						2: Snooze	
	PI Snooze Level	b5-22	0%	—	—	Use EZ sleep functionality in parameters b5-89 through b5-96. Contact technical support for assistance in programming EZ sleep function.	
	PI Snooze Delay Time	b5-23	0 s	—	—		
PI Snooze Deactivation Level	b5-24	0%	—	—			
PI Setpoint Boost Setting	b5-25	0%	—	—			
PI Maximum Boost Time	b5-26	0 s	—	—			
PI Snooze Feedback Level	b5-27	60%	—	—			
PI Feedback Square Root Function Selection	b5-28	0	b5-42	0	b5-30		
					0: Disabled		
					1: Enabled		
					—		
					2: Quadratic		
					3: Cubic		
PI Square Root Gain	b5-29	1.00	—	—	Refer to b5-10, PI output Gain, for details.		
Output Square Root Monitor Selection	b5-30	0	b5-43	0	b5-30		
					b5-43: Monitor Max. upper 4 digits		
			b5-44	0	0: Disabled		
					b5-44: Monitor Max. lower 4 digits		
					1: Enabled		
					b5-45: Monitor Min.		

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
PID Control	PI Unit Selection	b5-31	0	b5-46	0	b5-31	
						0: WC:InchOfWater	0: WC (inch of water)
						1: PSI:lb/SqrInch	1: PSI (pounds per square inch)
						2: GPM:Gallons/Min	2: GPM (gallons per minute)
						3: F:DegFahrenheit	3: °F (degrees Fahrenheit)
						4: CFM:Cubic ft/Min	4: CFM (cubic feet per minute)
						5: CMH:Cubic M/Hr	5: CMH (cubic meters per hour)
						6: LPH:Liters/Hr	6: LPH (liters per hour)
						—	7: LPS (liters per second)
						8: Bar:Bar	8: Bar (Bar)
						9: Pa:Pascals	9: Pa (Pascal)
						10: C:DegCelsius	10: °C (degrees Celsius)
						11: Mtr:Meters	11: Mtr (meters)
						—	12: Ft (feet)
—	13: LPM (liters per minute)						
—	14: CMM (cubic meters per minute)						
—	15: "Hg (inches of mercury)						
—	25: None						
Energy Saving Control	Energy Saving Control Selection	b8-01	0	b8-01	0	b8-01	b8-01
	Energy Saving Coefficient Value	b8-04	Varies by kVA	b8-04	*	*Determined by parameters o2-04, Drive Model Selection. Value changes automatically if E2-11 is manually changed or changed by Auto-Tuning.	
	Power Detection Filter Time	b8-05	20 ms	b8-05	20 ms	—	
	Search Operation Voltage Limit	b8-06	0%	b8-06	0%	—	
Accel/Decel Time	Acceleration Time 1	C1-01	30.0 s	C1-01	10.0 s	—	
	Deceleration Time 1	C1-02	30.0 s	C1-02	10.0 s	—	
	Acceleration Time 2	C1-03	30.0 s	C1-03	10.0 s	—	
	Deceleration Time 2	C1-04	30.0 s	C1-04	10.0 s	—	
	Fast Stop Time	C1-09	10.0 s	C1-09	10.0 s	—	
	Accel/Decel Switch Frequency	C1-11	0.0 Hz	C1-11	0.0 Hz	—	

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
S-Curve Characteristics	S-Curve Characteristic at Accel Start	C2-01	0.20 s	C2-01	0.20 s	—	
	S-Curve Characteristic at Accel End	C2-02	0.20 s	C2-02	0.20 s	—	
Torque Compensation	Torque Compensation Gain	C4-01	1.00	C4-01	1.00	—	
	Torque Compensation Primary Delay Time	C4-02	200 ms	C4-02	200 ms*	*Determined by parameter o2-04, Drive Model Selection.	
Carrier Frequency	Drive Duty Selection	C6-01	0	—	—	Parameter contents differ between P7 and P1000	
						C6-01	N/A
						0: Heavy Duty	—
						1: Normal Duty 1	—
	Carrier Frequency Selection	C6-02	Varies by kVA	C6-02	7	C6-02	C6-02
						0: Low Noise PWM	—
						1: 2.0 kHz	1: 2.0 kHz
						2: 5.0 kHz	2: 5.0 kHz
						3: 8.0 kHz	3: 8.0 kHz
						4: 10.0 kHz	4: 10.0 kHz
						5: 12.5 kHz	5: 12.5 kHz
						6: 15.0 kHz	6: 15.0 kHz
—	7 to A: Swing PWM 1-4						
F: User-set	F: User-set						
Carrier Frequency Upper Limit	C6-03	Varies by kVA	C6-03	*	*Determined by parameter C6-02, Carrier Frequency Selection.		
Carrier Frequency Lower Limit	C6-04	Varies by kVA	C6-04	*	*Determined by parameter C6-02, Carrier Frequency Selection.		
Carrier Frequency Proportional Gain	C6-05	0	C6-05	*	*Determined by parameter C6-02, Carrier Frequency Selection.		
Frequency Reference	Frequency Reference 1	d1-01	0.00 Hz	d1-01	0.00 Hz	—	
	Frequency Reference 2	d1-02	0.00 Hz	d1-02	0.00 Hz	—	
	Frequency Reference 3	d1-03	0.00 Hz	d1-03	0.00 Hz	—	
	Frequency Reference 4	d1-04	0.00 Hz	d1-04	0.00 Hz	—	
	Jog Frequency Reference	d1-17	6.00 Hz	d1-17	6.00 Hz	—	

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting					
		Parameter	Default	Parameter	Default	P7			P1000		
Frequency Limits	Frequency Reference Upper Limit Value	d2-01	100.0%	d2-01	100.0%	—					
	Frequency Reference Lower Limit Value	d2-02	0.0%	d2-02	0.0%	—					
	Main Speed Reference Lower Limit Value	d2-03	0.0%	d2-03	0.0%	—					
Jump Frequency	Jump Frequency 1	d3-01	0.0 Hz	d3-01	0.0 Hz	—					
	Jump Frequency 2	d3-02	0.0 Hz	d3-02	0.0 Hz	—					
	Jump Frequency 3	d3-03	0.0 Hz	d3-03	0.0 Hz	—					
	Jump Frequency Width	d3-04	1.0 Hz	d3-04	1.0 Hz	—					
Frequency Reference Hold	Frequency Reference Hold Function Selection	d4-01	0	—	—	d4-01			—		
						0: Disabled			—		
						1: Enabled			—		
	Trim Control Level	d4-02	10%	d7-01	0.0%	H1-01 to H1-06	d4-02	H1-01 to H1-08	d7-01	d7-02	H1-01 to H1-06
1C: +Speed Ref						Setting value	44	Setting value	No need to set	1C: +Speed Ref	
			d7-02	0.0%	1D: -Speed Ref	Setting value	45	No need to set	- (Setting Value)	1D: -Speed Ref	
V/f Characteristics	Input Voltage Setting	E1-01	240 V*	E1-01	230 V*	*Double values for 400 V class drives.					
	V/f Pattern Selection	E1-03	F	E1-03	F	E1-03			E1-03		
						0: 50 Hz			0: 50 Hz (constant torque 1)		
						1: 60 Hz saturation			1: 60 Hz (constant torque 2)		
						2: 50 Hz saturation			2: 60 Hz (constant torque 3), 50 Hz base		
						3: 72 Hz, 60 Hz base			3: 72 Hz (constant torque 4), 60 Hz base		
						4: 50 Hz VT1			4: 50 Hz VT1		
						5: 50 Hz VT2			5: 50 Hz VT2		
						6: 60 Hz VT1			6: 60 Hz VT3		
						7: 60 Hz VT2			7: 60 Hz VT4		
						8: 50 Hz HST1			8: 50 Hz HST1		
						9: 50 Hz HST2			9: 50 Hz HST2		
						A: 60 Hz HST1			A: 60 Hz HST3		
						B: 60 Hz HST2			B: 60 Hz HST4		
						C: 90 Hz (60 Hz base)			C: 90 Hz (60 Hz base)		
D: 120 Hz (60 Hz base)			D: 120 Hz (60 Hz base)								
E: 180 Hz (60 Hz base)			E: 180 Hz (60 Hz base)								
F: Custom V/f pattern			F: Custom V/f pattern								
FF: Custom w/o limit			—								

