

Catalog CA.G7.01
G7 Drives for Industrial Automation

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YASKAWA

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Other Documents and Manuals are available to support special use or installation of this product. These documents may be provided with the product or upon request. Contact Yaskawa Electric America, Inc. or visit www.yaskawa.com, as required. Documents may include the following:

TM.G7.01... Drive Technical Manual included on CD ROM with product
TM.AFD.12... Profibus-DP... Manual included on CD ROM with product
TM.AFD.13... DeviceNet... Manual included on CD ROM with product
TM.AFD.14... DeviceNet... Manual included on CD ROM with product
TM.AFD.17... Modbus Plus... Manual included on CD ROM with product
TM.AFD.20... LonWorks... Manual included on CD ROM with product
TM.AFD.26... EtherNet/IP... Included on CD ROM with product
DriveWizard... Software and Manual...Included on CD ROM with product
Option Installation Guides... Included on CD ROM with product

REVISIONS

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This amazing AC drive is the ultimate performance solution with increased speed and torque response to provide servo-like performance from an induction motor. In addition, the G7 has the world's first 480V 3-level inverter architecture that eliminates or minimizes the installation problems associated with IGBT switching and protects the entire motor-drive system.

Several control modes are provided. In open loop vector mode, the latest flux observer algorithms extend speed range and provide maximum starting torque. In closed loop vector mode, 0.01% speed regulation and 1000:1 control range can be achieved. Zero-servo capability provides position control at zero speed. The G7 power section includes built-in bus choke (most ratings), 12-pulse input capability (most ratings), common DC bus capability and regeneration options.

This G7 (480V) allows motor operation at very long cable lengths, with peak voltage being 30% less than conventional drives. Motor bearing current is 50% less than standard drives, providing four times the bearing life. Audible motor noise is 20% less.

DriveWizard™, DriveWorksEZ™ and Network Communication are available.

Performance Features

- Ratings: 1/2 to 150HP, 208 VAC
1/2 to 150HP, 240 VAC
3/4 to 500HP, 480 VAC
- Overload capacity: heavy duty, 150% for 1 min, 200% Peak
- Starting torque:
150% at 1Hz (V/f), at 0.5 Hz (open loop),
at 0.3 Hz (closed loop)
- Output frequency: 0.01 to 400Hz
- Speed control range:
40:1 (V/f), 200:1 (open loop),
1000:1 (closed loop)
- Speed regulation:
1% (V/f), 0.2% (open loop), 0.01% (closed loop)
- Speed response: 60Hz
- Torque response: 300Hz
- Speed reference resolution: 0.01% with digital reference, 0.1% with analog reference, 0.01 Hz with network input
- Speed/Torque/Position Control
- Zero-servo mode
- Adjustable accel/decel: 0.01 to 6000 seconds
- S-Curve: adjustable 0.00 to 2.50 seconds, for each corner
- Stall prevention
- Inertia and Power loss ride-thru
- Programmable auto restart after momentary power loss

Protective Features

- DC bus CHARGE indicator
- Optically-Isolated controls
- Phase-to-phase / phase-to-neutral short circuit protection
- Ground fault protection
- Electronic motor overload (UL508C)
- Current and torque limit (four quadrant)
- Over-torque / under-torque detection
- Over-current, over-voltage, and over-temperature
- Motor thermistor input
- Input/output phase loss

Design Features

- LCD keypad display: 5 lines x 16 characters, backlit, 7 languages, copy function
- Simplified programming: Quick Start and modified parameter groups
- Microprocessor logic: 32 bit
- Memory type: Flash memory for easy upgrades, custom software applications, and non-volatile program retention
- Control logic: 24VDC (sinking or sourcing)
- Terminal strip: Quick disconnect
- Front cover: Split for easy wiring
- Heat sink fan: Plug-in with on/off control
- Motor auto-tuning: Static and rotational
- Speed search: Bi-directional into rotating motor
- Process control: PID, reference with PID trim
- Motor parameters: 2 sets
- Stopping methods: Ramp stop, coast stop, fast stop, or high slip braking
- DC injection braking: Adjustable level, time
- Speed reference presets: 17 available
- Timer function: Programmable on/off delay
- Digital M.O.P.: Up/down/hold/reset reference
- Bias and gain: All analog and pulse train I/O
- Common DC bus capability: All models
- Dynamic braking transistor: 20 HP and below (240VAC), 25 HP and below (460VAC)
- Bus Reactor: 25 HP and above (240VAC), 30HP and above (460VAC)
- Twelve-pulse capability: 25 HP and above (240VAC), 30HP and above (460VAC)

