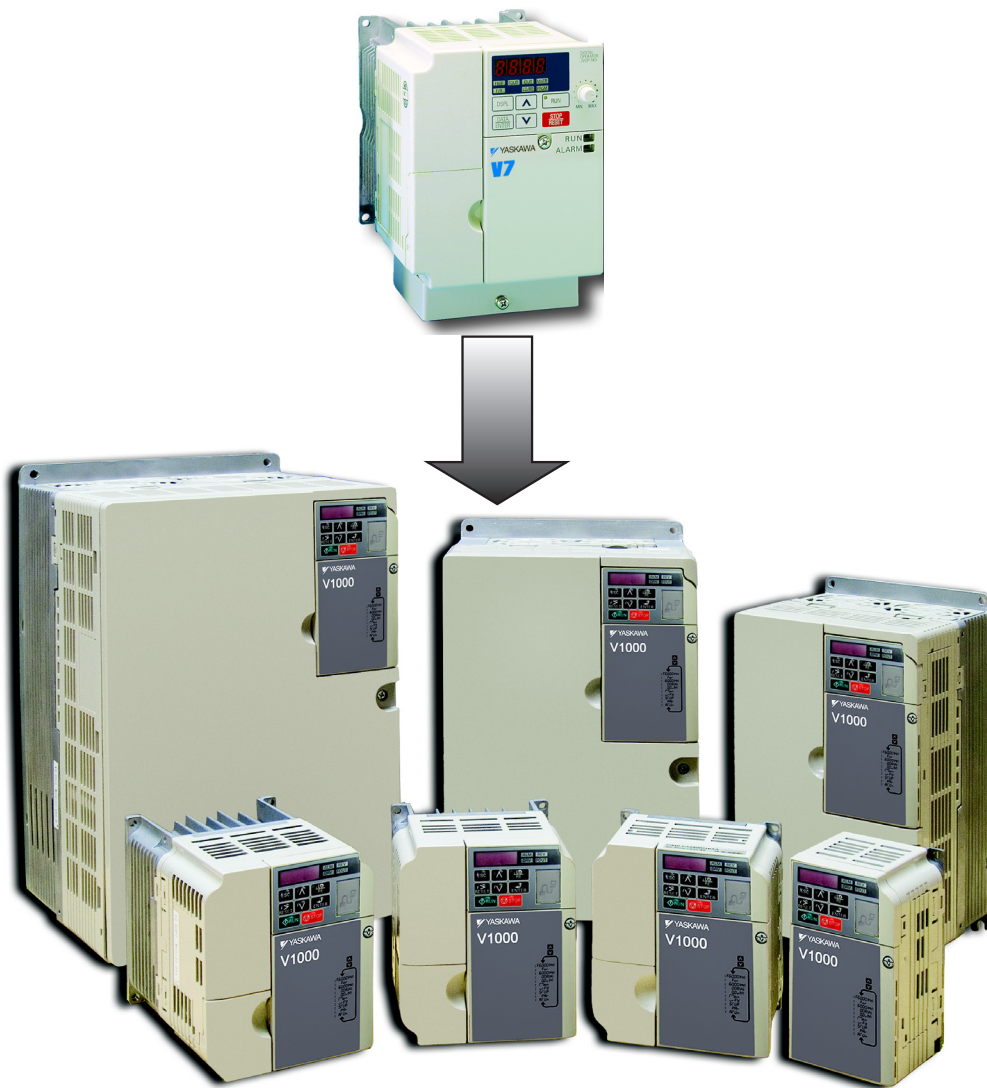


Product Transition Guide VS606 V7 to V1000

4/01/09



Product Transition Guide
PL. V1000.01 Rev: 4/1/09

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Product Transition Guide

Table of Contents

1.1	Applicable Drives <1>	4
1.2	Drive Replacement Checklist	4
1.3	Ratings Summary <1>	6
1.4	Terminals	7
	Main Circuit Terminals <1>	7
	Control Terminals, Signal Levels	7
	Network Communications Terminals <1>	8
	Terminal Size / Electric Wire Differences <1>	9
	Control Terminal Sizes and Wire Sizes	12
1.5	Dimensions, Installation Space and Substitution Material <1>	13
	Standard Type (IP20) Normal Duty (ND)	13
	Standard Type (IP20) Heavy Duty (HD)	14
	NEMA Type 1, (Normal Duty) (ND)	15
	NEMA Type 1, (Heavy Duty) (HD)	16
	Mounting Dimensions (IP20 & NEMA 1, ND & HD) <1>	17
1.6	Parameter Correspondence Table	18
	V7 and V1000 Differences in Parameter Settings	18
	V7→V1000 Parameter Correspondence for Drive Replacement	18
1.7	Appendix	30
	A1 V7 and V1000 Differences in Output Capacity, Current and Carrier Freq.<1> ...	30
	V7 and V1000 Differences in Watts Loss <1>	32
	V7 and V1000 Option Differences	33
	V7 and V1000 Specification Differences	34
1.8	Revision History	36

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

1.1 Applicable Drives <1>

This document describes the substitution of the following drives:

Original drive: **CIMR - V7xAxxxx or CIMR-V7AMxxxxx <1>**
Spec: xxxx0 (IP20) or xxxx1 (NEMA1)
Software Version S0023 to S0032 or S0103 to S0107

Replacement: **CIMR – VAxxxxxxxxx or CIMR-VUxxxxxxxxx <1>**

The description is not valid for drives with other specs or other firmware installed!

1.2 Drive Replacement Checklist

	Item	Checkpoints	Checked?
Hardware	Basic	< Check the installation type > <ul style="list-style-type: none"> • Check if the drive is installed with the heatsink external (through the back panel). <1> – For heatsink outside installation a special mounting kit is necessary. 	
		<ul style="list-style-type: none"> • Check if the new drive dimensions are bigger than the current drive. Can the mounting holes be used? – Verify that the existing dimensions reference in Section 1.5, “Dimensions, installation space and substitution material” of this manual compares the sizes of the current and new unit. If a mechanical substitution kit is necessary, it is referenced in Section 1.5. <2> 	
		< Digital operator > <ul style="list-style-type: none"> • Does the digital operator need to be at the same position as before? – If necessary, attempt to mount the operator panel at the same location as before. <1> • Was a remote operator connected to the current unit? – If so, do not attempt to connect the V7 remote operator to the V1000. <1> 	
		< Special specifications > <ul style="list-style-type: none"> • Check the installed drive’s specification to ensure that it is compliant to the standard specification (no special firmware, no special coating, no special modifications, etc. (see section 1.1 “Applicable Drives” above)). 	
	Main and Control Terminals	< Wire Length > <ul style="list-style-type: none"> • In the replacement drive, the main and control circuit terminals may be mounted in different positions. Check to ensure all cables are long enough to be connected to the new unit. <1> 	
		< Main circuit wires and terminal specifications > <ul style="list-style-type: none"> • Compare the occupied terminals of the current unit with the new drive’s terminals (shape, size, etc.), and verify that the wires fit in the new unit’s terminals, using Section 1.4 “Terminals”, specifically “Control Terminal Sizes and Wire Sizes” of this document. <1> 	
Software	Software Version	< Check for special software > <ul style="list-style-type: none"> • Check the software number of the current unit to ensure that it contains no special software. – If necessary, ask your Yaskawa representative to determine if the installed software on the current unit is a special software or not. If the current drive has special software installed, it might not be possible to replace it with a V1000 standard drive. Special software may also be required for the V1000. <1> 	
	Parameter	< Check the parameter settings > <ul style="list-style-type: none"> • Read the parameter settings of the current unit and perform a parameter conversion to the new parameters following Section 1.6 “Parameter Correspondence Table”, specifically “V7 and V1000 Differences in Parameter Settings” of this document. – If there is special software installed or parameters appear that are not mentioned in this document, contact your Yaskawa representative. <1> 	

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

	Item	Checkpoints	Checked?
Options, Others	Option Cards	<p>< Is an option card installed? ></p> <ul style="list-style-type: none"> • Check if any option card is installed. <ul style="list-style-type: none"> – If an option card is installed, get the equivalent option card for the V1000. – Never attempt to apply V7 option cards to the V1000 unit. – The option card on the V1000 may have another connector on the V7. Make sure that the connectors fit into the new option card before using it. 	
	Others	<p>< Is a braking resistor installed? ></p> <ul style="list-style-type: none"> • Check if a braking resistor is installed on the current drive. <ul style="list-style-type: none"> – Check the braking resistor before connecting it to the new drive. – Connect the braking resistor to the equivalent terminals on the new unit. – If it is a heatsink installed braking resistor (ERF-type), it will not fit in the drive and will need to be panel mounted. – The terminals might have a different location in the new drive; check to ensure that existing wiring is long enough to reach the new terminal location. <1> 	
		<p>< Is a braking unit installed? ></p> <ul style="list-style-type: none"> • Check if a braking unit is used in the current installation. <ul style="list-style-type: none"> – Check the braking unit before connecting it to the new drive. – Connect the braking unit to the equivalent terminals on the new unit. – The terminals might have a different location in the new drive; check to ensure that existing wiring is long enough to reach the new terminal location. <1> 	
		<p>< Is an AC reactor or DC choke installed? ></p> <ul style="list-style-type: none"> • Check if an AC reactor or DC choke is used in the current installation. <ul style="list-style-type: none"> – Check the reactor or choke before connecting it to the new drive. – Make sure that the reactor or choke data are appropriate for the replacement drive. – The terminals might have a different location in the new drive; check to ensure that existing wiring is long enough to reach the new terminal location. <1> 	

- Refer to the instruction manual for questions about installation, parameter settings or detailed parameter/function descriptions.
- In case of technical questions regarding replacement, please contact your Yaskawa representative. <1>

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

1.3 Ratings Summary <1>

The following table summarizes the output current ratings for the V1000 and V7 with respect to the specific drive model. Please note that the V7 current rating is based on a “Heavy Duty” rating, whereas, the V1000 factory default is based on a “Normal Duty” rating. See below for an explanation of the differences between “Heavy” and “Normal” duty ratings.