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
V/f Characteristics	Max Output Frequency	E1-04	60.0 Hz	E1-04	60.0 Hz *	*Depends on parameters A1-02 Control Method Selection (P7 only), o2-04, Drive Model Selection, and E5-01, Motor Code Selection.	
	Max Voltage	E1-05	240.0 V*	E1-05	230.0 V*		
	Base Frequency	E1-06	60.0 Hz *	E1-06	60.0 Hz*		
	Mid. Output Frequency	E1-07	3.0 Hz *	E1-07	3.0 Hz*		
	Mid. Output Frequency Voltage	E1-08	18.0 V*	E1-08	17.3 V*		
	Minimum Output Frequency	E1-09	1.5 Hz *	E1-09	1.5 Hz*		
	Minimum Output Frequency Voltage	E1-10	10.5 V*	E1-10	10.2 V*		
	Mid. Output Frequency 2	E1-11	0.0 Hz	E1-11	0.0 Hz		
	Mid. Output Frequency Voltage 2	E1-12	0.0 V	E1-12	0.0 V		
	Base Voltage	E1-13	0.0 V	E1-13	0.0 V		
Motor Parameters	Motor Rated Current	E2-01	*	E2-01	*	*For P1000, dependent on drive capacity parameter o2-04	
	Motor No-Load Current	E2-03	*	E2-03	*	*For P1000, dependent on drive capacity parameter o2-04	
	Motor Line-to-Line Resistance	E2-05	*	E2-05	*	*For P1000, dependent on drive capacity parameter o2-04	
Comm. Option Card	Operation Selection After Communications Error	F6-01	1	F6-01	1	F6-01	F6-01
						0: Ramp to stop	0: Ramp to stop
						1: Coast to stop	1: Coast to stop
						2: Fast Stop	2: Fast Stop
	External Fault from Comm. Option Board Detection Selection	F6-02	0	F6-02	0	F6-02	F6-02
						0: Always detected	0: Always detected
						1: Detected during run	1: Detected during run
	External Fault from Comm. Option Board Operation Selection	F6-03	1	F6-03	1	F6-03	F6-03
						0: Ramp to stop	0: Ramp to stop
						1: Coast to stop	1: Coast to stop
						2: Fast Stop	2: Fast Stop
	Comm. Option Card	Current Unit Monitor Display	F6-05	0	—	—	F6-05
0: A Display (Amps)							—
1: 100%/8192 (Drive Rated Current)							—

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
Multi-Function Relay Input	Multi-Function Digital Input Terminal S1 Function Selection	—	—	H1-01*	40 Use this setting	*Input functions for terminals S1 and S2 are fixed in P7, but multi-functional in P1000.	
						H1-01 to H1-06 (S3-S8)	H1-01 to H1-08 (S1-S8)
						0: 3-wire sequence	0: 3-wire Control
						1: LOCAL/REMOTE selection	1: LOCAL/REMOTE selection
						2: Option/Drive selection	2: External Ref. 1/2 Selection b1-15* b1-16* 3: Option card 3: Option card *Used when closed. When open, source is determined by b1-01 and b1-02
						3: Multi-Step Frequency Ref. 1	3: Multi-Step Frequency Ref. 1
	Multi-Function Digital Input Terminal S2 Function Selection	—	—	H1-02*	41 Use this setting	4: Multi-Step Frequency Ref. 2	4: Multi-Step Frequency Ref. 2
						—	5: Multi-Step Frequency Ref. 3
						6: Jog freq ref selection	6: Jog freq ref selection
						7: Accel/Decel Time Selection 1	7: Accel/Decel Time Selection 1
						8: External Baseblock (N.O.)	8: External Baseblock (N.O.)
						9: External Baseblock (N.C.)	9: Baseblock command (N.C.)
	Terminal S3 Function Selection	H1-01	24	H1-03	24	A: Accel/decel Ramp Hold	A: Accel/decel ramp hold
						—	B: Drive overheat alarm
						C: Terminal A2 Enable	C: Analog Terminal input selection
						F: Not used	F: Through-mode
						10: MOP Increase	10: Up command
	Terminal S4 Function Selection	H1-02	14	H1-04	14	11: MOP Decrease	11: Down command
						12: FWD jog	12: FWD jog
						13: REV jog	13: REV jog
						14: Fault Reset	14: Fault Reset
						15: Fast Stop (N.O.)	15: Fast Stop (N.O.)
	Terminal S5 Function Selection	H1-03	3 (0)	H1-05	3 (0)	17: Fast Stop (N.C.)	17: Fast Stop (N.C.)
						18: Timer function input	18: Timer function input
19: PID disable						19: PID disable	
—						1A: Accel/decel time selection 2	
1B: Program Lockout						1B: Program Lockout	
					1C: Trim Control Increase	—	
					1D: Trim Control Decrease	—	
					1E: Analog freq ref sample hold	1E: Analog freq ref sample/hold	

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
Multi-Function Relay Input	Terminal S5 Function Selection	H1-03	3 (0)	H1-05	3 (0)	20: External fault (N.O., Always detected, Ramp to stop)	20: External fault (N.O., Always detected, Ramp to stop)
						21: External fault (N.C., Always detected, Ramp to stop)	21: External fault (N.C., Always detected, Ramp to stop)
						22: External fault (N.O., Detected during run, Ramp to stop)	22: External fault (N.O., Detected during run, Ramp to stop)
						23: External fault (N.C., Detected during run, Ramp to stop)	23: External fault (N.C., Detected during run, Ramp to stop)
						24: External fault (N.O., Always detected, Coast to stop)	24: External fault (N.O., Always detected, Coast to stop)
						25: External fault (N.C., Always detected, Coast to stop)	25: External fault (N.C., Always detected, Coast to stop)
						26: External fault (N.O., Detected during run, Coast to stop)	26: External fault (N.O., Detected during run, Coast to stop)
						27: External fault (N.C., Detected during run, Coast to stop)	27: External fault (N.C., Detected during run, Coast to stop)
						28: External Fault (N.O., always detected, Fast Stop)	28: External Fault (N.O., always detected, Fast Stop)
						29: External fault (N.C., always detected, Fast Stop)	29: External fault (N.C., always detected, Fast Stop)
						2A: External Fault (N.O., detected during run, Fast Stop)	2A: External Fault (N.O., detected during run, Fast Stop)
Multi-Function Relay Input	Terminal S6 Function Selection	H1-04	4 (3)	H1-06	4 (3)	2B: External fault (N.C., detected during run, Fast Stop)	2B: External fault (N.C., detected during run, Fast Stop)
						2C: External fault (N.O., always detected, alarm only)	2C: External fault (N.O., always detected, alarm only)
						2D: External fault (N.C., always detected, alarm only)	2D: External fault (N.C., always detected, alarm only)
						2E: External Fault (N.O., detected during run, alarm only)	2E: External Fault (N.O., detected during run, alarm only)
						2F: External Fault (N.C., detected during run, alarm only)	2F: External Fault (N.C., detected during run, alarm only)
						30: PID integral reset	30: PID integral reset
						31: PID integral hold	31: PID integral hold
						—	32: Multi-step speed reference 4
						34: PID Soft Starter cancel	34: PID Soft Starter cancel
						35: PID input (error) polarity switch	35: PID input level selection

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
Multi-Function Relay Input	Terminal S6 Function Selection	H1-04	4 (3)	H1-06	4 (3)	36: Option/Inv Sel 2	—
						—	40: Forward run command
						—	41: Reverse run command
						—	42: Run command
	Terminal S7 Function Selection	H1-05	6 (4)	H1-07	6 (4)	—	43: Forward/Reverse command 2
						—	47: CanOpen Node setup
						—	51: Sequence Timer Disable
						—	52: Sequence Timer Cancel
						60: DC Injection Braking	60: DC Injection Braking
						61: Speed search 1	61: Speed search 1
						62: Speed search 2	62: Speed search 2
						—	63: Magnetic field weakening
						64: Speed search 3	—
						—	65: KEB Ride-thru (N.C.)
						—	66: KEB Ride-thru (N.O.)
						67: Comm. test mode	67: Comm. test mode
	68: High Slip Braking	68: High Slip Braking					
	69: Jog 2	—					
	Terminal S8 Function Selection	H1-06	8 (6)	H1-08	8 (6)	6A: Drive Enable	6A: Drive enable
						6B: Com/Inv Sel	—
						6C: Com/Inv Sel 2	—
						6D: Auto Mode Sel	—
						6E: Hand Mode Sel	—
						70: Bypass/Drv Enbl.	—
						80: Motor Preheat 2	—
						81: EmergOverrideFWD	—
						82: EmergOverrideREV	—
						—	75: UP 2
						—	76: DOWN 2
						—	7A: KEB Ride-Thru 2 (N.C.)
						—	7B: KEB Ride-Thru 2 (N.O.)
						—	7E: PG Rotate Rev
						—	7F: PID Bidirectional Enable
						—	A8: PI2 Diabie (N.O.)
						—	A9: PI2 Diabie (N.C.)
						—	AA: PI2 Invert
—	AB: PI2 Integral Reset						
—	AC: PI2 Integral Hold						
—	AD: Select PI2 Parameters						
—	AF: Emergency Override Forward						
—	B0: Emergency Override Reverse						
Multi-Function Relay Output	Terminal M1 and M2 Function Selection	H2-01	0	H2-01	0	H2-01 to H2-03	H2-01 to H2-03
						0: During Run 1	0: During run
						1: Zero Speed	1: Zero speed
						2: Fref/Fout Agree 1	2: Fref/Fout Agree 1
						3: Fref/Set agree 1	3: Fref/Set agree 1
						4: Frequency detection 1	4: Frequency detection 1
5: Frequency detection 2 (used when L4-07 = 1)	5: Frequency detection 2 (used when L4-07 = 1)						