Service Conditions

- Enclosure: NEMA 1 or protected chassis
- Ambient service temperatures:
-10 to 40°C (104°F) NEMA1,
-10 to 45°C (113°F) protected chassis
- Input frequency: 50/60Hz ± 5%
- Input voltage: +10% / -15%, 3 phase, 240 or 480VAC, phase insensitive
- Humidity: non-condensing 95% max
- Altitude: to 3300 feet (1000 meters) w/o derate
- Vibration: 1G or less (10 to 20Hz), 0.6G or less (20 to 55Hz)

Inputs and Outputs

- Analog inputs: 3 (2 programmable), ±10VDC (20K ohms) or 4 to 20 mA (250 ohm), 11 bit plus sign
- Analog outputs: 2 programmable, ±10VDC or 4- to 20mA, 9 bit plus sign
- Digital inputs: 12 (10 programmable), sinking or sourcing
- Digital outputs: 5 programmable, 3 form A and two open collector
- Pulse train input: 1 programmable, 32 KHz max
- Pulse train output: 1 programmable, 32 KHz max
- Fault contacts: 1 form C
- RS-232/422/485: Modbus RTU

Standards & Reliability

- UL, cUL & CE
- MBTF: Exceeds 28 years

Options

- DriveWorksEZ™ programming tool
- DriveWizard™ software (upload / download)
- Custom drive software
- Ethernet, DeviceNet, Profibus-DP, and others
- Remote display/keypad
- High resolution I/O cards
- 120 VAC interface
- NEMA 12 enclosures
- Input breaker, disconnect, fuses
- Input/output reactors
- EMC-compliant filters
- Dynamic braking transistor (if not standard)
- Bus Reactor (if not standard)
- Line regeneration (RC5 or DC5)

480V Three-Level Inverter Benefits

- Lead length; Meets NEMA MG1 Part 31
- Motor bearing life: 4 times increase
- Quiet operation: 5-10dB of noise reduction
- Common mode current: 50% reduction

G7 Drives - 1/2-500HP, 208-230/240 and 480V, 3-phase⁽¹⁾ input, NEMA 1 or protected chassis enclosure

Rated Input Voltage	Drive Model Number CIMR-G7U	Rated Output Current (Amps)	Nominal HP ⁽²⁾	Standard Enclosure	Drive List Price \$
208V	20P41	3.2	1/2	NEMA 1	
	20P71	6	1		
	21P51	8	2		
	22P21	12	3	NEMA 1	
	23P71	18	5		
	25P51	27	7.5	NEMA 1	
	27P51	34	10		
	20111	49	15	NEMA 1	
	20151	66	20		
	20181	80	25	NEMA 1	
	20221	96	30		
	20300	130	40	Protected Chassis	
	20370	160	50		
	20450	183	60	Protected Chassis	
20550	224	75			
20750	300	100	Protected Chassis		
20900	358	125			
21100	415	150			
240V	20P41	3.2	3/4	NEMA 1	
	20P71	6	1		
	21P51	8	2	NEMA 1	
	22P21	12	3		
	23P71	18	5	NEMA 1	
	25P51	27	7.5		
	27P51	34	10	NEMA 1	
	20111	49	15		
	20151	66	20	NEMA 1	
	20181	80	25		
20221	96	30 ⁽³⁾	NEMA 1		
20300	130	40	Protected Chassis		
		50			
230V	20370	160	60	Protected Chassis	
	20450	183	60 ⁽³⁾		
	20550	224	75	Protected Chassis	
	20750	300	100		
	20900	358	125	Protected Chassis	
21100	415	150			