Rated Input Voltage	V7 Drive Model Number CIMR-V7AM	Heavy Duty		Drive Model Number CIMR-V□	Normal Duty	
		Rated Output Current (Amps)	Nominal HP		Rated Output Current (Amps)	Nominal HP
200V, 1-Phase	B0P11	0.8	1/8	BA0001	1.2	1/8 & 1/4
	B0P21	1.6	1/4	BA0002	1.9	1/4
	B0P41	3.0	1/2	BA0003	3.3	1/2 & 3/4
	B0P71	5.0	3/4 & 1	BA0006	6.0	1
	B1P51	8.0	2	BA0010	9.6	2 & 3
200V, 3-Phase	B2P21	11.0	3	BA0012	12.0	3
	B3P71	17.5	5	BA0018 <1>	19.6	5
	20P11	0.8	1/8	2A0001	1.2	1/8 & 1/4
	20P21	1.6	1/4	2A0002	1.9	1/4
	20P41	3.0	1/2	2A0004	3.5	1/2 & 3/4
200V, 3-Phase	20P71	5.0	3/4 & 1	2A0006	6.0	1
	21P51	8.0	2	2A0010	9.6	2 & 3
	22P21	11.0	3	2A0012	12.0	3
	23P71	17.5	5	2A0020	19.6	5
	25P51	25.0	7.5	2A0030	30.0	7.5 & 10
400V, 3-Phase	27P51	33.0	10	2A0040	40.0	10
	N/A	N/A	N/A	2A0056	56.0	20
	N/A	N/A	N/A	2A0069	69.0	25
	40P21	1.2	1/2	4A0001	1.2	1/2
	40P41	1.8	3/4	4A0002	2.1	3/4 & 1
400V, 3-Phase	40P71	3.4	1 & 2	4A0004	4.1	2
	41P51	4.8	3	4A0005	5.4	3
	42P21	5.5	3	4A0007	6.9	4
	43P71	8.6	5	4A0009	8.8	5
	45P51	14.8	7.5 & 10	4A0011	11.1	7.5
400V, 3-Phase	45P51	14.8	7.5 & 10	4A0018	18.0	10
	47P51	18.8	10	4A0023	24.0	15
	N/A	N/A	N/A	4A0031	31.0	20
	N/A	N/A	N/A	4A0038	38.0	25

Note: If the V1000 drive is set to “Heavy Duty”, the current ratings are the same as the V7 drive. <1>

1.4 Terminals

Main Circuit Terminals <1>

- As the V7 and V1000 may have different terminals sizes (depending on capacity), the terminals must be carefully checked before replacement (see Section 1-4). <1>
- The main terminal functionality has not been changed between the V7 and the V1000 drive.

Main Terminals		Note
V7	V1000	
R/L1	R/L1	Power supply connection
S/L2	S/L2	
T/L3	T/L3	
U/T1	U/T1	Drive output
V/T2	V/T2	
W/T3	W/T3	
B1	B1	Braking resistor or external braking unit connection <1>
B2	B2	Braking resistor connection
+1	+1	DC Choke connection, DC power supply input
+2	+2	DC Choke connection
—	—	DC power supply input, external braking unit connection <1>
⊕	⊕	Ground <1>

Control Terminals, Signal Levels

- The V7 and V1000 initial settings for terminal function are shown below.
- "—" indicates that an equivalent terminal on the other unit does not exist.

Control Terminals		Function	Signal Level	
V7	V1000		V7	V1000
S1		Multi-Function input 1 (1: Run forward 0: Stop) <1>	Photocoupler 24 VDC, 8A isolation <1>	Photocoupler 24 VDC, 8A <1>
S2		Multi-Function input 2 (1: Run reverse 0: Stop) <1>		
S3		Multi-Function input 3 (External fault) <1>		
S4		Multi-Function input 4 (Fault reset) <1>		
S5		Multi-Function input 5 (Multi-step speed 1) <1>		
S6		Multi-Function input 6 (Multi-step speed 2) <1>		
S7		Multi-Function input 7 (JOG reference) <1>		
SC		Multi-Function input common <1>	—	—
RP		Pulse input (frequency reference)	Frequency range: 1.0~32 kHz <1>	Frequency range: 0.5~32 kHz <1>
FS	+V	Analog input power supply	+12 V (max. current 20 mA)	+10.5 V (max. current 20 mA)

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Control Terminals		Function	Signal Level	
V7	V1000		V7	V1000
FR	A1	Analog input 1 Voltage or current (not available on V1000 - see Note) input (frequency reference)	0~+10 VDC (20 kW), 0 or 4~20 mA (250 kW) <1>	0~+10 VDC (20 kW) <1>
—	A2	Analog input 2 (frequency reference)	—	DC:0~+10 V (20 kW) 0 or 4~20 mA (250 kW) (initial setting: 4-20 mA) <1>
FC	AC	Analog input common	0 V	
—	HC	Hard wire baseblock common	—	+24 V (max. current 10 mA)
—	H1	Hard wire baseblock input (EN954-1, category 3, Stop category 0) <1>	—	Open: Stop Closed: Operation
MA		Multi-Function Digital Output (N.O. Contact) (Fault)	Max. AC load: 250 VDC, 1 A max. 30 VDC, 1 A max. <1>	Max. load: AC:250 V, 10 mA~1 A DC:30 V, 10 mA~1 A
MB		Multi-Function Digital Output (N.O. Contact) (Fault)		
MC		Multi-Function Digital Output (common)		
P1		Open collector output 1 (during run)	Photocoupler +48 VDC, 50 mA or less Output <1>	
P2		Open collector output 2 (speed agree)		
PC		Open collector output common		
—	MP	Pulse output (output frequency)	—	Max. 32 kHz
AM		Analog output	DC:0~+10 V, 2 mA max. Resolution: 8 bit	DC:0~+10 V, 2 mA max. Resolution: 1/1000 <1>
AC		Analog output GND		

Note: The current input for terminal A1 is not available on the V1000. Use terminal A2 for current input. <1>

Network Communications Terminals <1>

- "-" indicates that an equivalent terminal on the other unit does not exist.







Serial Communication Terminals		Function	Signal Level	
V7	V1000		V7	V1000
R+	R+	Receive +	RS-485/422 MEMOBUS Protocol Max. 19.2 kbps	RS-485/422 MEMOBUS Protocol Max. 115.2 kbps
R-	R-	Receive -		
S+	S+	Transmit +		
S-	S-	Transmit -		
GND	IG	Shield connection, GND	—	0V

Terminal Size / Electric Wire Differences <1>

Voltage Class	Drive Type V7 (V1000)	Terminal Symbol	V7				V1000			
			Screw Size	Tightening Torque N•m (lb-in)	Applicable Wire Size mm ² (AWG)	Recommended Wire Size mm ² (AWG)	Screw Size	Tightening Torque N•m (lb-in)	Applicable Wire Size mm ² (AWG)	Recommended Wire Size mm ² (AWG)
Single Phase 200V	B0P1 B0P2 B0P4 (BA0001 BA0002 BA0003)	R/L1,S/L2, U/T1,V/T2, W/T3, -, +1, +2, B1, B2, ⊕	M3.5	0.8~1.0 (7.1~8.9)	0.75~2 (18~14)	2 (14)	M3.5	0.8~1.0 (7.1~8.9)	0.75~2 (18~14)	2 (14)
	B0P7 (BA0006)	R/L1,S/L2, U/T1,V/T2, W/T3, -, +1, +2, B1, B2, ⊕	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	3.5 (12)	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	2 (14)
	B1P5 (BA0010)	R/L1,S/L2, U/T1,V/T2, W/T3, ⊕	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	5.5 (10)	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	3.5 (12)
		-, +1, +2, B1, B2,								5.5(10)
B2P2 (BA0012)	R/L1,S/L2, U/T1,V/T2, W/T3, -, +1, +2, B1, B2, ⊕	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	5.5 (10)	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	5.5 (10)	
Single Phase 200V	B3P7 (BA0020)	R/L1,S/L2, U/T1,V/T2, W/T3, -, +1, +2, B1, B2,	M5	3.0 (27)	3.5~8.0 (12~8)	8 (8)	M5	2.5 (22)	3.5~8.0 (12~8)	8 (8)
		⊕	M4	1.2~1.5 (10.6~13.3)	2.0~8.0 (14~8)	5.5 (10)				

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Voltage Class	Drive Type V7 (V1000)	Terminal Symbol	V7				V1000			
			Screw Size	Tightening Torque N·m (lb-in)	Applicable Wire Size mm ² (AWG)	Recommended Wire Size mm ² (AWG)	Screw Size	Tightening Torque N·m (lb-in)	Applicable Wire Size mm ² (AWG)	Recommended Wire Size mm ² (AWG)
3 Phase 200V	20P1 20P2 20P4 20P7 (2A0001 2A0002 2A0004 2A0006)	R/L1,S/L2, T/L3,U/T1, V/T2,W/T3, -, +1, +2, B1, B2, 	M3.5	0.8~1.0 (7.1~8.9)	0.75~2.0 (18~14)	2 (14)	M3.5	0.8~1.0 (7.1~8.9)	0.75~2 (18~14)	2 (14)
	21P5 (2A0010)	R/L1,S/L2, T/L3,U/T1, V/T2,W/T3, -, +1, +2, 	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	2 (14)	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	2 (14)
		3.5 (12)				2.0~5.5 (14~10)				3.5 (12)
	22P2 (2A0012)	R/L1,S/L2, T/L3,U/T1, V/T2,W/T3, -, +1, +2, B1, B2, 	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	3.5 (12)	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	3.5 (12)
	23P7 (2A0020)	R/L1, S/L2, T/L3,U/T1, V/T2,W/T3, -, +1, +2, B1, B2, 	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	5.5 (10)	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	5.5 (10)
	25P5 (2A0030)	R/L1,S/L2, T/L3,U/T1, V/T2,W/T3, -, +1, +2, 	M5	2.5 (22.2)	5.5~8.0 (10~8)	8 (8)	M5	2~2.5 (17.7~22.1)	5.5~14 (10~6)	8 (8)
		B1, B2,					M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	5.5 (10)
	27P5 (2A0040)		M5	2.5 (22.2)	5.5~8.0 (10~8)	8 (8)	M5	2~2.5 (17.7~22.1)	5.5~14 (10~6)	8 (8)
		R/L1,S/L2, T/L3,U/ T1,V/T2, W/ T3,-, +1, +2, B1, B2,								M4