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
Multi-Function Relay Output	Terminal M1 and M2 Function Selection	H2-01	0	H2-01	0	6: Drive ready	6: Drive ready
						7: DC bus undervoltage	7: DC bus undervoltage
						8: Baseblock 1 (N.O.)	8: Baseblock 1 (N.O.)
						9: Option reference	9: Freq ref source
						A: Local/Remote operation	A: Run cmd source
						B: Torque detection 1 (N.O.)	B: Torque detection 1 (N.O.)
						C: Frequency reference loss	C: Frequency reference loss
						D: Braking resistor overheat	D: Braking resistor overheat
						E: Fault	E: Fault
						F: Not used	F: Through-mode / Not Used
						10: Minor Fault - Alarm	10: Minor Fault - Alarm
						11: Reset command active	11: Fault reset command active
Multi-Function Relay Output	Terminal M3-M4 Function Selection	H2-02	A	H2-02	1	12: Timer output	12: Timer output
						—	13: Speed agree 2
						—	14: User-Set speed agree 2
						—	15: Frequency detection 3
						—	16: Frequency detection 4
						17: Torque detection 1 (N.C.)	17: Torque detection 1 (N.C.)
						—	18: Torque detection 2 (N.O.)
						—	19: Torque detection 2 (N.C.)
						1A: Reverse run	1A: During reverse
						—	1B: During baseblock (N.C.)
						1E: Fault restart enabled	1E: Fault restart enabled
						1F: Motor overload alarm	1F: Motor overload alarm
						20: Drive overheat pre-alarm	20: Drive overheat pre-alarm
						—	22: Mechanical weakening detection
						—	2F: Maintenance period
						—	37: During Run 2
						38: Drive Enable	38: Drive enabled
						39: Waiting to Run	—
						—	39: Watt hour pulse
						3A: OH Freq. Reference	—
						3B: Run SRC Com/OPT	—
						—	3C: LOCAL/REMOTE mode
						3D: Cooling Fan Err	—
						—	3D: During Speed Search
						—	3E: PID feedback low (during loss)
						—	3F: PID feedback high (fault)
						—	4A: During KEB Ride-thru
						—	4C: During Fast Stop
—	4D: oH pre-alarm time limit						

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
Multi-Function Relay Output	Terminal M3-M4 Function Selection	H2-02	A	H2-02	1	—	4E: Braking transistor fault (rr)
						—	4F: Braking resistor overheat (oH)
						—	51: Sequence Timer 1
						—	52: Sequence Timer 2
						—	53: Sequence Timer 3
						—	54: Sequence Timer 4
						—	58: UL6
						—	60: Fault Alarm Detection
						—	71: PI2 Feedback Low
						—	72: PI2 Feedback High
						—	100 to 192: Inverse Output of 0-92
Analog Input	Terminal A1 Gain Setting	H3-02	100.0%	H3-03	100.0%	—	
	Terminal A1 Bias Setting	H3-03	0.0%	H3-04	0.0%	—	
	Terminal A2 Signal Level Selection	H3-08	2	H3-09	2	H3-08	H3-09
						0: 0 to 10 V	0: 0 to +10 V (with lower limit)
						1: -10 to 10 V	1: -10 to +10 V (no lower limit)
						2: 4 to 20 mA	2: 4 to 20 mA
						—	3: 0 to 20 mA
	Terminal A2 Function Selection	H3-09	0	H3-10	0	H3-09	H3-10
						0: Terminal A1 bias	0: Frequency bias
						—	1: Frequency gain
						2: Auxiliary freq ref 1	2: Auxiliary freq ref 1
						—	3: Auxiliary frequency reference 2
						—	4: Output voltage bias
						—	5: Accel/decel time gain
						—	6: DC Injection Braking current
						—	7: Torque detection level
						—	8: Stall Prevention level during run
						—	9: Output freq lower limit level
						B: PID feedback	B: PID feedback
						—	C: PID setpoint
						D: Frequency Reference bias 2	D: Frequency bias 2
						E: Motor temperature	E: Motor temperature PTC
	—	F: Through- mode					
	16: PI Differential	16: Differential PID feedback					
	1F: Not used	1F: Through-mode					
	—	25: PI2 Setpoint					
—	26: PI2 Feedback						
Terminal A2 Gain Setting	H3-10	100.0%	H3-11	100.0%	—		
Terminal A2 Bias Setting	H3-11	0.0%	H3-12	0.0%	—		
Analog Input Filter Time Constant	H3-12	0.03 s	H3-13	0.03 s	—		

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
Analog Input	Master Frequency Reference Terminal Selection	H3-13	0	—	—	H3-13	—
						0: Main Fref TA1	—
						1: Main Fref TA2	—
Multi-Function Analog Output	Analog Output 1 Terminal FM Monitor Selection	H4-01	2	H4-01	102	H4-01	H4-01
						—	0: Not Used
						1: Frequency Ref (100% = max. output frequency)	101: Frequency Ref (100% = max. output frequency)
						2: Output Freq (100% = max. output frequency)	102: Output Freq (100% = max. output frequency)
						3: Output Current (100% = drive rated current)	103: Output Current (100% = drive rated current)
						6: Output Voltage (100% = 230 V or 100% = 460 V)	106: Output Voltage (100% = 230 V or 100% = 460 V)
						7: DC Bus Voltage (100% = 400 V or 100% = 800 V)	107: DC Bus Voltage (100% = 400 V or 100% = 800 V)
						8: Output kW (100% = drive rated power)	108: Output kW (100% = drive rated power)
						15: Term A1 Level	113: Term A1 Level
						16: Term A2 Level	114: Term A2 Level
						—	115: Term A3 Level
						—	—
						18: Mot SEC Current (100% = Motor rated secondary current)	601: Motor Secondary Current
						20: SFS Output (100% = max. output frequency)	116: SFS Output (100% = max. output frequency)
						—	121: AI Output Channel 1 Level
						—	122: AI Output Channel 2 Level
						—	123: AI Output Channel 3 Level
						—	124: Terminal RP Input Frequency
						—	408: Heatsink Temp
						—	416: Motor OL1 Level
						24: PI Feedback	501: PI Feedback 1
						31: Not Used	31: Not Used
						36: PI Input	502: PI Input
37: PI Output (100% = max. output frequency)	503: PI Output (100% = max. output frequency)						
38: PI Setpoint	504: PI Setpoint						
51: Auto Mode Fref (100% = max. output frequency)	—						
52: Hand Mode Fref (100% = max. output frequency)	—						

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
Multi-Function Analog Output	Analog Output 1 Terminal FM Monitor Selection	H4-01	2	H4-01	102	53: PI Feedback 2	505: PI Feedback 2
						—	506: PI Differential Feedback
						—	514: PI Output 2 (U4)
						—	515: PI Output 2 (L4)
						—	517: PI2 Set-point
						—	518: PI2 Feedback
						—	519: PI Input 2
						—	520: Output
						—	599:PID Setpoint Command
						—	618: PG1 Counter Value
						—	619: PG2 Counter Value
						—	620: UP/DOWN 2 Bias
						—	621: Offset Frequency
Note: 100% = 10 Vdc output FM gain setting (H4-02).						—	
Multi-Function Analog Output	Analog Output 1 Terminal FM Gain	H4-02	100%	H4-02	100.0%	—	
	Analog Output 1 Terminal FM Bias	H4-03	0.0%	H4-03	0.0%	—	
	Analog Output 2 Terminal AM Selection	H4-04	8*	H4-04	103*	*Refer to parameter H4-01 for details.	
	Analog Output 2 Terminal AM Gain	H4-05	50.0%	H4-05	50.0%	—	
	Analog Output 2 Terminal AM Bias	H4-06	0.0%	H4-06	0.0%	—	
	Analog Output 1 Signal Level (FM) Selection	H4-07	0	H4-07	0	H4-07	H4-07
						0: 0 to +10 V output	0: 0 to +10 Vdc output
						—	1: -10 to 10 Vdc output
	Analog Output 2 Signal Level (AM) Selection	H4-08	0	H4-08	0	H4-08	H4-08
						0: 0 to +10 V output	0: 0 to +10 Vdc output
						—	1: -10 to 10 Vdc output
						2: 4 to 20 mA*	2: 4 to 20 mA
	* An analog output of 4-20mA cannot be used with the standard terminal board. A terminal board with a shunt connector CN15 is needed, part ETC.						