(1) For single-phase input applications, consult Yaskawa Drives Applications Engineering for proper sizing

(2) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(3) Check motor FLA for proper drive sizing



G7 Drives (Continued)

Rated Input Voltage	Drive Model Number CIMR-G7U	Rated Output Current (Amps)	Nominal HP ⁽²⁾	Standard Enclosure	Drive List Price \$
480V	40P41	1.8	3/4	NEMA 1	
	40P71	3.4	1 2	NEMA 1	
	41P51	4.8	3	NEMA 1	
	42P21	6.2	3 ⁽³⁾		
	43P71	9	5	NEMA 1	
	44P01	11	7.5		
	45P51	15	10	NEMA 1	
	47P51	21	15		
	40111	27	20	NEMA 1	
	40151	34	25		
	40181	42	30	NEMA 1	
	40221	52	40		
	40301	65	50	NEMA 1	
	40371	80	60		
	40451	97	75		
	40550	128	100		
	40750	165	125	Protected Chassis	
	40900	195	150	Protected Chassis	
	41100	240	200		
	41320	270	200 ⁽³⁾	Protected Chassis	
41600	302	250			
41850	370	300	Protected Chassis		
42200	450	350			
43000	605	400 500	Protected Chassis		

- (1) For single-phase input applications, consult Yaskawa Drives Applications Engineering for proper sizing
- (2) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (3) Check motor FLA for proper drive sizing

Dynamic Braking, 10% Duty Cycle - Used to assist the drive to periodically decelerate a load without overvoltage trips. Ten percent dynamic braking is not typically used for "hold-back" type applications, such as unwinders, elevators, hoists, or downhill conveyors. Dynamic braking consists of at least one transistor and at least one resistor, and are sized for rated motor horsepower. The braking transistor may be included in the standard drive; this is indicated in the tables below. The resistors are sized for a 10% duty cycle (10 seconds maximum on-time of every 100 seconds), and will provide approximately 150% braking torque. Refer to the dynamic braking instruction sheet for more details; consult Yaskawa for information on higher duty cycles.

Rated Input Voltage	Drive Model Number CIMR-G7U	Nominal HP ⁽¹⁾	Transistor Module(s)			Resistor(s)				Total List Price \$ ⁽⁵⁾
			Part Number CDBR-	Qty	List Price (ea.) \$	Part Number URS000	Qty	List Price \$	Configuration ⁽²⁾	
208V	20P41	1/2	Included			034	1		Single ⁽³⁾	
	20P71	3/4	Included			022	1		Single ⁽³⁾	
	21P51	2	Included			023	1		Single ⁽³⁾	
	22P21	3	Included			024	1		Single ⁽³⁾	
	23P71	5	Included			025	1		Single ⁽³⁾	
	25P51	7.5	Included			026	1		Single ⁽³⁾	
	27P51	10	Included			027	1		Single ⁽³⁾	
	20111	15	Included			140	1		Single ⁽⁴⁾	
	20151	20	Included			136	1		Single ⁽⁴⁾	
	20181	25	Included			135	1		Dual	
	20221	30	2022B	2		135	1		Dual	
	20300	40	Included			129	1		Dual	
	20370	50	2110B	1		100	1		Single	
	20450	60	Included							
	20550	75	2110B	1		096	1		Single	
20750	100	2110B & 2022B	1 each		096 & 128	1 each		Single Single		
20900	125	2110B & 2022B	1 2		096 & 127	1 each		Single Dual		
21100	150	2110B	2		097	1		Dual		

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) Single = 1 resistor per package
 Dual = 2 resistors per package (requires 2 DB transistor modules, as indicated in table above)
 Triple = 3 resistors per package (requires 3 DB transistor modules, as indicated in table above)

(3) This resistor package provides 120% braking torque

(4) This resistor package provides 100% braking torque

(5) Total List Price includes all resistors and transistor modules to provide the Dynamic Braking function



Dynamic Braking, 10% Duty Cycle (continued for 230/240V)