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Voltage Class	Drive Type V7 (V1000)	Terminal Symbol	V7				V1000			
			Screw Size	Tightening Torque N•m (lb-in)	Applicable Wire Size mm ² (AWG)	Recommended Wire Size mm ² (AWG)	Screw Size	Tightening Torque N•m (lb-in)	Applicable Wire Size mm ² (AWG)	Recommended Wire Size mm ² (AWG)
3 Phase 400V	40P2 40P4 40P7 41P5 42P2 (4A0001) (4A0002) (4A0004) (4A0005) (4A0007)	R/L1,S/L2, T/L3,U/T1, V/T2,W/T3, -, +1, +2, B1, B2 Ⓧ	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	2 (14)	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	2 (14)
	43P0 (4A0009)	R/L1,S/L2, T/L3,U/T1, V/T2,W/T3, -, +1, +2, B1, B2, Ⓧ	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	2 (14)	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	2 (14)
		3.5 (12)				3.5 (12)				
	43P7 (4A0011)	R/L1,S/L2, T/L3,U/T1, V/T2,W/T3, -, +1, +2, B1, B2, Ⓧ	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	2 (14)	M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	2 (14)
		3.5 (12)				3.5 (12)				
	45P5 (4A0018)	Ⓧ	M4	1.4 (12.4)	3.5~5.5 (12~10)	5.5 (10)	M5	2.0~2.5 (17.7~22.1)	5.5~14 (10~6)	5.5 (10)
		R/L1,S/L2, T/L3,U/T1, V/T2,W/T3, -, +1, +2, B1, B2, Ⓧ					M4	1.2~1.5 (10.6~13.3)	2.0~5.5 (14~10)	
	47P5 (4A0023)	R/L1,S/L2, T/L3,U/T1, V/T2,W/T3, -, +1, +2, Ⓧ	M5	2.5 (22.2)	5.5~8 (10~8)	5.5 (10)	M5	2.0~2.5 (17.7~22.1)	5.5~14 (10~6)	8 (8)
		Ⓧ								5.5 (10)
		B1, B2								

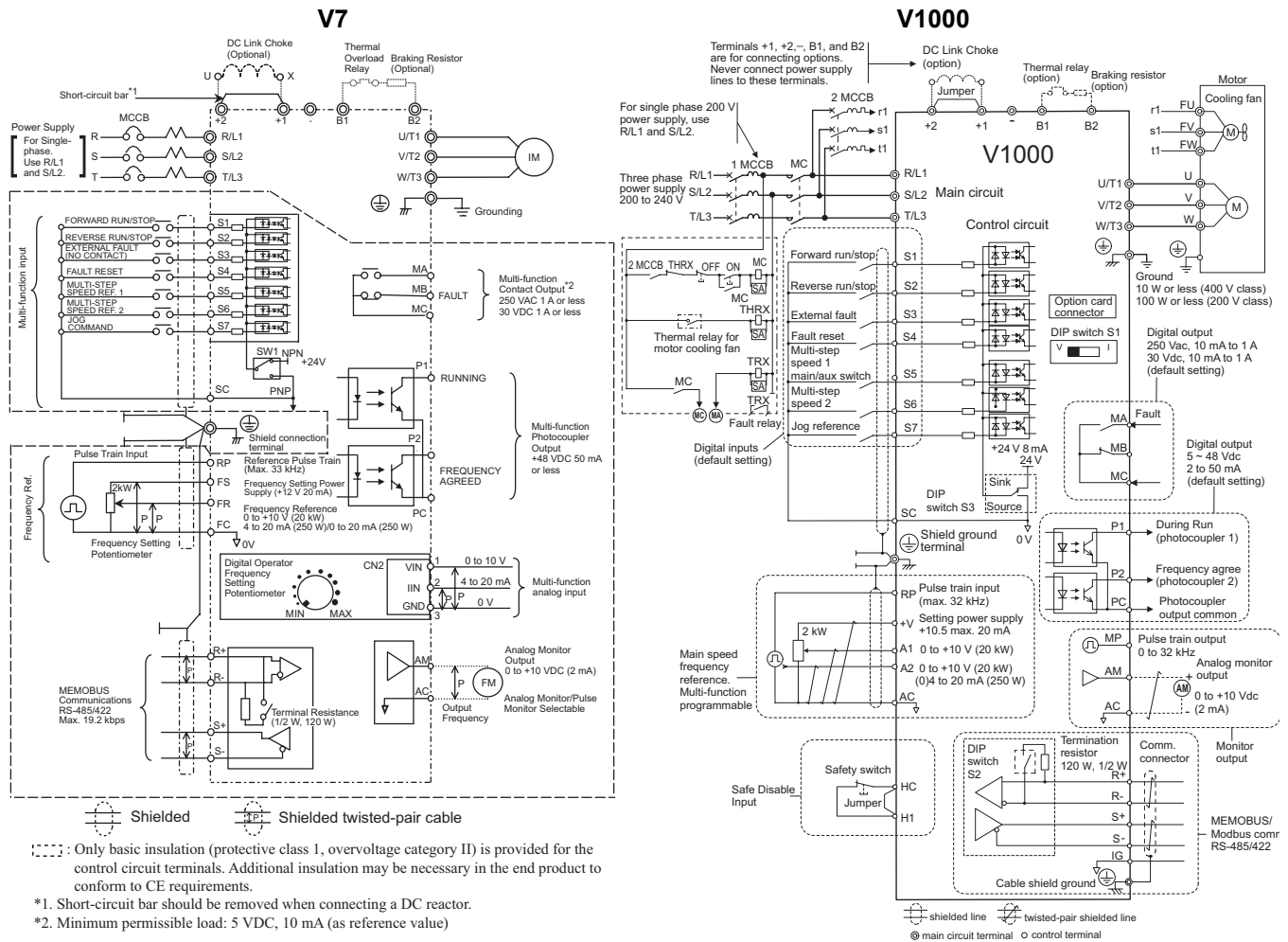
Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Control Terminal Sizes and Wire Sizes

Terminals (New/Changed in V1000)	V7				V1000			
	Screw Size	Tighten. Torque N·m (in-lbs)	Applicable Wire Size mm ² (AWG)	Recommended Wire Size mm ² (AWG)	Screw Size	Tighten. Torque N·m (in-lbs)	Applicable Wire Size mm ² (AWG)	Recommended Wire Size mm ² (AWG)
MA, MB, MC	M3	0.5~0.6 (4.4~5.3)	Stranded 0.5~1.25 (20~16) Solid 0.5~1.25 (20~16)	0.75 (18)	M3	0.5~0.6 (4.4~5.3)	Stranded 0.25~1.25 (24~16) Solid 0.25~1.25 (24~16)	0.75 (18)
S1-S7, P1, P2, SC, PC, R+, R-, S+, S-, FS (V+), FR (A1), (A2), FC (AC), AM, AC, RP (MP), (HC), (H1)	M2	0.22~0.25 (1.9~2.2)	Stranded 0.5~0.75 (20~18) Solid 0.5~1.25 (20~16)	0.75 (18)	M2	0.22~0.25 (1.9~2.2)	Stranded 0.25~0.75 (24~18) Solid 0.25~1.25 (24~16)	0.75 (18)

Terminal Comparisons <1>



Note: Refer to Installation & Start-Up Manual (TOEP 0710606 14) for warnings, cautions and additional notes. <1>

1.5 Dimensions, Installation Space and Substitution Material <1>

Standard Type (IP20) Normal Duty (ND)

Voltage Class	Maximum Motor Power kW (HP)	V7 Type V7AM□□	V1000 Type V□	V7			V1000			External Heatsink Bracket (Normal Mtg)			
				W mm (in)	H mm (in)	D mm (in)	W mm (in)	H mm (in)	D mm (in)				
Single Phase 200 V	0.1 (1/8)	B0P1	BA0001	68 (2.68)	128 (5.04)	76 (2.99)	68 (2.68)	128 (5.04)	76 (2.99)	100-034-075			
	0.2 (1/4)	B0P2				131 (5.16)							
	0.4 (1/2)	B0P4	BA0002			140 (5.51)							
	0.75 (1)	B0P7	BA0003	108 (4.25)		156 (6.14)	108 (4.25)		118 (4.65)		137.5 (5.41)	100-034-076	100-034-418
	1.5 (2)	B1P5	BA0006	140 (5.51)		163 (6.42)			154 (6.06)		100-034-079		
	2.2 (3)	B2P2	BA0010	170 (6.69)		180 (7.09)			163 (6.42)		100-034-080		
	3.7 (5)	B3P7	BA0012				140 (5.51)						
3 Phase 200 V	0.1 (1/8)	20P1	2A0001	68 (2.68)	128 (5.04)	76 (2.99)	68 (2.68)	128 (5.04)	76 (2.99)	100-034-075			
	0.2 (1/4)	20P2									108 (4.25)		
	0.4 (3/4)	20P4				2A0002					128 (5.04)		
	0.75 (1.5)	20P7	2A0004	108 (4.25)		131 (5.16)	108 (4.25)		128 (5.04)		129 (5.08)	100-034-076	100-034-077
	1.5 (3)	21P5	2A0006	140 (5.51)		140 (5.51)			137.5 (5.41)		100-034-079		
	2.2 (3)	22P2	2A0010	140 (5.51)		143 (5.63)			143 (5.63)		100-034-080		
	3.7 (5)	23P7	2A0012				140 (5.51)						
	5.5 (10)	25P5	2A0020	180 (7.09)		260 (10.24)	170 (6.69)		140 (5.51)		234 (9.21)	140 (5.51)	100-036-361 (100-036-356)
	7.5 (15)	27P5	2A0030										
3 Phase 400 V	0.2 (1/4)	40P2	4A0001	108 (4.25)	128 (5.04)	92 3.62	108 (4.25)	128 (5.04)	81 (3.19)	100-034-078			
	0.4 (3/4)	40P4									110 (4.33)		
	0.75 (2)	40P7	4A0002			140 (5.51)			99 (3.90)		100-036-418		
	1.5 (3)	41P5	4A0004	156 (6.14)		137.5 (5.41)	100-034-079						
	2.2 (3)	42P2	4A0005	140 (5.51)		143 (5.63)	154 (6.06)		100-036-360 (100-036-355)				
	3.0 (5)	43P0	4A0007										
	3.7 (7.5)	43P7	4A0009										
	5.5 (10)	45P5	4A0011	180 (7.09)		260 (10.24)	170 (6.69)		140 (5.51)		234 (9.21)	143 (5.63)	100-034-080
7.5 (15)	47P5	4A0018											

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Standard Type (IP20) Heavy Duty (HD)