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
MEMOBUS Comms.	Drive Node Address	H5-01	1F	H5-01	1F	—	
	Communication Speed Selection	H5-02	3	H5-02	3	H5-02	H5-02
						0: 1200 bps	0: 1200 bps
						1: 2400 bps	1: 2400 bps
						2: 4800 bps	2: 4800 bps
						3: 9600 bps	3: 9600 bps
						4: 19200 bps	4: 19200 bps
						—	5: 38400 bps
						—	6: 57600 bps
	Communication Parity Selection	H5-03	0	H5-03	0	H5-03	H5-03
						0: No parity	0: No parity
						1: Even parity	1: Even parity
	Stopping Method After Communication Error	H5-04	3	H5-04	0	H5-04	H5-04
						0: Ramp to stop	0: Ramp to stop
1: Coast to stop						1: Coast to stop	
2: Fast Stop						2: Fast Stop	
Communication Fault Detection Selection	H5-05	1	H5-05	0	H5-05	H5-05	
					0: Disabled	0: Disabled	
					1: Enabled	1: Enabled	
Drive Transmit Wait Time	H5-06	5 ms	H5-06	5 ms	—		
RTS Control Selection	H5-07	1	H5-07	1	H5-07	H5-07	
					0: Disabled (RTS always on)	0: Disabled (RTS always on)	
					1: Enabled (RTS enabled during send only)	1: Enabled (RTS enabled during send only)	
					—		
Communication Error Detection Time	H5-09	2.0	H5-09	2.0	—		
Motor Protection Function	Motor Overload Protection Selection	L1-01	1	L1-01	1	L1-01	L1-01
						0: Disabled	0: Disabled
						1: Standard fan cooled	1: General-purpose motor
						2: Standard blower cooled	2: Drive-dedicated motor with a speed range of 1:10
						3: Vector motor	3: Vector motor with a speed range of 1:100
	—		6: General purpose motor (50 Hz)				
	Motor Overload Protection Time	L1-02	8.0 min.	L1-02	1.0 min.	—	
	Motor Overheat Alarm Operation Selection	L1-03	3	L1-03	3	L1-03	L1-03
						0: Ramp to stop	0: Ramp to stop
						1: Coast to stop	1: Coast to stop
2: Fast Stop						2: Fast Stop	
						3: Alarm Only	3: Alarm Only

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
Motor Protection Function	Motor Overheat Fault Operation Selection	L1-04	1	L1-04	1	L1-04 0: Ramp to stop 1: Coast to stop 2: Fast Stop	L1-04 0: Ramp to stop 1: Coast to stop 2: Fast Stop
	Motor Temperature Input Filter Time	L1-05	0.20 s	L1-05	0.20 s	—	
Momentary Power Loss Process	Momentary Power Loss Detection/ Operation Selection	L2-01	2	L2-01	2	L2-01	L2-01
						0: Disabled	0: Disabled
						1: Power Loss Ride Thru Time	1: Recover within the time set in L2-02
						2: CPU Power Active	2: Recover as long as CPU Power Active
						—	3: KEB deceleration for time set in L2-02
						—	4: KEB deceleration as long as CPU has power.
—	5: KEB deceleration to stop.						
Momentary Power Loss Process	Momentary Power Loss Ride-Thru Time	L2-02	*	L2-02	**	*Dependent on duty rating parameter C6-01 and drive capacity parameter o2-04. **Dependent on drive capacity parameter o2-04	
	Momentary Power Loss Minimum Baseblock Time	L2-03	*	L2-03	**	*Dependent on duty rating parameter C6-01 and drive capacity parameter o2-04. **Dependent on drive capacity parameter o2-04	
	Momentary Power Loss Voltage Recovery Ramp Time	L2-04	*	L2-04	**	*Dependent on duty rating parameter C6-01 and drive capacity parameter o2-04. **Dependent on drive capacity parameter o2-04	
	Undervoltage Detection Level	L2-05	190 V	L2-05	190 V	380 V for a 400 class drive. If E1-01 is set lower than 400, set 350 V for P1000.	
Stall Prevention Function	Stall Prevention Selection during Acceleration	L3-01	1	L3-01	1	L3-01	L3-01
						0: Disabled	0: Disabled
						1: General purpose	1: General purpose
						2: Intelligent	2: Intelligent
	Stall Prevention Level during Acceleration	L3-02	120%*	L3-02	120% **	*Varies by duty rating parameter C6-01 **Upper limit is determined by L8-38.	
	Stall Prevention Selection during Deceleration	L3-04	1	L3-04	1	L3-04	L3-04
						0: Disabled	0: Disabled
						1: General purpose	1: General purpose
						2: Intelligent	2: Intelligent
						—	3: Stall Prevention with braking resistor
—						4: Overexcitation Deceleration	
—	5: Overexcitation Deceleration 2						
Stall Prevention Selection during Run	L3-05	1	L3-05	1	L3-05	L3-05	
					0: Disabled	0: Disabled	
					1: Enabled (Decel Time 1)	1: Enabled (Decel Time 1)	
					2: Enabled (Decel Time 2)	2: Enabled (Decel Time 2)	

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
Stall Prevention Function	Stall Prevention Level during Run	L3-06	120%*	L3-06	120% **	*Varies by duty rating (Defaults: HD = 150%, ND = 120%) **Upper limit is determined by parameters L8-38, Carrier Frequency Reduction Selection.	
Frequency Detection	Speed Agreement Detection Level	L4-01	0.0 Hz	L4-01	0.0 Hz	—	
	Speed Agreement Detection Width	L4-02	2.0 Hz	L4-02	2.0 Hz	—	
	Frequency Reference Loss Detection Selection	L4-05	1	L4-05	0	L4-05	L4-05
						0: Stop	0: Stop
						1: Run at L4-06 PrevRef 1: Run at the level set to L4-06 In P1000, the setting range for the frequency reference when the reference is lost (L4-06) is 0 to 100% (default: 80%)	
Reference Detection	Frequency Reference Level at Loss Frequency	L4-06	80.0%	L4-06	80.0%	—	
Fault Restart	Number of Auto Restart Attempts	L5-01	0 times	L5-01	0 times	—	
	Auto Restart Operation Selection	L5-02	0	L5-02	0	L5-02	L5-02
						0: No Fault Relay	0: Fault output not active
							1: Fault Relay Active 1: Fault output active during restart attempt
Maximum Restart Time After Fault	L5-03	180.0 s	L5-04	10.0 s*	L5-03	L5-04	L5-05
			L5-05	0*	180.0 s	180.0 s	1: Use time in L5-04 * Use the above settings to have the same fault reset method as the P7 drive.
Overtorque Detection	Torque Detection Selection 1	L6-01	0	L6-01	0	L6-01, L6-04	
						0: Disabled	
						1: oL3 detection only active during speed agree, operation continues after detection	
						2: oL3 detection always active during run, operation continues after detection	
						3: oL3 detection only active during speed agree, output shuts down on an oL3 fault	
						4: oL3 detection always active during run, output shuts down on an oL3 fault	
						5: UL3 detection only active during speed agree, operation continues after detection	
L6-01, L6-04							
0: Disabled							
1: oL3 detection only active during speed agree, operation continues after detection							
2: oL3 detection always active during run, operation continues after detection							
3: oL3 detection only active during speed agree, output shuts down on an oL3 fault							
4: oL3 detection always active during run, output shuts down on an oL3 fault							
5: UL3 detection only active during speed agree, operation continues after detection							

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting		
		Parameter	Default	Parameter	Default	P7	P1000	
Overtorque Detection	Torque Detection Selection 1	L6-01	0	L6-01	0	6: UL3 detection always active during run, operation continues after detection	6: UL3 detection always active during run, operation continues after detection	
						7: UL3 detection only active during speed agree, output shuts down on an oL3 fault	7: UL3 detection only active during speed agree, output shuts down on an oL3 fault	
						8: UL3 detection always active during run, output shuts down on an oL3 fault	8: UL3 detection always active during run, output shuts down on an oL3 fault	
						—	9: UL6 detection only active during speed agree, operation continues after detection	
						—	10: UL6 detection always active during run, operation continues after detection	
						—	11: UL6 detection only active during speed agree, output shuts down on an oL3 fault	
	Torque Detection Level 1	L6-02	15%	L6-02	15%	—		
	Torque Detection Time 1	L6-03	10.0 s	L6-03	10.0 s	—		
Hardware Protection	Internal Dynamic Braking Resistor Protection Selection (ERF)	L8-01	0	L8-01	0	L8-01	L8-01	
						0: Not Provided	0: Disabled	
						1: Provided	1: Enabled	
		Overheat Pre-Alarm Level	L8-02	95 °C	L8-02	*	*Determined by drive capacity parameter o2-04.	
	Overheat Pre- Alarm Operation Selection	L8-03	3	L8-03	3	L8-03	L8-03	
						0: Ramp to stop	0: Ramp to stop	
						1: Coast to stop	1: Coast to stop	
						2: Fast Stop	2: Fast Stop	
						3: Alarm Only	3: Continue operation (Alarm triggered)	
	—	4: Continue operation at reduced speed as set in L8-19						
		Input Phase Loss Detection Level	L8-06	KVA Dep.	N/A	—	—	
	Output Ground Fault Detection Selection	L8-09	1	L8-09	1*	L8-09	L8-09	
0: Disabled						0: Disabled		
1: Enabled						1: Enabled		
						*Determined by drive capacity parameter o2-04.		
Heatsink Cooling Fan Operation Selection	L8-10	0	L8-10	0	L8-10	L8-10		
					0: During run only	0: During run only		
					1: Fan always on	1: Fan always on		