Rated Input Voltage	Drive Model Number CIMR-G7U	Nominal HP ⁽¹⁾	Transistor Module(s)			Resistor(s)				Total List Price \$ ⁽⁵⁾
			Part Number CDBR-	Qty	List Price (ea.) \$	Part Number URS000	Qty	List Price \$	Config-uration ⁽²⁾	
230/ 240V	20P41	1/2 3/4	Included			034 022	1 1		Single ⁽³⁾ Single ⁽³⁾	
	20P71	1	Included			022	1		Single ⁽³⁾	
	21P51	2	Included			023	1		Single ⁽³⁾	
	22P21	3	Included			024	1		Single ⁽³⁾	
	23P71	5	Included			025	1		Single ⁽³⁾	
	25P51	7.5	Included			026	1		Single ⁽³⁾	
	27P51	10	Included			027	1		Single ⁽³⁾	
	20111	15	Included			140	1		Single ⁽⁴⁾	
	20151	20	Included			136	1		Single ⁽⁴⁾	
	20181	25 30	2022B	2		135	2		Dual	
	20221	30	2022B	2		135	2		Dual	
	20300	50	2110B	1		100	1		Single	
	20370	60								
	20450	60	2110B	1		100	1		Single	
	20550	75				096	1		Single	
20750	100	2110B & 2022B	1 each		096 & 128	1 each		Single Single		
20900	125	2110B & 2022B	1 2		096 & 127	1 each		Single Dual		
21100	150	2110B	2		097	1		Dual		

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) Single = 1 resistor per package
 Dual = 2 resistors per package (requires 2 DB transistor modules, as indicated in table above)
 Triple = 3 resistors per package (requires 3 DB transistor modules, as indicated in table above)

(3) This resistor package provides 120% braking torque

(4) This resistor package provides 100% braking torque

(5) Total List Price includes all resistors and transistor modules to provide the Dynamic Braking function

Dynamic Braking, 10% Duty Cycle (continued for 480V)

Rated Input Voltage	Drive Model Number CIMR-G7U	Nominal HP ⁽¹⁾	Transistor Module(s)			Resistor(s)				Total List Price \$ ⁽⁵⁾
			Part Number CDBR-	Qty	List Price (ea.) \$	Part Number URS000	Qty	List Price \$	Config-uration ⁽²⁾	
480V	40P41	3/4	Included			32	1		Single ⁽³⁾	
	40P71	1	Included			33	1		Single ⁽³⁾	
	41P51	2	Included							
	42P21	3	Included			34	1		Single ⁽³⁾	
	43P71	3	Included							
	44P01	5	Included			35	1		Single ⁽³⁾	
	45P51	7.5	Included			36	1		Single ⁽³⁾	
	47P51	10	Included			37	1		Single ⁽³⁾	
	40111	15	Included			38	1		Single ⁽³⁾	
	40151	20	Included			40	1		Single ⁽³⁾	
	40181	25	Included							
	40221	30	4045B	1		150	1		Single	
	40301	40	4045B	2		142	1		Single	
	40371	50	4045B	2		151	1		Dual	
	40451	60	4045B	2		151	1		Dual	
	40550	75	4045B	2		143	1		Dual	
	40750	100	4220B	1		119	1		Single	
	40900	125	4220B	1		165	1		Single	
	41100	150	4220B	1		165	1		Single	
	41320	200	4220B & 4045B	1		165 & 142	1 each		Single	
41600	200	4220B & 4045B	1		165 & 142	1 each		Single		
41850	250	4220B & 4045B	1		165 & 143	1 each		Single		
42200	300	4220B	2		166	1		Dual		
43000	350	4220B	2		166	1		Dual		
43000	400	4220B	3		120 & 165	1		Dual		
43000	450	4220B	3		167	1		Single		
43000	500	4220B	3		167	1		Triple		

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) Single = 1 resistor per package
Dual = 2 resistors per package (requires 2 DB transistor modules, as indicated in table above)
Triple = 3 resistors per package (requires 3 DB transistor modules, as indicated in table above)

(3) This resistor package provides 120% braking torque

(4) This resistor package provides 100% braking torque

(5) Total List Price includes all resistors and transistor modules to provide the Dynamic Braking function