Voltage Class	Maximum Motor Power kW (HP)	V7 Type V7AM□□	V1000 Type V□□A	V7			V1000			Installation Attachment (Order Code)	
				W mm (in)	H mm (in)	D mm (in)	W mm (in)	H mm (in)	D mm (in)		
Single Phase 200V	0.1 (1/8)	B0P1	0001	68 (2.68)	128 (5.04)	76 (2.99)	68 (2.68)	128 (5.04)	76 (2.99)		
	0.2 (1/4)	B0P2	0002			131 (5.16)			118 (4.65)		
	0.4 (1/2)	B0P4	0004			140 (5.51)			137.5 (5.41)		
	0.75 (1)	B0P7	0006	108 (4.25)		156 (6.14)	154 (6.06)				
	1.5 (2)	B1P5	0010			163 (6.42)	163 (6.42)				
	2.2 (3)	B2P2	0012			180 (7.09)	170 (6.69)				
	3.7 (5)	B3P7	0020			140 (5.51)					
3 Phase 200V	0.1 (1/8)	20P1	0001	68 (2.68)	128 (5.04)	76 (2.99)	68 (2.68)	128 (5.04)	76 (2.99)		
	0.2 (1/4)	20P2	0002			108 (4.25)			108 (4.25)		
	0.4 (3/4)	20P4	0004			128 (5.04)			128 (5.04)		
	0.75 (1)	20P7	0006	108 (4.25)		131 (5.16)	129 (5.08)				
	1.5 (2)	21P5	0010			140 (5.51)	137.5 (5.41)				
	2.2 (3)	22P2	0012			143 (5.63)	143 (5.63)				
	3.7 (5)	23P7	0020			140 (5.51)	140 (5.51)				
	5.5 (7.5)	25P5	0030	180 (7.09)		260 (10.24)	170 (6.69)		234 (9.21)	140 (5.51)	
	7.5 (10)	27P5	0040								
3 Phase 400V	0.2 (1/4)	40P2	0001	108 (4.25)	128 (5.04)	92 (3.62)	108 (4.25)	128 (5.04)	81 (3.19)		
	0.4 (3/4)	40P4	0002			110 (4.33)			99 (3.90)		
	0.75 (2)	40P7	0004			140 (5.51)			137.5 (5.41)		
	1.5 (3)	41P5	0005			156 (6.14)			154 (6.06)		
	2.2 (3)	42P2	0007	140 (5.51)		143 (5.63)	143 (5.63)				
	3.0 (5)	43P0	0009			140 (5.51)	140 (5.51)				
	3.7 (7.5)	43P7	0011			180 (7.09)	260 (10.24)		170 (6.69)	234 (9.21)	140 (5.51)
	5.5 (10)	45P5	0018								
7.5 (15)	47P5	0023									

NEMA Type 1, (Normal Duty) (ND)

Voltage Class	Maximum Motor Power kW (HP)	V7 Type V7AM□□	V1000 Type V□□A	V7			V1000			Installation Attachment (Order Code)		
				W mm (in)	H mm (in)	D mm (in)	W mm (in)	H mm (in)	D mm (in)			
Single Phase 200 V	0.1 (1/8)	B0P1	0001	68 (2.68)	148 (5.83)	76 (2.99)	68 (2.68)	150 (5.89)	76 (2.99)			
	0.2 (1/4)	B0P2										
	0.4 (1/2)	B0P4	0002			131 (5.16)						
	0.75 (1)	B0P7	0003	108 (4.25)		140 (5.51)	108 (4.25)		118 (4.65)			
	1.5 (2)	B1P5	0006	156 (6.14)		137.5 (5.41)						
	2.2 (3)	B2P2	0010	140 (5.51)		163 (6.42)	154 (6.06)					
	3.7 (5)	B3P7	0012	170 (6.69)		166 (6.54)	180 (7.09)		140 (5.51)	163 (6.42)		
3 Phase 200 V	0.1 (1/8)	20P1	0001	68 (2.68)	148 (5.83)	76 (2.99)	68 (2.68)	150 (5.89)	76 (2.99)			
	0.2 (1/4)	20P2										
	0.4 (3/4)	20P4	0002			108 (4.25)						
	0.75 (1.5)	20P7	0004	128 (5.04)		108 (4.25)	108 (4.25)					
	1.5 (3)	21P5	0006	131 (5.16)			128 (5.04)					
	2.2 (3)	22P2	0010	140 (5.51)		129 (5.08)						
	3.7 (5)	23P7	0012	140 (5.51)		143 (5.63)	108 (4.25)		153 (6.02)	137.5 (5.41)		
	5.5 (10)	25P5	0020	180 (7.09)		260 (10.24)	170 (6.69)		140 (5.51)	234 (9.21)	143 (5.63)	
	7.5 (15)	27P5	0030								140 (5.51)	
3 Phase 400 V	0.2 (1/4)	40P2	0001	108 (4.25)	148 (5.83)	92 (3.62)	108 (4.25)	150 (5.89)	81 (3.19)			
	0.4 (3/4)	40P4				110 (4.33)						
	0.75 (2)	40P7	0002			140 (5.51)				99 (3.90)		
	1.5 (3)	41P5	0004	156 (6.14)		137.5 (5.41)						
	2.2 (3)	42P2	0005	140 (5.51)		143 (5.63)	140 (5.51)		234 (9.21)	154 (6.06)		
	3.0 (5)	43P0	0007									
	3.7 (7.5)	43P7	0009									
	5.5 (10)	45P5	0018	180 (7.09)		260 (10.24)	170 (6.69)		140 (5.51)	234 (9.21)	140 (5.51)	
7.5 (15)	47P5	0023										

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

NEMA Type 1, (Heavy Duty) (HD)

Voltage Class	Maximum Motor Power kW (HP)	V7 Type V7AM□□	V1000 Type V□□A	V7			V1000			Installation Attachment (Order Code)		
				W mm (in)	H mm (in)	D mm (in)	W mm (in)	H mm (in)	D mm (in)			
Single Phase 200 V	0.1 (1/8)	B0P1	0001	68 (2.68)	148 (5.83)	76 (2.99)	68 (2.68)	150 (5.89)	76 (2.99)			
	0.2 (1/4)	B0P2	0002			131 (5.16)			118 (4.65)			
	0.4 (1/2)	B0P4	0003			140 (5.51)			137.5 (5.41)			
	0.75 (1)	B0P7	0006	108 (4.25)		156 (6.14)	154 (6.06)					
	1.5 (2)	B1P5	0010			163 (6.42)	153 (6.02)					
	2.2 (3)	B2P2	0012	140 (5.51)		150 (5.51)	163 (6.42)					
	3.7 (5)	B3P7	0020	170 (6.69)			166 (6.54)		180 (7.09)			
3 Phase 200 V	0.1 (1/8)	20P1	0001	68 (2.68)	148 (5.83)	76 (2.99)	68 (2.68)	150 (5.89)	76 (2.99)			
	0.2 (1/4)	20P2	0002			108 (4.25)			108 (4.25)			
	0.4 (3/4)	20P4	0004			128 (5.04)			128 (5.04)			
	0.75 (1)	20P7	0006	108 (4.25)		131 (5.16)	129 (5.08)					
	1.5 (2)	21P5	0010			140 (5.51)	137.5 (5.41)					
	2.2 (3)	22P2	0012	140 (5.51)		140 (5.51)	153 (6.02)		143 (5.63)			
	3.7 (5)	23P7	0020	180 (7.09)			260 (10.24)		170 (6.69)	140 (5.51)		
	5.5 (10)	25P5	0020	180 (7.09)		260 (10.24)	170 (6.69)		140 (5.51)	234 (9.21)	140 (5.51)	
	7.5 (15)	27P5	0030									
3 Phase 400 V	0.2 (1/4)	40P2	0001	108 (4.25)	148 (5.83)	92 (3.62)	108 (4.25)	150 (5.89)	81 (3.19)			
	0.4 (3/4)	40P4	0002			110 (4.33)			99 (3.90)			
	0.75 (2)	40P7	0004			140 (5.51)			137.5 (5.41)			
	1.5 (3)	41P5	0005	140 (5.51)		156 (6.14)	154 (6.06)					
	2.2 (3)	42P2	0007			143 (5.63)	143 (5.63)					
	3.0 (5)	43P0	0009	140 (5.51)		260 (10.24)	170 (6.69)		140 (5.51)	234 (9.21)	140 (5.51)	
	3.7 (7.5)	43P7	0011									
	5.5 (10)	45P5	0018	180 (7.09)		260 (10.24)	170 (6.69)		140 (5.51)	234 (9.21)	140 (5.51)	
	7.5 (15)	47P5	0023									

Mounting Dimensions (IP20 & NEMA 1, ND & HD) <1>

Voltage Class	Maximum Motor Power kW (HP)	V7 Type V7AM□□	V1000 Type V□□A	V7			V1000		
				W mm (in)	H mm (in)	D mm (in)	W mm (in)	H mm (in)	D mm (in)
Single Phase 200 V	0.1 (1/8)	B0P1	0001	68 (2.68)	128 (5.04)	76 (2.99)	56 (2.20)	118 (4.65)	6.5 (0.26)
	0.2 (1/4)	B0P2				131 (5.16)			
	0.4 (1/2)	B0P4	0002						
	0.75 (1)	B0P7	0003	108 (4.25)		140 (5.51)	96 (3.78)		38.5 (1.52)
	1.5 (2)	B1P5	0006	156 (6.14)		58 (2.28)			
	2.2 (3)	B2P2	0010	140 (5.51)		163 (6.42)	128 (5.04)		65 (2.56)
	3.7 (5)	B3P7	0012	170 (6.69)		180 (7.09)			
3 Phase 200 V	0.1 (1/8)	20P1	0001	68 (2.68)	128 (5.04)	76 (2.99)	56 (2.20)	118 (4.65)	6.5 (0.26)
	0.2 (1/4)	20P2				108 (4.25)			
	0.4 (3/4)	20P4	0002						
	0.75 (1.5)	20P7	0004	108 (4.25)		128 (5.04)	96 (3.78)		38.5 (1.52)
	1.5 (3)	21P5	0006			131 (5.16)			58 (2.28)
	2.2 (3)	22P2	0010	140 (5.51)		143 (5.63)	128 (5.04)		65 (2.56)
	3.7 (5)	23P7	0012	140 (5.51)					234 (9.21)
	5.5 (10)	25P5	0020	180 (7.09)		170 (6.69)	128 (5.04)		
	7.5 (15)	27P5	0030			260 (10.24)			
3 Phase 400 V	0.2 (1/4)	40P2	0001	108 (4.25)	128 (5.04)	92 3.62	96 (3.78)	118 (4.65)	10 (0.39)
	0.4 (3/4)	40P4				110 (4.33)			
	0.75 (2)	40P7	0002						140 (5.51)
	1.5 (3)	41P5	0004	156 (6.14)		58 (2.28)			
	2.2 (3)	42P2	0005						
	3.0 (5)	43P0	0007	140 (5.51)		143 (5.63)	128 (5.04)		65 (2.56)
	3.7 (7.5)	43P7	0009						
	5.5 (10)	45P5	0011	180 (7.09)		170 (6.69)	234 (9.21)		140 (5.51)
7.5 (15)	47P5	0018		260 (10.24)					