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
Hardware Protection	Heatsink Cooling Fan Operation Delay Time	L8-11	60 s	L8-11	60 s	—	
	Ambient Temperature Setting	L8-12	45 °C	L8-12	40 °C	Set the ambient temperature where the drive is being used.	
	oL2 Characteristics Selection at Low Speeds	L8-15	1	L8-15	1	L8-15	L8-15
						0: Disabled	0: Disabled
						1: Enabled	1: Enabled
	Soft CLA Selection	L8-18	1	L8-18	1	L8-18	L8-18
						0: Disabled	0: Disabled
						1: Enabled	1: Enabled
	oH Frequency Reference Reduction Level	L8-19	20.0%	N/A	—	—	
	oH1 Detection Selection for Fan Failure	L8-32	1	L8-32	1	L8-32	L8-32
0: Disabled (Fan Alarm is Displayed)						0: Fault, Ramp to Stop	
1: Enabled (oH1 Fault occurs)						1: Fault, Coast to Stop	
—						2: Fast-Stop	
—						3: Alarm Only	
—	4: Alarm, Run at L8-19 Rate						
Hunting Prevention Function	Hunting Prevention Function Selection	n1-01	1	n1-01	1	n1-01	n1-01
						0: Disabled	0: Disabled
						1: Enabled	1: Enabled
Hunting Prevention Gain Setting	n1-02	1.00	n1-02	1.00	—		
High slip Braking	High-Slip Braking Deceleration Frequency Width	n3-01	5%	n3-01	5%	—	
	High-Slip Braking Current Limit	n3-02	150%	n3-02	120%*	*Upper limit is determined by parameters L8-38, Carrier Frequency Reduction Selection.	
	High-Slip Braking Dwell Time at Stop	n3-03	1.0 s	n3-03	1.0 s	—	
	High-Slip Braking Overload Time	n3-04	40 s	n3-04	40 s	—	
Display Setting/ Selection	Drive Mode Unit Monitor Selection	o1-01	6*	o1-01	106*	*Refer to parameter H4-01 for details.	
	User Monitor Selection After Power Up	o1-02	1	o1-02	1	o1-02	o1-02
						1: Frequency reference	1: Frequency reference
						2: Output frequency	3: Output frequency
						3: Output current	4: Output current
						4: User-selected Monitor (set by o1-01)	5: User-selected Monitor (set by o1-01)
—	2: Direction						

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting							
		Parameter	Default	Parameter	Default	P7	P1000						
Display Setting/ Selection	Digital Operator Display Selection	o1-03	0	o1-03	0	o1-03	o1-03						
						0: Hz units	0: 0.01 Hz units						
						1: % units (100% = E1-04)	1: 0.01% units						
						2 to 39: RPM	2: r/min units						
						40 to 39999: User display	3: User-set units						
							o1-10	o1-11					
							1 to 60000	0 to 3					
						o1-10: Determines how the units for the frequency reference.							
						o1-11: Sets the decimal point for the frequency reference display							
						Ex. : For a max output frequency of 200.0, set the following:							
	Setting value :						Setting value: o1-03 = 3						
	o1-03 = 12000						: o1-10 = 2000						
							: o1-11 = 1						
	1 2 0 0 0												
	└─┬─ Max value, excluding decimal point → o1-10= "2000"												
	└─┬─ digits displayed to the right of the decimal → o1-11 = 1												
	LCD Brightness	o1-05	3	—	—	This parameter is not available in P1000.							
	User Monitor Selection Mode	o1-06	0	o1-06	0	o2-06	o2-06						
						0: 3 Mon Sequential (Displays next 2 sequential monitors)	0: 3 Mon Sequential (Displays next 2 sequential monitors)						
						1: 3 Mon Selectable (Set by 01-07 and 01-08)	1: 3 Mon Selectable (Set by 01-07 and 01-08)						
Second Line User Monitor Selection	o1-07	2*	o1-07	2*	*Default setting changes to 38 when b5-01 is set to 1.								
Third Line User Monitor Selection	o1-08	3*	o1-08	3*	*Default setting changes to 24 when b5-01 is set to 1.								
Frequency Reference Display Units	o1-09	0	o1-09	25	o1-09	o1-09							
					0: WC:InchOfWater	0: WC (inch of water)							
					1: PSI:lb/SqrInch	1: PSI (pounds per square inch)							
					2: GPM:Gallons/Min	2: GPM (gallons per minute)							
					3: F:DegFahrenheit	3: ° F (degrees Fahrenheit)							
					4: CFM:Cubic ft/Min	4: CFM (cubic feet per minute)							
					5: CMH:Cubic M/Hr	5: CMH (cubic meters per hour)							
					6: LPH:Liters/Hr	6: LPH (liters per hour)							
					—	7: LPS (liters per second)							
					8: Bar:Bar	8: Bar (Bar)							
					9: Pa:Pascals	9: Pa (Pascal)							
					10: C:DegCelsius	10: ° C (degrees Celsius)							
					11: Mtr:Meters	11: Mtr (meters)							
					—	12: Ft (feet)							
—	13: LPM (liters per minute)												

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
Display Setting/ Selection	Frequency Reference Display Units	o1-09	0	o1-09	25	—	14: CMM (cubic meters per minute)
						—	15: ”Hg (inches of mercury)
						—	25: None
Multi-Function Selection	LOCAL/ REMOTE Key Function Selection	o2-01	1	o2-01	1	o2-01	o2-01
						0: Disabled	0: Disabled
						1: Enabled	1: Enabled
	STOP Key Function Selection	o2-02	1	o2-02	1	o2-02	o2-02
						0: Disabled	0: Disabled
	User Parameter Default Value	o2-03	0	o2-03	0	o2-03	o2-03
						0: No change	0: No change
						1: Set defaults	1: Save values
	2: Clear all	2: Clear all					
	Drive Model Selection	o2-04	*	o2-04	*	*Do not change this setting. Varies by kVA Determined by drive capacity.	
	Frequency Reference Setting Method Selection	o2-05	1	o2-05	0	o2-05	o2-05
						0: ENTER required	0: ENTER required
1: ENTER key not required	1: ENTER key not required						
Operation Selection when Digital Operator is Disconnected	o2-06	1	o2-06	1	o2-06	o2-06	
					0: Disabled	0: Continues operation if digital operator is disconnected	
1: Enabled	1: An oPr fault is triggered and the motor coasts to a stop						
Cumulative Operation Time Setting	o2-07	0 hr	o4-01	0 hr	—		
Cumulative Operation Time Selection	o2-08	1	o4-02	0	o2-08	o4-02	
					0: Power on time	0: Logs power-on time	
1: Running time	1: Logs operation time when the drive output is active						
Initialization Specification Selection	o2-09	1	o2-09	*	*Do not change this setting. Factory use only		
Fan Operation Time (P1000: Cooling Fan Operation Time Setting)	o2-10	0 hr	o4-03	0 hr	P7 Setting Range : 0 to 65535 P1000 Setting Range : 0 to 9999		
Multi-Function Selection	Fault Trace/Fault History Clear Function (P1000: U2, U3 Initialization)	o2-12	0	o4-11	0	o2-12	o4-11
						0: No change	0: No change
						1: Reset U2, U3 parameters	1: Reset U2, U3 parameters
kWh User Monitor Initialization	o2-14	0	o4-12	0	o2-14	o4-12	
					0: No change	0: No change	
1: U1-29 and o2-14 are reset to zero	1: U4-10 and U4-11 are reset						
Hand Key Function Selection	o2-15	1	N/A	—	o2-15	—	
					0: Disabled	—	
1: Enabled	—						

13 Appendix 2 Parameter Cross Reference

Parameter Name		P7		P1000		Setting	
		Parameter	Default	Parameter	Default	P7	P1000
Copy Function	Copy Function Selection	o3-01	0	o3-01	0	o3-01	o3-01
						0: COPY SELECT	0: No action
						1: READ	1: Read LCD operation
						2: COPY	2: Write to the drive
	Copy Allowed Selection	o3-02	0	o3-02	0	3: VERIFY	3: Verify
						o3-02	o3-02
						0: Read prohibited	0: Read prohibited
						1: Read allowed	

14 Appendix 3 Terminal Sizes and Wire Gauges

◆ Terminal Sizes and Wire Gauges

The table below lists the wiring sizes based on national electrical codes. Gauges are recommended, and users may select different gauges at their own discretion. For wire gauges applicable in the United States, refer to “Chapter 3. Electrical Installation” of the P1000 Quick Start Guide (TOEPYAIP1U01).