Dynamic Braking Options

3% Duty



Dynamic Braking, 3% Duty Cycle - Used to assist the drive to periodically decelerate a load without overvoltage trips. Three percent dynamic braking is not applicable for "hold-back" type applications, such as unwinders, elevators, hoists, or downhill conveyors. Dynamic braking consists of at least one transistor and at least one resistor, and are sized for rated motor horsepower. The braking transistor is included in the standard drive for these resistors. The resistors are sized for a 3% duty cycle (3 seconds maximum on-time of every 100 seconds), and will provide at least 100% braking torque. Refer to the dynamic braking instruction sheet for more details; consult Yaskawa for information on higher duty cycles. These resistors can be mounted directly to the heatsink on the back of the drive.

Rated Input Voltage	Drive Model Number CIMR-G7U	Nominal HP ⁽¹⁾	Resistor			
			Part Number	Qty	List Price \$	Braking Torque %
208V	20P41	1/2	R7505	1		220
	20P71	1	R7505	1		125
	21P51	2	R7504	1		125
	22P21	3	R7503	1		120
	23P71	5	R7510	1		100
240V	20P41	1/2	R7505	1		220
	20P41	3/4	R7505	1		220
	20P71	1	R7505	1		125
	21P51	2	R7504	1		125
	22P21	3	R7503	1		120
480V	23P71	5	R7510	1		100
	40P41	3/4	R7508	1		230
	40P71	1	R7508	1		130
	40P71	2	R7508	1		130
	41P51	3	R7507	1		125
42P21	3	R7506	1		115	
43P71	5	R7505	1		110	

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors



Ring Kit Options

Ring Kit - These kits allow installation of the drive into a customer's enclosure with the heatsink mounted out the back to reduce overall enclosure size. Each kit includes all of the necessary components, including hardware, gaskets and instructions.

Rated Input Voltage	Drive Model Number CIMR-G7U	Kit Model No. UDA00417-	Kit List Price \$
208-230/240V	20P41 thru 23P71	D	
	25P51	C	
	27P51		
	20111	B	
	20151		
	20181	F	
	20221	E	
	20300 thru 21100	Not Available	
480V	40P41 thru 44P01	D	
	45P51	C	
	47P51		
	40111	B	
	40151		
	40181	E	
	40221		
	40301 thru 40451	A	
	40550 thru 43000	Not Available	

End Cap Kit Options

G7

End Cap Kit, NEMA 1 - This option consists of a top and bottom cover to convert a protected chassis drive to a NEMA 1 enclosed unit. This option DOES NOT provide additional space for mounting auxilliary components (i.e. circuit breaker, input fuses, reactor, etc.).

Rated Input Voltage	Drive Model Number CIMR-G7U	Kit Model No. UDA00365-	Overall Drive Dimensions			Kit List Price \$
			Height (in.)	Width (in.)	Depth (in.)	
208-230/240V	20P41 thru 20221		Not Required			
	20300	C	31.85	14.96	No Change	
	20370					
	20450	E	40.43	17.83	No Change	
	20550					
	20750	F	48.94	19.84	No Change	
	20900 21100		Not Available			
480V	40P41 thru 40451		Not Required			
	40550	E	40.43	17.83	No Change	
	40750					
	40900	F	48.94	19.84	No Change	
	41100					
	41320	P	52.13	22.80	No Change	
	41600					
	41850 42200 43000		Not Available			

Reactor, 3% and 5% Impedance - May be used on either the input or output of a drive to reduce the effect of load or line side transients on the drive. The three-phase reactors are provided in a separate NEMA 1 enclosure.