1.6 Parameter Correspondence Table

V7 and V1000 Differences in Parameter Settings

The list in Section 1.6 shows the parameter relations between the V7 and the V1000. It lists the parameters and setting values necessary for V7 replacement by a V1000, but does not show the complete V1000 parameters and extended parameter setting ranges. For details about new functions, parameters and parameter settings refer to the instruction manual <SIEPC71060618A>. <1>

V7→V1000 Parameter Correspondence for Drive Replacement

Parameter Function	Drive			V7			V1000			Note			
	Param. No.	Initial Value	Set Value	Param. No.	Initial Value	Set Value	Param. No.	Initial Value	Set Value				
Parameter access level	n001	1		A1-01	2					V7	V1000		
									n001→0	A1-01→0			
									n001→1~4	A1-01→2			
							A1-03	0		n001→5	A1-01→2 b1-08→1		
							b1-08	0		n001→6	o4-11→1		
RUN cmd. In PRG mode sel.									n001→10	A1-03→2220			
Initialize mode (Spec.)									n001→11	A1-03→3330			
Control mode selection	n002	0		A1-02	0					V7	V1000		
												n002→0	A1-02→0
												n002→1	A1-02→2
RUN command source selection	n003	0		b1-02	1					V7	V1000		
												n003→0	b1-02→0
												n003→1	b1-02→1
												n003→2	b1-02→2
												n003→3	b1-02→3
Frequency reference source selection	n004	0		b1-01	1					V7	V1000		
												n004→0	— (no operator pot i)
												n004→1	b1-01→0
												n004→2	b1-01→1 and (H3-01→0 (term. A1) or H3-09→0 (term. A2))
												n004→3	b1-01→1 and H3-09→2 (term. A2)
												n004→4	b1-01→1 and H3-09→3 (term. A2)
												n004→5	b1-01→4
Frequency reference by analog input A2 (signal level) selection	n004 n078	0 1		H3-09	2					n004→6	b1-01→2		
												n004→7 n078→0	b1-01→1 and (H3-01→0 (term. A1) or H3-09→0 (term. A2))
												n004→8 n078→1	b1-01→1 and H3-09→2 (term. A2)
												n004→9	b1-01→3

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Parameter Function	Drive	V7		V1000			Note	
		Param. No.	Initial Value	Set Value	Param. No.	Initial Value		
Stop method selection	n005	0		b1-03	0		V7	V1000
							n005→0	b1-03→0
							n005→1	b1-03→1
Reverse operation selection	n006	0		b1-04	0		V7	V1000
							n006→0	b1-04→0
							n006→1	b1-04→1
Operation panel STOP key function	n007	0		o2-02	1		V7	V1000
							n007→0	o2-02→1
							n007→1	o2-02→0
Frequency reference in local mode	n008	0		-	-		As the V1000 has no operator panel pot, no selection available. <1>	
Frequency reference from operator ENTER key selection	n009	0		o2-05	0		V7	V1000
							n009→0	o2-05→0
							n009→1	o2-05→1
Operator panel disconnect fault detection selection	n010	0		o2-06	o2-09 dep.		V7	V1000
							n010→0	o2-06 = 0
							n010→1	o2-06 = 1
Max. output frequency (FMAX)	n011	50.0 Hz		E1-04	E1-03, o2-09 dep./ E5-01 dep. If A1-02=5			
Max. output voltage (VMAX)	n012	200.0 V 400.0 V		E1-05	E5-01 dep. If A1-02=5		The V1000 has two different settings for VBASE and VMAX. The initial setting for VBASE is 0.0V which means, that VMAX is output at FBASE (like in V7).	
Output voltage at base frequency (VBASE)	n012	200.0 V 400.0 V		E1-13	0.0VAC			
Base frequency (FBASE)	n013	50.0 Hz		E1-06	E1-03, o2-09 dep./ E5-01 dep. If A1-02=5			
Mid. output frequency (FMID)	n014	1.35 Hz		E1-07	A1-02, E1-03, o2-09 dep.			
Mid. output voltage (VMID)	n015	12.0 V		E1-08				
Min. output frequency (FMIN)	n016	1.3 Hz		E1-09	A1-02, E1-03, o2-09 dep./ E5-01 dep. If A1-02=5			
Min. output voltage (VMIN)	n017	12.0 V		E1-10	A1-02, E1-03, o2-09 dep.			

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Parameter Function	Drive	V7		V1000			Note	
		Param. No.	Initial Value	Set Value	Param. No.	Initial Value		
Acceleration / deceleration time resolution selection	n018	0		C1-10	1		V7	V1000
							n018→0	C1-10→1
							n018→1	C1-10→0
Acceleration time 1	n019	10.0 sec		C1-01	10.0 sec			
Deceleration time 1	n020	10.0 sec		C1-02	10.0 sec			
Acceleration time 2	n021	10.0 sec		C1-03	10.0 sec			
Deceleration time 2	n022	10.0 sec		C1-04	10.0 sec			
S-curve at accel. Start	n023	0 (0 sec)		C2-01	0.2 sec		In the V7 one of four values could be selected for all s-curves. The V1000 requires a separate time setting for each s-curve.	
S-curve at accel. End	n023	0 (0 sec)		C2-02	0.2 sec			
S-curve at decel. start	n023	0 (0 sec)		C2-03	0.2 sec			
S-curve at decel. end	n023	0 (0 sec)		C2-04	0.2 sec			
Multi speed reference 1	n024	6.00 Hz		d1-01	o2-09, FMAX dep.			
Multi speed reference 2	n025	0.00 Hz		d1-02	0 Hz			
Multi speed reference 3	n026	0.00 Hz		d1-03	0 Hz			
Multi speed reference 4	n027	0.00 Hz		d1-04	0 Hz			
Multi speed reference 5	n028	0.00 Hz		d1-05	0 Hz			
Multi speed reference 6	n029	0.00 Hz		d1-06	0 Hz			
Multi speed reference 7	n030	0.00 Hz		d1-07	0 Hz			
Multi speed reference 8	n031	0.00 Hz		d1-08	0 Hz			
Jog frequency	n032	6.00 Hz		d1-17	6.00 Hz			
Frequency reference upper limit	n033	100%		d2-01	100.0%			
Frequency reference lower limit	n034	0%		d2-02	0.0%			
Digital operator display unit for frequency reference values.	n035	0		o1-03	0		V7	V1000
							n035→0	o1-03→0
							n035→1	o1-03→1
							n035→2~39	o1-03→2 and set E2-04, E4-04, E4-05
n035→40~3999	o1-03→3 and set o1-10, o1-11							
Motor rated current	n036			E2-01	kVA dep.		Depends on the drive capacity (V7,V1000)	
Motor overload protection	n037	0		L1-01	1		V7	V1000
							n037→0	L1-01→1
							n037→1	L1-01→2~4
n037→2	L1-01→0							
Motor overload protection time	n038	8 min		L1-02	1 min		Needs not to be changed.	

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Parameter Function	Drive	V7		V1000			Note	
		Param. No.	Initial Value	Set Value	Param. No.	Initial Value		
Drive cooling fan operation selection	n039	0		L8-10	0		V7	V1000
							n039→0	L8-10→0
							n039→1	L8-10→1
Phase order selection	n040	0		b1-14	0		V7	V1000
							n040→0	b1-14→0
							n040→1	b1-14→1
Acceleration Time 3	n041	10 sec		C1-05	10.0 sec		In V1000 also used as Accel Time 1 for Motor 2	
Deceleration Time 3	n042	10 sec		C1-06	10.0 sec		In V1000 also used as Decel Time 1 for Motor 2	
Acceleration Time 4	n043	10 sec		C1-07	10.0 sec		In V1000 also used as Accel Time 2 for Motor 2	
Deceleration Time 4	n044	10 sec		C1-08	10.0 sec		In V1000 also used as Decel Time 2 for Motor 2	
Frequency reference bias step value (up/down2)	n045	0.0 Hz		d4-03	0.0 Hz			
Frequency reference bias accel/decel rate (up/down2)	n046	0		d4-04	0		V7	V1000
							n046→0	d1-04→0 (use current Accel / decel time)
							n046→1	d1-04→1 (use Accel/decel time 4)
Frequency reference bias operation mode selection (up/down2)	n047	0		d4-05	0			
Frequency reference bias value (up/down2)	n048	0.0%		d4-06	0.0%			
Analog frequency reference fluctuation limit (up/down2)	n049	1.0%		d4-07	1.0%			
Terminal S1 function selection	n050	1		H1-01	40		V7	V1000
							n050~56→1	H1-01~H1-06→40
							n050~56→2	H1-01~H1-06→41
							n050~56→3	H1-01~H1-06→24
							n050~56→4	H1-01~H1-06→25
Terminal S2 function selection	n051	2		H1-02	41		n050~56→5	H1-01~H1-06→14
							n050~56→6	H1-01~H1-06→3
							n050~56→7	H1-01~H1-06→4
							n050~56→8	H1-01~H1-06→5
							n050~56→9	H1-01~H1-06→32
Terminal S3 function selection	n052	3		H1-03	24		n050~56→10	H1-01~H1-06→6
							n050~56→11	H1-01~H1-06→7
							n050~56→12	H1-01~H1-06→8
							n050~56→13	H1-01~H1-06→9
							n050~56→14	H1-01~H1-06→61