Table 13 3-Phase 200 V Class Main Circuit Terminal Sizes and Wire Gauges

P7 Model	Terminal Designation	Terminal Screw	Torque N · m (lb.in.)	Wire Range AWG, kcmil	Rec. Gauge AWG, kcmil	P1000 Model	Terminal Designation	Terminal Screw	Torque N · m (lb.in.)	Wire Range AWG, kcmil	Rec. Gauge AWG, kcmil
20P4 20P7 21P5	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3 -, +1, +2, B1, B2	M4	1.2 to 1.5 (10.6 to 13.3)	14 to 10	14	2A0004 2A0006 2A0008	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M4	1.2 to 1.5 (10.6 to 13.3)	14 to 10	14
	Chassis ground						—				
Chassis ground	10										
22P2	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3 -, +1, +2, B1, B2	M4	1.2 to 1.5 (10.6 to 13.3)	12 to 10	12	2A0010	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M4	1.2 to 1.5 (10.6 to 13.3)	12 to 10	12
	Chassis ground						—				
Chassis ground	—										
23P7	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3 -, +1, +2, B1, B2,	M4	1.2 to 1.5 (10.6 to 13.3)	12 to 10	12	2A0012	R/L1, S/L2, T/L3	M4	1.2 to 1.5 (10.6 to 13.3)	14 to 10	12
	Chassis ground						U/T1, V/T2, W/T3				14
	—						-, +1, +2, B1, B2				—
—	Chassis ground	10									
25P5	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3 -, +1, +2, B1, B2	M4	1.2 to 1.5 (10.6 to 13.3)	10	10	2A0018	R/L1, S/L2, T/L3	M4	1.2 to 1.5 (10.6 to 13.3)	12 to 10	10
	Chassis ground						U/T1, V/T2, W/T3			14 to 10	—
	—						-, +1, +2, B1, B2			—	
	—						Chassis ground			10	
27P5	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3 -, +1, +2, B1, B2	M5	2.5 (21.99)	8 to 6	8	2A0021	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M4	1.2 to 1.5 (10.6 to 13.3)	12 to 10	10
	Chassis ground						-, +1, +2			14 to 10	—
	—						B1, B2			12 to 10	10
—	Chassis ground	—									
2011	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3 -, +1, +2, B1, B2	M5	2.5 (21.99)	6 to 4	4, 6 (T1-3)	2A0030	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M4	2.1 to 2.3 (18.4 to 20.4)	10 to 6	8
	Chassis ground						-, +1, +2			—	
—	Chassis ground	M5	2 to 2.5 (17.7 to 22.1)	10 to 8	8						
2015	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3 -, +1, +2	M6	4 to 5 (35.2 to 43.99)	4 to 2	3, 4 (T1-3)	2A0040	R/L1, S/L2, T/L3	M4	2.1 to 2.3 (18.4 to 20.4)	8 to 6	6
	B1, B2	M5	2.5 (21.99)	8 to 6	—		U/T1, V/T2, W/T3			8	
	Chassis ground	M6	4 to 5 (35.2 to 43.99)	4	4		-, +1, +2			6	—
	—						12 to 10			—	
—	Chassis ground	M5	2 to 2.5 (17.7 to 22.1)	10 to 8	8						

14 Appendix 3 Terminal Sizes and Wire Gauges

P7 Model	Terminal Designation	Terminal Screw	Torque N · m (lb.in.)	Wire Range AWG, kcmil	Rec. Gauge AWG, kcmil
2018	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3 -, +1, +2	M8	9 to 10 (79.2 to 87.97)	3 to 2	2, 3 (T1-3)
	B1, B2	M5	2.5 (21.99)	8 to 6	—
	Chassis ground	M6	4 to 5 (35.2 to 43.99)	4	4
2022	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3 -, +1, R1/L11, S1/L21, T1/L31	M8	9 to 10 (79.2 to 87.97)	—	1, 2 (T1-3)
	+3	M6	4 to 5 (35.2 to 43.99)		—
	Chassis ground	M8	9 to 10 (79.2 to 87.97)		4
2030	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3 -, +1, R1/L11, S1/L21, T1/L31	M8	9 to 10 (79.2 to 87.97)	—	1/0
	+3	M6	4 to 5 (35.2 to 43.99)		—
	Chassis ground	M8	9 to 10 (79.2 to 87.97)		4
2037	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3 -, +1, R1/L11, S1/L21, T1/L31	M10	17.6 to 22.5 (154.8 to 197.9)	—	4/0
	+3	M8	8.8 to 10.8 (77.4 to 95.0)		—
	Chassis ground	M10	17.6 to 22.5 (154.8 to 197.9)		2
	$\tau/\ell_1, \mathcal{A}/\ell_2$	M4	1.3 to 1.4 (11.4 to 12.3)		16
2045	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3 -, +1, R1/L11, S1/L21, T1/L31	M10	17.6 to 22.5 (154.8 to 197.9)	—	300, 250 (T1-3)
	+3	M8	8.8 to 10.8 (77.4 to 95.0)		—
	Chassis ground	M10	17.6 to 22.5 (154.8 to 197.9)		1
	$\tau/\ell_1, \mathcal{A}/\ell_2$	M4	1.3 to 1.4 (11.4 to 12.3)		16

P1000 Model	Terminal Designation	Terminal Screw	Torque N · m (lb.in.)	Wire Range AWG, kcmil	Rec. Gauge AWG, kcmil
2A0056	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M6	5.4 to 6.0 (47.8 to 53.1)	6 to 4	4
	-, +1, +2				—
	B1, B2	M5	2.7 to 3.0 (23.9 to 26.6)	10 to 6	—
	Chassis ground	M6	4 to 6 (35.4 to 53.1)	8 to 6	6
2A0069	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M8	9.9 to 11.0 (87.6 to 97.4)	4 to 3	3
	-, +1, +2				—
	B1, B2	M5	2.7 to 3.0 (23.9 to 26.6)	8 to 6	—
	Chassis ground	M6	4 to 6 (35.4 to 53.1)	6 to 4	6
2A0081	R/L1, S/L2, T/L3	M8	9.9 to 11.0 (87.6 to 97.4)	3 to 2	2
	U/T1, V/T2, W/T3				—
	-, +1, +2	M5	2.7 to 3.0 (23.9 to 26.6)	6	—
	B1, B2				6
Chassis ground	M6	4 to 6 (35.4 to 53.1)	6 to 4	6	
2A0110	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M8	9 to 11 (79.7 to 97.4)	3 to 1/0	1/0
	-, +1			2 to 1/0	—
	B1, B2			6 to 1/0	—
	Chassis ground			6 to 4	6
2A0138	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M10	18 to 23 (159 to 204)	1 to 2/0	2/0
	-, +1			1/0 to 3/0	—
	B1, B2	M8	9 to 11 (79.7 to 97.4)	4 to 2/0	4
2A0169	R/L1, S/L2, T/L3	M10	18 to 23 (159 to 204)	2/0 to 4/0	4/0
	U/T1, V/T2, W/T3			3/0 to 4/0	
	-, +1	M10	18 to 23 (159 to 204)	1 to 4/0	—
	+3			1/0 to 4/0	
Chassis ground	M10	4 to 2	4		
2A0211	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M10	18 to 23 (159 to 204)	1/0 to 2/0	1/0 × 2P
	-, +1			1 to 4/0	—
	+3			1/0 to 4/0	—
	Chassis ground			4 to 1/0	4