Rated Input Voltage	Drive Model Number CIMR-G7U	Rated Output Current (Amps)	3% Enclosed Reactor					5% Enclosed Reactor				
			Part Number 05P00620-	List Price \$	Dimensions (in)			Part Number 05P00620-	List Price \$	Dimensions (in)		
					H	L	W			H	L	W
208V	20P41	3.2	0020		8.0	8.0	6.0	0021		8.0	8.0	6.0
	20P71	6	0027					0028				
	21P51	8	0032		8.0	8.0	6.0	0033		8.0	8.0	6.0
	22P21	12	0036					0032				
	23P71	18	0041					0036		8.0	8.0	6.0
	25P51	27	0046		13.0	13.0	13.0	0047		13.0	13.0	13.0
	27P51	34	0050					0048				
	20111	49	0054		13.0	13.0	13.0	0055		13.0	13.0	13.0
	20151	66	0058					0059				
	20181	80	0172		13.0	13.0	13.0	0062		13.0	13.0	13.0
	20221	96	0066					0067				
	20300	130	0066		13.0	13.0	13.0	0067		13.0	13.0	13.0
	20370	160	0072					0073				
	20450	183	0077		13.0	13.0	13.0	0078		13.0	13.0	13.0
	20550	224	0082		13.0	13.0	13.0	0083		24.0	17.0	17.0
	20750	300	0087		24.0	17.0	17.0	0088				
20900	358	0173					0092					
21100	415	0174		24.0	17.0	17.0	0096		24.0	17.0	17.0	
230/ 240V	20P41	3.2	0020		8.0	8.0	6.0	0021		8.0	8.0	6.0
	20P71	6	0027					0028				
	21P51	8	0027		8.0	8.0	6.0	0028		8.0	8.0	6.0
	22P21	12	0036					0037				
	23P71	18	0036		8.0	8.0	6.0	0037		8.0	8.0	6.0
	25P51	27	0046		13.0	13.0	13.0	0047		13.0	13.0	13.0
	27P51	34	0050					0051				
	20111	49	0054		13.0	13.0	13.0	0055		13.0	13.0	13.0
	20151	66	0058					0059				
	20181	80	0172		13.0	13.0	13.0	0062		13.0	13.0	13.0
	20221	96	0172					0062				
	20300	130	0066		13.0	13.0	13.0	0067		13.0	13.0	13.0
	20370	160	0072					0073				
	20450	183	0077		13.0	13.0	13.0	0078		13.0	13.0	13.0
	20550	224	0082		13.0	13.0	13.0	0083		24.0	17.0	17.0
	20750	300	0087		24.0	17.0	17.0	0088				
20900	358	0173					0092					
21100	415	0174		24.0	17.0	17.0	0096		24.0	17.0	17.0	



Reactor, 3% and 5% Impedance (continued for 480V)

Rated Input Voltage	Drive Model Number CIMR-G7U	Rated Output Current (Amps)	3% Enclosed Reactor					5% Enclosed Reactor				
			Part Number 05P00620-	List Price \$	Dimensions (in)			Part Number 05P00620-	List Price \$	Dimensions (in)		
					H	L	W			H	L	W
480V	40P41	1.8	0015		8.0	8.0	6.0	0016		8.0	8.0	6.0
	40P71	3.4	0021					0022				
	41P51	4.8	0029		8.0	8.0	6.0	0030		8.0	8.0	6.0
	42P21	6.2	0028					0030				
	43P71	9	0028		8.0	8.0	6.0	0029		8.0	8.0	6.0
	44P01	11	0033					0034				
	45P51	15	0037		8.0	8.0	6.0	0038		13.0	13.0	13.0
	47P51	21	0042		13.0	13.0	13.0	0043				
	40111	27	0047		13.0	13.0	13.0	0048		13.0	13.0	13.0
	40151	34	0051					0048				
	40181	42	0055		13.0	13.0	13.0	0056		13.0	13.0	13.0
	40221	52	0055					0056				
	40301	65	0059		13.0	13.0	13.0	0060		13.0	13.0	13.0
	40371	80	0062					0063				
	40451	97	0062		13.0	13.0	13.0	0063		13.0	13.0	13.0
	40550	128	0067					0068				
	40750	165	0073		13.0	13.0	13.0	0074		13.0	13.0	13.0
	40900	195	0078					0079				
	41100	240	0083		24.0	17.0	17.0	0084		24.0	17.0	17.0
	41320	270	0088					0089				
41600	302	0088		24.0	17.0	17.0	0089		24.0	17.0	17.0	
41850	370	0092					0093					
42200	450	0096		24.0	17.0	17.0	0097		24.0	17.0	17.0	
43000	605	0100					0101					

DC Bus Reactor - May be used on the DC bus of a drive to reduce the effect of line side transients on the drive. The DC bus reactors are available loose in an open configuration, and must be mounted in a NEMA 1 enclosure.