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Parameter Function	Drive	V7			V1000			Note	
		Param. No.	Initial Value	Set Value	Param. No.	Initial Value	Set Value		
Terminal S4 function selection	n053	5		H1-04	14		n050~56→15	H1-01~H1-06→62	
							n050~56→16	H1-01~H1-06→A	
							n050~56→17	H1-01~H1-06→1	
							n050~56→18	H1-01~H1-06→2 and b1-15→2 and b1-16→2	
							n050~56→19	H1-01~H1-06→28	
Terminal S5 function selection	n054	6		H1-05	3 (0)		n050~56→20	H1-01~H1-06→2C	
							n050~56→21	H1-01~H1-06→29	
							n050~56→22	H1-01~H1-06→2F	
							n050~56→23	H1-01~H1-06→19	
							n050~56→24	H1-01~H1-06→30	
Terminal S6 function selection	n055	7		H1-06	4 (3)		n050~56→25	H1-01~H1-06→31	
							n050~56→26	H1-01~H1-06→B	
							n050~56→27	H1-01~H1-06→1A	
							n052 → 0	H1-03→0	
							n056→34	H1-07→10, 11	
							n056→35	H1-07→67	
Terminal S7 function selection	n056	10		-	-		Terminal S7 does not exist		
Terminal MA, MB, MC function selection	n057	0		H2-01	E		V7	V1000	
							n056→36	H1-07→75,76	
							n057~59→0	H2-01~03→E	
							n057~59→1	H2-01~03→0	
							n057~59→2	H2-01~03→2	
							n057~59→3	H2-01~03→1	
							n057~59→4	H2-01~03→4	
							n057~59→5	H2-01~03→5	
							n057~59→6	H2-01~03→B,18	
Terminal P1 function selection (Open collector)	n058	1		H2-02	0		n057~59→7	H2-01~03→17,19	
							n057~59→8	H2-01~03→B,18	
							n057~59→9	H2-01~03→17, 19	
							n057~59→10	H2-01~03→10	
							n057~59→11	H2-01~03→8	
							n057~59→12	H2-01~03→3C	
							n057~59→13	H2-01~03→6	
Terminal P2 function selection (Open collector)	n059	2		H2-03	2		n057~59→14	H2-01~03→1E	
							n057~59→15	H2-01~03→7	
							n057~59→16	H2-01~03→1A	
							n057~59→17	H2-01~03→3D	
							n057~59→18	—	
							n057~59→19	H2-01~03→3E	
							n057~59→20	H2-01~03→C	
							n057~59→21	H2-01~03→(1F), 20	

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Parameter Function	Drive	V7			V1000			Note	
		Param. No.	Initial Value	Set Value	Param. No.	Initial Value	Set Value		
Analog input FR (A1) gain		n060	100%		H3-03	100%			
Analog input FR (A2) bias		n061	0%		H3-04	0%			
Analog input filter time constant		n062	0.10 sec		H3-13	0.03 sec			
SI-T Watchdog error operation selection		n063	0		-	-	-	No ML support	
Operation at frequency reference loss selection		n064	0		L4-05	0		V7	V1000
								n064→0	L4-05→0
								n064→1	L4-05→1 and L4-06→fref value
Analog output AM Monitor type selection		n065	0		-	-		Use terminal FM for analog and terminal MP for pulse output signals.	
Analog output AM function selection		n066	0		H4-01	102		V7	V1000
								n066→0	H4-01→102
								n066→1	H4-01→103
								n066→2	H4-01→107
								n066→3	H4-01→109
								n066→4	H4-01→108
								n066→5	H4-01→106
n066→6	H4-01→101								
Analog output AM gain		n067	1.00		H4-02	100.0%			
Analog frequency ref. gain (Volt. input CN2) → Terminal A2 gain		n068	100%		H3-11	100.0%		H3-09 must be set to 0 or 1	
Analog freq. reference bias (Volt. input CN2) → Terminal A2 bias		n069	0%		H3-12	0.0%			
Analog frequency ref. filter (Volt. input CN2)		n070	0.10s		H3-13	0.03		Filter time H3-13 is the same for analog input A1 and A2 in V1000	
Analog frequency ref. gain (Cur. input CN2) → Terminal A2 gain		n071	100%		H3-11	100.0%		H3-09 must be set to 2 or 3	
Analog frequency ref. bias (Cur. input CN2) → Terminal A2 gain		n072	0%		H3-12	0.0%			
Analog frequency ref. filter (Volt. input CN2)		n073	0.10s		H3-13	0.03		Filter time H3-13 is the same for analog input A1 and A2 in V1000	
Pulse input gain		n074	100%		H6-03	100.0%			
Pulse input bias		n075	0%		H6-04	0.0%			
Pulse input filter time		n076	0.10 sec		H6-05	0.10 sec			
Analog input function selection (CN2→ Terminal A2)		n077	0		H3-10	0		V7	V1000
								n077→0	H3-10→F
								n077→1	H3-10→2
								n077→2	H3-10→1
								n077→3	H3-10→0
n077→4	H3-10→4								

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Parameter Function	Drive	V7		V1000			Note	
		Param. No.	Initial Value	Set Value	Param. No.	Initial Value		
Analog input signal level selection (CN2→ Terminal A2)	n078	0		H3-09	1		V7	V1000
							n078→0	H3-09→0
							n078→1	H3-09→2
Frequency reference bias max. value for terminal CN2 reference input → terminal A2	n079	10%		-	-		This function can not be used with current input in the V1000. For voltage input at terminal A2 the following has to be set: H3-09→1 H3-10→0 H3-11→n079 H3-11→n079	
Carrier frequency selection	n080	4		C6-02	o2-04 dep.		V7	V1000
Carrier frequency upper limit				C6-03	C6-02 dep.		n080→1	C6-02→1 (2kHz)
Carrier frequency lower limit				C6-04	C6-02 dep.		n080→2	C6-02→2 (5kHz)
Carrier frequency proportional gain				C6-05	0		n080→3	C6-02→3 (8kHz)
							n080→4	C6-02→4 (10kHz)
			n080→7~9	C6-03/04/05 must be used				
Momentary power loss detection selection	n081	0		L2-01	0		V7	V1000
							n081→0	L2-01→0
							n081→1	L2-01→1
							n081→2	L2-01→2
Automatic restart attempts	n082	0		L5-01	0			
Jump frequency 1	n083	0.0 Hz		d3-01	0.0 Hz			
Jump frequency 2	n084	0.0 Hz		d3-02	0.0 Hz			
Jump frequency 3	n085	0.0 Hz		d3-03	0.0 Hz			
Jump frequency bandwidth	n086	0.0 Hz		d3-04	1.0 Hz			
Operation time counter selection	n087	0		o4-02	0		V7	V1000
							n087→0	o4-02→0
							n087→1	o4-02→1
Accumulated operation time	n088	0 H		o4-01	0 H			
DC injection braking current	n089	50%		b2-02	50%			
DC injection time at stop	n090	0.5 sec		b2-04	o2-09 dep.			
DC injection time at start	n091	0 sec		b2-03	0 sec			
Stall prevention during deceleration	n092	0		L3-04	1		V7	V1000
							n092→0	L3-04→1
							n092→1	L3-04→0, 3
Stall prevention level during acceleration	n093	170%		L3-02	150%			
Stall prevention level during run	n094	160%		L3-06	160%			

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Parameter Function	Drive	V7			V1000			Note
		Param. No.	Initial Value	Set Value	Param. No.	Initial Value	Set Value	
Output frequency detection level (DO)		n095	0.00 Hz		L4-01	0.0 Hz		
Over / under torque detection		n096 (OL) n117 (UL)	0	L6-01 L6-03	0	V7		V1000
						n096,117→0	L6-01/03→0	
						n096,117→1	L6-01/03→1(OL),5(UL)	
						n096,117→2	L6-01/03→3(OL),6(UL)	
						n096,117→3	L6-01/03→2(OL),7(UL)	
						n096,117→4	L6-01/03→4(OL),8(UL)	
Over / under torque detection level		n098 (OL) n118 (UL)	160% 10%		L6-02 L6-05	150%		
Over / under torque detection time		n099 (OL) n119 (UL)	0.1 sec		L6-03 L6-06	0.1 sec		
Torque selection in vector mode		n097	0		-	-		The torque reference value (U1-09) is always used as comparison value for torque detection in vector control.
Frequency reference hold selection (up/down function)		1n00	0	d4-01	0	V7		V1000
						n100→0	d4-01→0	
						n100→1	d4-01→1	
Speed search deceleration time		n101	2.0 sec		b3-03	2.0 sec		
Speed search deactivation current		n102	150%		b3-02	A1-02 dep.		
Torque compensation gain		n103	1.0		C4-01	1.00		
Torque compensation time constant		n104	0.3 sec		C4-02	A1-02 dep.		
Torque compensation iron losses		n105			E2-10	o2-04 dep.	Value is different to V7 and capacity dependent	
Motor rated slip		n106			E2-02	o2-04 dep.		
Motor line-to-line resistance		n107			E2-05	o2-04 dep.		
Motor leakage inductance		n108			E2-06	o2-04 dep.		
Motor no-load current		n110			E2-03	o2-04 dep.		
Slip compensation gain		n111	0.0		C3-01	A1-02 dep.		
Slip compensation time constant		n112	2.0 sec		C3-02	A1-02 dep.		