14 Appendix 3 Terminal Sizes and Wire Gauges

P7 Model	Terminal Designation	Terminal Screw	Torque N · m (lb.in.)	Wire Range AWG, kcmil	Rec. Gauge AWG, kcmil
2055	R/L1, S/L2, T/L3, -, +1	M10	17.6 to 22.5 (154.8 to 197.9)	—	1/0 × 2P
	U/T1, V/T2, W/T3, R1/L11, S1/L21, T1/L31	M10	17.6 to 22.5 (154.8 to 197.9)		1/0 × 2P
	+3	M8	8.8 to 10.8 (77.4 to 95.0)		—
	Chassis ground	M10	17.6 to 22.5 (154.8 to 197.9)		1/0
	$\overline{r/l_1}, \overline{a/l_2}$	M4	1.3 to 1.4 (11.4 to 12.3)		16
2075	-, +1	M12	31.4 to 39.2 (276.2 to 344.8)	—	3/0 × 2P
	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3 R1/L11, S1/L21, T1/L31	M10	17.6 to 22.5 (154.8 to 197.9)		4/0 × 2P, 3/0 × 2P (T1-3)
	+3	M8	8.8 to 10.8 (77.4 to 95.0)		—
	Chassis ground	M12	31.4 to 39.2 (276.2 to 344.8)		3/0
	$\overline{r/l_1}, \overline{a/l_2}$	M4	1.3 to 1.4 (11.4 to 12.3)		16
2090	R/L1, S/L2, T/L3, -, +1, R1/L11, S1/L21, T1/L31	M12	31.4 to 39.2 (276.2 to 344.8)	—	250 × 2P
	U/T1, V/T2, W/T3				4/0 × 2P
	+3	M8	8.8 to 10.8 (77.4 to 95.0)		—
	Chassis ground	M12	31.4 to 39.2 (276.2 to 344.8)		2/0 × 2P
	$\overline{r/l_1}, \overline{a/l_2}$	M4	1.3 to 1.4 (11.4 to 12.3)		16
2110	R/L1, S/L2, T/L3, -, +1, R1/L11, S1/L21, T1/L31	M12	31.4 to 39.2 (276.2 to 344.8)	—	350 × 2P
	U/T1, V/T2, W/T3				300 × 2P
	+3	M8	8.8 to 10.8 (77.4 to 95.0)		—
	Chassis ground	M12	31.4 to 39.2 (276.2 to 344.8)		300 × 2P
	$\overline{r/l_1}, \overline{a/l_2}$	M4	1.3 to 1.4 (11.4 to 12.3)		16

P1000 Model	Terminal Designation	Terminal Screw	Torque N · m (lb.in.)	Wire Range AWG, kcmil	Rec. Gauge AWG, kcmil	
2A0250	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M12	32 to 40 (283 to 354)	—	3/0 × 2P	
	-, +1				—	
	+3	M10	18 to 23 (159 to 204)		2 to 300	
	Chassis ground	M12	32 to 40 (283 to 354)		3 to 300	3
2A0312	R/L1, S/L2, T/L3	M12	32 to 40 (283 to 354)	—	4/0 × 2P	
	U/T1, V/T2, W/T3				3/0 × 2P	
	-, +1				—	
	+3	M10	18 to 23 (159 to 204)		—	
	Chassis ground	M12	32 to 40 (283 to 354)		2 to 300	2
2A0360	R/L1, S/L2, T/L3	M12	32 to 40 (283 to 354)	—	250 × 2P	
	U/T1, V/T2, W/T3				4/0 × 2P	
	-, +1	M10	18 to 23 (159 to 204)		250 to 600	—
	+3				3/0 to 600	
	Chassis ground	M12	32 to 40 (283 to 354)		1 to 350	1
2A0415	R/L1, S/L2, T/L3	M12	32 to 40 (283 to 354)	—	250 to 600	
	U/T1, V/T2, W/T3				300 to 600	
	-, +1	M10	18 to 23 (159 to 204)		3/0 to 600	—
	+3				3/0 to 600	
	Chassis ground	M12	32 to 40 (283 to 354)		1 to 350	1

Table 14 P7 and P1000 3-Phase 400 V Class Main Circuit Terminal Size and Gauge

P7 Model	Terminal Designation	Terminal Screw	Torque N · m (lb.in.)	Wire Range AWG, kcmil	Rec. Gauge AWG, kcmil	P1000 Model	Terminal Designation	Terminal Screw	Torque N · m (lb.in.)	Wire Range AWG, kcmil	Rec. Gauge AWG, kcmil
40P4 40P7 41P5	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1, +2, B1, B2	M4	1.2 to 1.5 (10.6 to 13.2)	14 to 10	14	4A0002 4A0004	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M4	1.2 to 1.5 (10.6 to 13.2)	14 to 10	14
	Chassis ground						14 to 12				12
42P2	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1, +2, B1, B2	M4	1.2 to 1.5 (10.6 to 13.2)	14 to 10	14	4A0005	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M4	1.2 to 1.5 (10.6 to 13.2)	14 to 10	14
	Chassis ground						14 to 10				10
43P7 44P0	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1, +2, B1, B2	M4	1.2 to 1.5 (10.6 to 13.2)	14 to 10	12	4A0007 4A0009	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M4	1.2 to 1.5 (10.6 to 13.2)	14 to 10	14
	Chassis ground				14		10				
45P5	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1, +2, B1, B2	M4	1.2 to 1.5 (10.6 to 13.2)	12 to 10	12	4A0011	R/L1, S/L2, T/L3	M4	1.2 to 1.5 (10.6 to 13.2)	14 to 10	12
	Chassis ground			14 to 10	14		U/T1, V/T2, W/T3				14
47P5	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1, +2, B1, B2	M4	1.8 (15.6)	10	10	4A0018	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M4	2.1 to 2.3 (18.4 to 20.4)	12 to 6	10
	Chassis ground			12 to 10	12		-, +1, +2			12 to 10	—
49P0	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1, +2, B1, B2	M5	2.5 (21.99)	10 to 6	8	4A0023	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M4	2.1 to 2.3 (18.4 to 20.4)	10 to 6	10
	Chassis ground				10		12 to 6			—	
4011	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1, +2, B1, B2	M5	2.5 (21.99)	10 to 6	8	4A0031	R/L1, S/L2, T/L3	M5	2.7 to 3.0 (23.9 to 26.6)	8 to 6	8
	Chassis ground				10		10 to 6			8	
4015	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1, +2, B1, B2	M5	2.5 (21.99)	8 to 6	8	4A0038	R/L1, S/L2, T/L3	M5	2.7 to 3.0 (23.9 to 26.6)	8 to 6	6
	Chassis ground	M5, M6	2.5 (21.99), 4.0 to 5.0 (35.2 to 43.99)	10 to 6	10		U/T1, V/T2, W/T3			8	
4018	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1, +2	M6	4 to 5 (35.2 to 43.99)	8 to 2	6, 8 (T1-3)	4A0044	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M6	5.4 to 6.0 (47.8 to 53.1)	6 to 4	6
	B1, B2	M5	2.5 (21.99)	8	8		-, +1, +2			—	
	Chassis ground	M6	4 to 5 (35.2 to 43.99)	8 to 4	8		B1, B2	M5	2.7 to 3.0 (23.9 to 26.6)	10 to 8	—
4022	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1, +3 R1/L11, S1/L21, T1/L31	M6	4 to 5 (35.2 to 43.99)	—	4, 6 (T1-3)	4A0058	Chassis ground	M6	4 to 6 (35.4 to 53.1)	8 to 6	6
	Chassis ground	M8	9 to 10 (79.2 to 87.97)	—	6						
4024	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1, +3 R1/L11, S1/L21, T1/L31	M6	4 to 5 (35.2 to 43.99)	—	3, 4 (T1-3)	4A0058	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M8	9 to 11 (79.7 to 97.4)	6 to 4	4
	Chassis ground	M8	9 to 10 (79.2 to 87.97)	—	4		-, +1			6 to 1	—
							B1, B2			8 to 4	—
							Chassis ground			8 to 6	6