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Parameter Function	Drive	V7		V1000			Note		
		Param. No.	Initial Value	Set Value	Param. No.	Initial Value	Set Value		
Slip compensation in regenerative mode selection	n113	0		C3-04	0		V7	V1000	
							n113→0	C3-04→0	
							n113→1	C3-04→1	
SI-T BUS max. transmission errors	n114	2		-	-		No ML support.		
Stall prevention level reduction during run in constant power range	n115	0		L3-23	0		V7	V1000	
							n115→0	L3-23→0	
							n115→1	L3-23→1	
Stall prevention during run selection	n116	0		L3-05	1		V7	V1000	
							n116→0	L3-05→0	
							n116→1	L3-05→2	
Under torque detection	n117 to n119						→see n096 to n098 (Over torque det)		
Multi speed reference 9	n120	0.00 Hz		d1-09	0.00 Hz				
Multi speed reference 10	n121	0.00 Hz		d1-10	0.00 Hz				
Multi speed reference 11	n122	0.00 Hz		d1-11	0.00 Hz				
Multi speed reference 12	n123	0.00 Hz		d1-12	0.00 Hz				
Multi speed reference 13	n124	0.00 Hz		d1-13	0.00 Hz				
Multi speed reference 14	n125	0.00 Hz		d1-14	0.00 Hz				
Multi speed reference 15	n126	0.00 Hz		d1-15	0.00 Hz				
Multi speed reference 16	n127	0.00 Hz		d1-16	0.00 Hz				
PID control selection	n128	0		b5-01	0		V7	V1000	
							n128→0	b5-01→0	
							n128→1	b5-01→1	b5-09→0
							n128→2	b5-01→2	
PID output mode selection	n128	0		b5-09	0		n128→4	b5-01→4	b5-09→1
							n128→5	b5-01→1	
							n128→6	b5-01→2	
							n128→7	b5-01→3	
PID feedback gain	n129	1.0		H3-03 H3-11 H6-03	100%		Use feedback signal gain and bias (analog, pulse input gain/bias)		
PID proportional gain (P)	n130	1.0		b5-02	1.00				
PID integral time (I)	n131	1.0 sec		b5-03	1.0 sec				
PID derivative time (D)	n132	0.0 sec		b5-05	0.0 sec				
PID output offset	n133	0.0%		b5-07	0.0%				
PID integral limit	n134	100%		b5-04	100%				
PID output delay time	n135	0.0 sec		b5-08	0.0 sec				
PID feedback loss detection	n136	0		b5-12	0		V7	V1000	
							n136→0	b5-12→0	
							n136→1	b5-12→1	
							n136→2	b5-12→2	

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Parameter Function	Drive	V7			V1000			Note		
		Param. No.	Initial Value	Set Value	Param. No.	Initial Value	Set Value			
PID feedback loss detection level		n137	0%		b5-13	0%				
PID feedback loss detection time		n138	1.0 sec		b5-14	1.0 sec				
Auto tuning selection		n139	0		T1-01	0		V7	V1000	
								n139→0	b8-01→0	
								n139→1	b8-01→1	
Energy saving coefficient		n140			b8-04	o2-04 dep.		Value is different to V7 and capacity dependent		
Energy saving voltage lower limit (60Hz)		n141	50%		-	-		No need to set.		
Energy saving voltage lower limit (6Hz)		n142	12%		-	-				
Power average time		n143	1		-	-				
Energy saving voltage search limit		n144	0%		b8-06	0%				
Voltage step width at 100% voltage		n145	0.5%					No need to set.		
Voltage step width at 50% voltage		n146	0.1%							
Pulse input scaling		n149	2500 Hz		H6-02	1440 Hz				
Pulse output function selection		n150	0		H6-06	102		V7	V1000	
								n150→0	H6-06	H6-07
								n150→1	102	1440
								n150→6		E1-04
								n150→12		6xE1-04
								n150→24		12xE1-04
n150→36	24xE1-04									
Pulse output scaling		n150	0		H6-07	1440 Hz		n150→36	36xE1-04	
								n150→40	1440	
								n150→41	E1-04	
								n150→42	6xE1-04	
								n150→43	12xE1-04	
								n150→44	24xE1-04	
n150→45	36xE1-04									
Memobus communication error behavior selection		n151	0		H5-04	3		V7	V1000	
								n151→0	H5-04	H5-05
Memobus communication error detection		n151	0		H5-05	1		n151→1	1	1
								n151→2	0	
								n151→3	(act. Ramp) 2 (C1-09) 3	
								n151→4	No effect	
Drive node address		n153	0		H5-01	1F				

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Parameter Function	V7			V1000			Note	
	Param. No.	Initial Value	Set Value	Param. No.	Initial Value	Set Value		
Memobus communication Speed selection	n154	2		H5-02	3		V7	V1000
							n154→0	H5-02→1
							n154→1	H5-02→2
							n154→2	H5-02→3
							n154→3	H5-02→4
Memobus parity selection	n155	0		H5-03	0		V7	V1000
							n155→0	H5-03→1
							n155→1	H5-03→2
							n155→2	H5-03→0
Transmission wait time	n156	10 ms		H5-06	5 ms			
RTS flow control control on/off	n157	0		H5-07	1		V7	V1000
							n157→0	H5-07→1
							n157→1	H5-07→0
Motor code (for energy saving)	n158			b8-04	E2-11, o2-04 dep.		In the V7 the motor code sets the rated power and the coefficient for energy saving.	
				E2-11			In the V1000 the coefficient is set in b8-04. It depends on the rated motor power set in E2-11. E2-11 is automatically adjusted during autotuning.	
Upper voltage limit for energy saving at 60Hz	n159	120%		-	-	-	No setting available.	
Upper voltage limit for energy saving at 6Hz	n160	16%						
Power detection hold during voltage tuning	n161	10%						
Power detection filter time constant	n162	5 (20 ms)		b8-05	20 ms			
PID output gain	n163	1.0		b5-10	1.0			
PID feedback value selection	n164	0		H3-09	2		V7	V1000
				H3-10	0		n164→0	Term. A2: H3-09→0, H3-10→B
							n164→1	Term. A2: H3-09→2, H3-10→B
							n164→2	Term. A2: H3-09→3, H3-10→B
							n164→3	– (no operator poti)
				H6-01	0		n164→4	
n164→5	H6-01 = 1							
							When terminal A2 is used always check the position of DIP switch S1!	
Braking resistor over heat protection (ERF type)	n165	0		L8-01	0		V7	V1000
							n165→0	L8-01→0
							n165→1	L8-01→1

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Parameter Function	Drive	V7		V1000			Note	
		Param. No.	Initial Value	Set Value	Param. No.	Initial Value		Set Value
Input open phase detection level		n166	0%		L8-05	o2-09 dep.	The input phase loss detection level and time can not be set in V1000. The phase loss detection can be enabled/ disabled by setting L8-05.	
Input open phase detection time		n167	0.0 sec					
Output open phase detection level		n168	0%		L8-07	o2-09 dep.	The output phase loss detection level and time can not be set in V1000. The phase loss detection can be enabled/ disabled by setting L8-07.	
Output open phase detection time		n169	0.0 sec					
Memobus Enter command selection		n170	0		-	-	V1000 accepts Enter commands at any time.	
Frequency reference bias upper limit (up/down2)		n171	0.0%		d4-08	0.0%		
Frequency reference bias lower limit (up/down2)		n172	0.0%		d4-09	0.0%		
DC braking P-gain		n173	83		-	-	No need to set up in V1000	
DC braking integral time		n174	25					
Low speed carrier frequency reduction		n175	0		L8-38	0	V7	V1000
							n175→0	L8-38→0
							n175→1	L8-38→1
COPY function selection		n176	rdy		o3-01	0	V7	V1000
							n176→rdy	-
							n176→rEd	o3-01→1
							n176→CPy	o3-01→2
							n176→vFy	o3-01→3
							n176→vA	-
n176→Sno	-							
READ prohibit selection		n177	0		o3-02	0	V7	V1000
							n177→0	o3-02→0
							n177→1	o3-02→1
Fault History		n178	-		U2/U3-xx		In the V1000 the last fault can be traced in the U2-xx monitors. The fault history is displayed in the U3-xx monitors.	
Software version		n179	-		U1-25/ 26			

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

1.7 Appendix

V7 and V1000 Differences in Output Capacity, Current and Carrier Freq.<1>

Normal Duty

Voltage Class	Maximum Motor Power kW	V7 Type V7AM□□	V1000 Type V□	V7			V1000		
				Output Power (kVA)	Output Current (A)	Carrier Frequency (kHz)	Output Power (kVA)	Output Current (A)	Carrier Frequency (kHz)
3 Phase 200V	0.1	20P1	2A0001	0.3	0.8	10	0.5	1.2	2
	0.2	20P2		0.6	1.6				
	0.4	20P4	2A0002	1.1	3.0				
	0.75	20P7	2A0004	1.9	5.0				
	1.5	21P5	2A0006	3.0	8.0	7.5	2.3	6.0	2
	2.2	22P2	2A0010	4.2	11.0				
	3.7	23P7	2A0012	6.7	17.5				
	5.5	25P5	2A0020	9.5	25.0				
	7.5	27P5	2A0030	13.0	33.0				
Single Phase 200V	0.1	B0P1	BA0001	0.3	0.8	10	0.5	1.2	2
	0.2	B0P2		0.6	1.6				
	0.4	B0P4	BA0002	1.1	3.0				
	0.75	B0P7	BA0003	1.9	5.0				
	1.5	B1P5	BA0006	3.0	8.0	7.5	2.3	6.0	2
	2.2	B2P2	BA0010	4.2	11.0				
	3.7	B3P7	BA0012	6.7	17.5				
3 Phase 400V	0.2	40P2	4A0001	0.9	1.2	7.5	0.9	1.2	2
	0.4	40P4		1.4	1.8				
	0.75	40P7	4A0002	2.6	3.4				
	1.5	41P5	4A0004	3.7	4.8				
	2.2	42P2	4A0005	4.2	5.5				
	3.0	43P0	4A0007	5.5	7.2				
	3.7	43P7	4A0009	6.6	8.6				
	5.5	45P5	4A0011	11.0	14.8				
	7.5	47P5	4A0018	14.0	18.0				

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Heavy Duty

Voltage Class	Maximum Motor Power kW	V7 Type V7AM□□	V1000 Type V□	V7			V1000		
				Output Power (kVA)	Output Current (A)	Carrier Frequency (kHz)	Output Power (kVA)	Output Current (A)	Carrier Frequency (kHz)
3 Phase 200V	0.1	20P1	2A0001	0.3	0.8	10	0.3	0.8	2
	0.2	20P2	2A0002	0.6	1.6		0.6	1.6	
	0.4	20P4	2A0004	1.1	3.0		1.1	3.0	
	0.75	20P7	2A0006	1.9	5.0		1.9	5.0	
	1.5	21P5	2A0010	3.0	8.0	7.5	3.0	8.0	2
	2.2	22P2	2A0012	4.2	11.0		4.2	11.0	
	3.7	23P7	2A0020	6.7	17.5		6.7	17.5	
	5.5	25P5	2A0030	9.5	25.0		9.5	25.0	
7.5	27P5	2A0040	13.0	33.0		12.6	33.0		
Single Phase 200V	0.1	B0P1	BA0001	0.3	0.8	10	0.3	0.8	2
	0.2	B0P2	BA0002	0.6	1.6		0.6	1.6	
	0.4	B0P4	BA0003	1.1	3.0		1.1	3.0	
	0.75	B0P7	BA0006	1.9	5.0		1.9	5.0	
	1.5	B1P5	BA0010	3.0	8.0	7.5	3.0	8.0	2
	2.2	B2P2	BA0012	4.2	11.0		4.2	11.0	
	3.7	B3P7	BA0020	6.7	17.5		6.7	17.5	
3 Phase 400V	0.2	40P2	4A0001	0.9	1.2	7.5	0.9	1.2	2
	0.4	40P4	4A0002	1.4	1.8		1.4	1.8	
	0.75	40P7	4A0004	2.6	3.4		2.6	3.4	
	1.5	41P5	4A0005	3.7	4.8		3.7	4.8	
	2.2	42P2	4A0007	4.2	5.5		4.2	5.5	
	3.0	43P0	4A0009	5.5	7.2		5.5	7.2	
	3.7	43P7	4A0011	6.6	8.6		7.0	9.2	
	5.5	45P5	4A0018	11.0	14.8		11.3	14.8	
	7.5	47P5	4A0023	14.0	18.0		13.7	18.0	