14 Appendix 3 Terminal Sizes and Wire Gauges

P7 Model	Terminal Designation	Terminal Screw	Torque N · m (lb.in.)	Wire Range AWG, kcmil	Rec. Gauge AWG, kcmil	P1000 Model	Terminal Designation	Terminal Screw	Torque N · m (lb.in.)	Wire Range AWG, kcmil	Rec. Gauge AWG, kcmil	
4030	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1, +3 R1/L11, S1/L21, T1/L31	M6	4 to 5 (35.2 to 43.99)	—	3, 4 (T1-3)	4A0072	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M8	9 to 11 (79.7 to 97.4)	4 to 3	3	
	Chassis ground	M8	9 to 10 (79.2 to 87.97)	—	4		-, +1			4 to 1	—	
					B1, B2		6 to 3			—		
					Chassis ground		6			6		
4037	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1 R1/L11, S1/L21, T1/L31	M8	9 to 10 (79.2 to 87.97)	—	2, 3 (T1-3)	4A0088	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M8	9 to 11 (79.7 to 97.4)	3 to 1/0	2	
	+3	M6	4 to 5 (35.2 to 43.99)				—			-, +1	6 to 1/0	—
	Chassis ground	M8	9 to 10 (79.2 to 87.97)				4			+3	6 to 4	4
					Chassis ground							
4045	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1 R1/L11, S1/L21, T1/L31	M8	9 to 10 (79.2 to 87.97)	—	1/0, 1 (T1-3)	4A0103	R/L1, S/L2, T/L3	M8	9 to 11 (79.7 to 97.4)	2 to 1/0	1/0	
	+3	M6	4 to 5 (35.2 to 43.99)				—			U/T1, V/T2, W/T3	3 to 1/0	1
	Chassis ground	M8	9 to 10 (79.7 to 87.97)				4			-, +1	4 to 1/0	—
					+3		6 to 4			4		
					Chassis ground							
4055	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, -, +1 R1/L11, S1/L21, T1/L31	M8	9 to 10 (79.2 to 87.97)	—	2/0	4A0139	R/L1, S/L2, T/L3	M10	18 to 23 (159 to 204)	1/0 to 4/0	3/0	
	+3	M6	4 to 5 (35.2 to 43.99)				—			U/T1, V/T2, W/T3	0	2/0
	Chassis ground	M8	9 to 10 (79.2 to 87.97)				4			-, +1	3 to 4/0	—
					+3		4			4		
					Chassis ground							
4075	R/L1, S/L2, T/L3, R1/L11, S1/L21, T1/L31, -, +1	M10	17.6 to 22.5 (154.8 to 197.5)	—	4/0	4A0165	R/L1, S/L2, T/L3	M10	18 to 23 (159 to 204)	3/0 to 4/0	4/0	
	U/T1, V/T2, W/T3						0			—		
	+3	M8	8.8 to 10.8 (77.4 to 95.0)		—		-, +1			1 to 4/0	—	
	Chassis ground	M10	17.6 to 22.5 (154.8 to 197.5)		2		+3			1/0 to 4/0	—	
										Chassis ground	4 to 2	4
	r/ℓ1, ℓ200/ℓ2200, ℓ400/ℓ2400	M4	1.3 to 1.4 (11.4 to 12.3)		16							
4090	R/L1, S/L2, T/L3, -, +1, R1/L11, S1/L21, T1/L31	M10	17.6 to 22.5 (154.8 to 197.5)	—	250	4A0208	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M10	18 to 23 (159 to 204)	2 to 300	300	
	U/T1, V/T2, W/T3						1 to 250			—		
	+3	M8	8.8 to 10.8 (77.4 to 95.0)		—		+3			3 to 3/0	—	
	Chassis ground	M10	17.6 to 22.5 (154.8 to 95.0)		1		Chassis ground			4 to 300	4	
	r/ℓ1, ℓ200/ℓ2200, ℓ400/ℓ2400	M4	1.3 to 1.4 (11.4 to 12.3)		16							

14 Appendix 3 Terminal Sizes and Wire Gauges

P7 Model	Terminal Designation	Terminal Screw	Torque N · m (lb.in.)	Wire Range AWG, kcmil	Rec. Gauge AWG, kcmil	P1000 Model	Terminal Designation	Terminal Screw	Torque N · m (lb.in.)	Wire Range AWG, kcmil	Rec. Gauge AWG, kcmil
4110	R/L1, S/L2, T/L3, -, +1, R1/L11, S1/L21, T1/L31	M10	17.6 to 22.5 (154.8 to 197.5)	—	2/0 × 2P	4A0250	R/L1, S/L2, T/L3	M10	18 to 23 (159 to 204)	1 to 600	400
	U/T1, V/T2, W/T3				1/0 to 600						
	+3	3/0 to 600	—								
	Chassis ground	1 to 325									
	r/ℓ 1, 200/ℓ 2200, 400/ℓ 2400	16									
4132	R/L1, S/L2, T/L3, -, +1, R1/L11, S1/L21, T1/L31	M10	17.6 to 22.5 (154.8 to 197.5)	—	3/0 × 2P	4A0296	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M12	32 to 40 (283 to 354)	2/0 to 600	500
	U/T1, V/T2, W/T3				2/0 × 2P		3/0 to 600				
	+3	—	—								
	Chassis ground	4/0									
	r/ℓ 1, 200/ℓ 2200, 400/ℓ 2400	16									
4160	R/L1, S/L2, T/L3, -, +1, R1/L11, S1/L21, T1/L31	M12	31.4 to 39.2 (276.2 to 344.8)	—	4/0 × 2P	4A0362	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M12	32 to 40 (283 to 354)	3/0 to 600	4/0 × 2P
	U/T1, V/T2, W/T3				3/0 × 2P		4/0 to 600				
	+3	—	—								
	Chassis ground	1/0 × 2P									
	r/ℓ 1, 200/ℓ 2200, 400/ℓ 2400	16									
4185	R/L1, S/L2, T/L3	M16	78.4 to 98 (693.9 to 867.4)	—	300 × 2P	4A0414	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M12	32 to 40 (283 to 354)	3/0 to 600	300 × 2P
	U/T1, V/T2, W/T3, R1/L11, S1/L21, T1/L31				600 × 2P		4/0 to 600				
	-, +1				—		—				
	+3				—						
	Chassis ground				3/0 × 2P						
	r/ℓ 1, 200/ℓ 2200, 400/ℓ 2400	M4	1.3 to 1.4 (11.4 to 12.3)		16						
4220	R/L1, S/L2, T/L3, R1/L11, S1/L21, T1/L31	M16	78.4 to 98	—	500 × 2P	4A0515	R/L1, S/L2, T/L3	M12	32 to 40 (283 to 354)	3/0 to 300	3/0 × 4P
	U/T1, V/T2, W/T3				400 × 2P		4/0 to 4P				
	-, +1				250 × 4P		—				
	+3				—						
	Chassis ground				250 × 2P						
	r/ℓ 1, 200/ℓ 2200, 400/ℓ 2400	M4	1.3 to 1.4 (11.4 to 12.3)		16						

14 Appendix 3 Terminal Sizes and Wire Gauges

P7 Model	Terminal Designation	Terminal Screw	Torque N · m (lb.in.)	Wire Range AWG, kcmil	Rec. Gauge AWG, kcmil	P1000 Model	Terminal Designation	Terminal Screw	Torque N · m (lb.in.)	Wire Range AWG, kcmil	Rec. Gauge AWG, kcmil
4300	R/L1, S/L2, T/L3	M16	78.4 to 98 (693.9 to 867.4)	—	250 × 4P	4A0675	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3	M12	32 to 40 (283 to 354)	4/0 to 300	300 × 4P
	R1/L11, S1/L21, T1/L31				1/0 to 300		—				
	U/T1, V/T2, W/T3				2/0 to 300		2/0				
	-, +1				—		—				
	+3				—		—				
	Chassis ground				400 × 2P		—				
	r/l1, 200/l2200, 400/l2400	M4	1.3 to 1.4 (11.4 to 12.3)	—	16	4A0930	R/L1, S/L2, T/L3, R1/L11, S1/L21, T1/L31	M12	32 to 40 (283 to 354)	3/0 to 300	4/0 × 4P×2
							U/T1, V/T2, W/T3			4/0 to 300	—
							-, +1			3/0 to 250	3/0
							+3			—	—
							Chassis ground			4/0 to 300	300 × 4P×2
							4A1200			M12	32 to 40 (283 to 354)
U/T1, V/T2, W/T3	4/0 to 300	—									
-, +1	4/0 to 300	—									
+3	4/0 to 250	4/0									
Chassis ground	—	—									

Table 15 Control Circuit Terminal Sizes and Wire Gauges

Power Supply	Series	Capacity	Terminal Designation	Terminal Screw	Tightening Torque lb-in (N · m)	Possible Gauges AWG (mm ²)	Recomm. Gauges AWG (mm ²)
200 V Class 400 V Class	P7	All capacities	S1, S2, S3, S4, S5, S6, S7, SN, SC, SP, +V, A1, A2, AC, MI, M2, M3, M4, MA, MB, MC, FM, AC, AM, R+, R-, S+, S-, IG	PHOENIX type	4.2 to 5.3 (0.5 to 0.6)	Stranded wire: 26 to 16 (0.14 to 1.5)	18 (0.75)
			E (G)	M3.5	7.0 to 8.8 (0.8 to 1.0)	20 to 14 (0.5 to 2.0)	12 (1.25)
200 V Class 400 V Class	P1000	All capacities	FM, AC, AM, SC, SN, SP, A1, A2, A3, +24V, +V, S1, S2, S3, S4, S5, S6, S7, S8, MA, MB, MC, MD, ME, MF, M1, M2, M3, M4	M3	4.4 to 5.3 (0.5 to 0.6)	Stranded wire: 24 to 16 (0.2 to 1.0) Solid wire: 24 to 16 (0.2 to 1.5) Ferrule-Type: 24 to 20 (0.25 to 0.5)	Bare Wire: 18 (0.75) Ferrule-Type: 20 (0.5)
			RP, R+, R-, S+, S-, IG				
			E (G)	—	—	—	—

YASKAWA AC Drive

P7 to P1000

Product Transition Guide

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In the event that the end user of this product is to be the military and said product is to be employed in any weapons systems or the manufacture thereof, the export will fall under the relevant regulations as stipulated in the Foreign Exchange and Foreign Trade Regulations. Therefore, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may apply.

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DOCUMENT NO. PL.P1000.01

Published in U.S.A July 2012 12-07 <1>