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

V7 and V1000 Differences in Watts Loss <1>

Voltage Class	Maximum Motor Power kW	V7 Type V7AM□□	V1000 Type V□□A	V7			V1000		
				Heatsink Loss (W)	Interior Unit Loss (W)	Total Loss (W)	Heatsink Loss (W)	Interior Unit Loss (W)	Total Loss (W)
3 Phase 200V	0.1	20P1	2A0001	3.7	9.3	13.0	4.3	7.3	11.6
	0.2	20P2	2A0002	7.7	10.3	18.0	7.9	8.8	16.7
	0.4	20P4	2A0004	15.8	12.3	28.1	16.1	11.6	27.6
	0.75	20P7	2A0006	28.4	16.7	45.1	27.4	15.9	43.3
	1.5	21P5	2A0010	53.7	19.1	72.8	54.8	23.8	78.6
	2.2	22P2	2A0012	60.4	34.4	94.8	70.7	29.9	100.7
	3.7	23P7	2A0020	96.7	52.4	149.1	110.5	43.3	153.8
	5.5	25P5	2A0030	170.4	79.4	249.8			335.3
	7.5	27P5	2A0040	219.2	98.9	318.1			379.5
Single Phase 200V	0.1	B0P1	BA0001				28.7	15.5	11.7
	0.2	B0P2	BA0002				38.8	21.9	16.8
	0.4	B0P4	BA0003				52.0	29.5	27.6
	0.75	B0P7	BA0006				80.6	43.9	50.5
	1.5	B1P5	BA0010				4.7	12.5	80.7
	2.2	B2P2	BA0012				7.2	13.7	104.8
	3.7	B3P7	BA0020				14.0	18.6	161.9
3 Phase 400V	0.2	40P2	4A0001	9.4	13.7	23.1	19.2	11.5	30.6
	0.4	40P4	4A0002	15.1	15.0	30.1	28.9	14.8	43.8
	0.75	40P7	4A0004	30.3	24.6	54.9	42.3	17.9	60.2
	1.5	41P5	4A0005	45.8	29.9	75.7	70.7	26.2	96.9
	2.2	42P2	4A0007	50.5	32.5	83.0	81.0	30.7	111.7
	3.0	43P0	4A0009				84.6	32.9	117.5
	3.7	43P7	4A0011	73.4	44.5	117.9	107.2	41.5	148.7
	5.5	45P5	4A0018	168.8	87.7	256.5			228.7
	7.5	47P5	4A0023	209.6	99.3	308.9			285.2

V7 and V1000 Option Differences

The table below gives an overview of options, which might be installed in the drive which has to be replaced. Replace an option with the appropriate new type and do not attempt to apply any option not mentioned to the V1000. This option list may not be inclusive; please contact a Yaskawa representative. <1>

Type	Description	V7	V1000
Serial Communications	Profibus comm. option	SI-P1 / V7	SI-P3/V
	CanOpen comm. option	SI-S1 / V7	SI-S3/V
	DeviceNet comm. option	SI-N1 / V7	SI-N3/V
	Mechatrolink II comm. option	SI-T / V7	–
	LonWorks comm. option		No
	EtherNet IP comm. option		SI-EN3/V
	Modbus TCP/IP comm. option		SI-EM3/V
	CC-Link comm. option	SI-C/V7	SI-C3/V
	24Vdc Backup Power Supply	–	PS-V10S, PS-V10M
Operator Panel	Remote operator without pot	JVOP-146	JVOP-180
	Remote operator with pot	JVOP-144	–
	Extension cable 1 m	72606-WV001	72606-WV001 (UWR0051)
	Extension cable 2 m	72606-WV003	72606-WV003 (UWR0052)
	LCD Operator	–	JVOP-180
Braking Resistor	Panel mounted braking resistor (3% duty cycle)	ERF-150WJx	R75xx
DIN-Rail Attachment	Used to mount the drive on a DIN rail	EZZ08122x	EZZ08122x
Screwless Terminals		–	Yes
AC Reactor		UZBA-B	05P00620-xxxx
DC Choke		UZDA-B	05P00620-xxxx
Heatsink External Mounting		EZZ08136x	100-03x-xxx (check the drive catalog for selecting the correct option)

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

V7 and V1000 Specification Differences

Category	Feature	Item	V7	V1000
Power Section	Control Method	–	Sinewave PWM: V/f & OLV	Sinewave PWM: V/f & Current Vector
Power Section	Ratings	230v, 3ph.	0.125 to 10 HP	0.125 to 25 HP
Power Section	Ratings	460v, 3ph.	0.5 to 10 HP	0.5 to 25 HP
Power Section	Maximum Output Frequency	–	400 Hz (800 Hz optional)	400 Hz (1000 Hz optional)
Power Section	Carrier Frequency	–	10 kHz (model dependent)	ND: 2 kHz; HD: 15 kHz (model dependent)
Power Section	F _c Default (derate)	–	Constant	Swing PWM
Power Section	Braking Transistor Circuit	–	Built-in to 10 HP	Built-in to 25 HP
Power Section	Short Circuit Withstand Rating	–	18,000 A RMS Symmetrical	30,000 A RMS Symmetrical
Power Section	Control Method	–	IM only	IM / PM Control
Control Section	Digital Operator	Display	LED 4x 7 seg. (LCD option)	LED 5x 7 seg. (LCD option)
Control Section	Digital Operator	Number of Keys	6	8
Control Section	Copy Function	–	Built-in	Y-Stick USB copy unit option
Control Section	Microprocessor	–	Single	Dual
Control Section	Control Method	Pseudo-Closed Loop	No	Yes, w/ RP input
Control Section	Macro Applications	–	No	Yes
Control Section	Digital Input	Scan Rate	8 msec.	4 msec.
Control Section	Analog Input	Qty.	1 (Programmable)	2 (Programmable)
Control Section	Analog Input	Scan Rate	8 msec.	2 msec.
Control Section	Analog Input	Freq. Ref Voltage	15 Vdc	10.5 Vdc
Control Section	Analog Output	Scan Rate	8 msec.	2 msec.
Control Section	Pulse Input	Qty.	1 (Programmable)	1 (Programmable)
Control Section	Pulse Input	Input Frequency	33 kHz	33 kHz
Control Section	Pulse output	Qty.	1 (Programmable)	1 (Programmable)
Control Section	Pulse output	Output Frequency	1.44 kHz	33 kHz
Control Section	Digital Operator	Display	8 LED Indicators	6 LED Indicators
Control Section	Removable Terminal Block	–	No	Yes (w / memory)
Control Section	Thermistor Input PTC	–	No	Yes
Control Section	2-Motor Control	–	No	Yes
Control Characteristics	Overload Capacity	–	150% for 1 min.	ND: 120% for 1 min.; HD: 150% for 1 min.
Control Characteristics	Starting Torque	–	150% @ 3 Hz (V/f)	150% @ 3 Hz (V/f), 200% @ 0.5 Hz (OLV)
Control Characteristics	Speed Control Range	Open Loop for PM	N/A	1:10
Control Characteristics	Output Frequency Resolution	–	0.01 Hz	0.001 Hz
Control Characteristics	Auto-Tuning	Automatic/OnLine	No	Yes, R1 and Rotational
Control Characteristics	Elapse Time	–	No	Yes (Power up or Run)
Control Characteristics	Fault Storage	–	Last 4	Last 10 w / Elapsed Time Meter
Control Characteristics	Fault Record	–	No Trace Data Points	15 Trace Data Points
Control Characteristics	High Current Alarm	HCA	No	Yes, 150%
Control Characteristics	OV Suppression	–	Option- CASE	Standard
Control Characteristics	Torque Detection	–	Over-Torque	Over and Under-Torque

Product Transition Guide

PL. V1000.01 Rev: 4/1/09

Category	Feature	Item	V7	V1000
Control Characteristics	Overtemperature	Memory Retention	No	Yes
Control Characteristics	Overtemperature	–	OH	Auto-Speed Reduction on OH
Control Characteristics	PI/PID Control	–	PID	PID w / sleep
Control Characteristics	High Slip Braking	–	No	Yes
Control Characteristics	Cooling Fan	–	Bottom-mount	Top-mount
Control Characteristics	Drive Enable Run Permissive	–	None	Meets EN954-1, Cat. 3
Control Characteristics	RS485 Comms	Comm. Speed	19.2kbps	115.2kbps
Key Features	Parameter Upload/Download	–	Drive Wizard	Drive Wizard Plus
Key Features	Drive Function Customization	–	None	DriveWorks EZ
Key Features	Maintenance Monitors	–	None	Capacitors, Fans, IGBTs
Key Features	Hybrid Heatsink	–	No	Yes
Enclosures	Types	Open Chassis - IP20	230 V and 460 V to 10 Hp	230 V and 460 V to 25 Hp
Enclosures	Types	NEMA 1 - IP20	230 V and 460 V to 10 Hp	230 V and 460 V to 25 Hp
Enclosures	Side-by-Side Mounting	–	No	Yes
Harmonics	Harmonic Filters	–	C1 as Option	C1, C2, C3 as Options
EMC	Internal RFI/EMC Filter	–	C1 as Option	C1, C2, C3 as Options
Standards	Third Party Certifications	–	UL / cUL / CE	UL / cUL / CE. RoHS
Environment	Ambient Temperature	–	-10 to 40° C	-10 to +50° C (IP20)

VS606 V7 to V1000 Product Transition Guide

Data Subject to change without notice.



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