Rated Input Voltage	Drive Model Number CIMR-G7U	Rated Output Current (Amps)	3% DC Bus Reactor					5% DC Bus Reactor				
			Part Number	List Price \$	Dimensions (in)			Part Number	List Price \$	Dimensions (in)		
					H	L	W			H	L	W
208V	20P41	3.2	URX000040		2.50	2.88	1.50	URX000041		3.25	3.75	2.00
	20P71	6	TBD		3.25	3.75	2.00	05P00620-0111		4.50	3.81	2.82
	21P51	8	URX000045		4.50	3.81	2.82	05P00652-0213		4.50	3.81	2.82
	22P21	12	TBD		4.50	3.81	2.82	URX000048		4.50	3.81	3.75
	23P71	18	URX000051		4.50	3.81	2.82	URX000053		4.50	3.81	3.00
	25P51	27	05P00620-0120		4.31	3.81	3.32	URX000055		5.25	4.63	4.25
	27P51	34	05P00620-0123		4.50	3.81	3.13	URX000057		5.25	4.63	4.00
	20111	49	URX000063		4.00	4.63	5.00	URX000065		5.50	6.50	6.25
20151	66	05P00620-0129		4.00	4.63	6.00	URX000069		4.00	4.63	7.00	
20181 thru 21100	80 thru 415	Built-in; additional DC bus reactor not required					Built-in; additional DC bus reactor not required					
230/240V	20P41	3.2	05P00620-0111		4.50	3.81	2.82	URX000044		5.25	4.63	4.00
	20P71	6	TBD		3.25	3.75	2.00	05P00620-0111		4.50	3.81	2.82
	21P51	8	TBD		3.25	3.75	2.00	URX000046		5.25	4.63	3.50
	22P21	12	TBD		4.50	3.81	2.82	URX000048		4.50	3.81	3.75
	23P71	18	URX000052		4.50	3.81	3.75	URX000053		4.50	3.81	3.00
	25P51	27	05P00620-0120		4.31	3.81	3.32	URX000055		5.25	4.63	4.25
	27P51	34	05P00620-0124		4.50	3.81	3.75	URX000057		5.25	4.63	4.00
	20111	49	URX000063		4.00	4.63	5.00	URX000065		5.50	6.50	6.25
20151	66	05P00620-0129		4.00	4.63	6.00	URX000069		4.00	4.63	7.00	
20181 thru 21100	80 thru 415	Built-in; additional DC bus reactor not required					Built-in; additional DC bus reactor not required					
480V	40P41	1.8	URX000042		4.50	3.81	2.82	URX000039		3.25	3.75	2.00
	40P71	3.4	URX000041		3.25	3.75	2.00	URX000042		4.50	3.81	2.82
	41P51	4.8	05P00620-0111		4.50	3.81	2.82	URX000044		5.25	4.63	4.00
	42P21	6.2										
	43P71	9	URX000046		5.25	4.63	3.50	URX000044		5.25	4.63	4.00
	44P01	11	05P00652-0216		5.25	4.63	4.00	URX000049		5.25	4.63	5.25
	45P51	15	URX000048		4.50	3.81	3.75	URX000049		5.25	4.63	5.25
	47P51	21	URX000053		4.50	3.81	3.00	URX000054		5.25	4.63	5.25
40111	27	URX000055		5.25	4.63	4.25	URX000056		5.25	4.63	5.25	
40151	34	URX000057		5.25	4.63	4.00	URX000058		6.55	6.50	6.00	
40181 thru 43000	42 thru 605	Built-in; additional DC bus reactor not required					Built-in; additional DC bus reactor not required					



Control Options - These cards, cables and devices add control functionality to the standard drive. Items are shipped loose, unmounted. See Configured Section for factory mounted and wired control.

Analog Input Options

Analog Input (14 Bit). This option provides for the interface of 2 high resolution analog inputs to the drive.

Signal levels (fixed):

- 1 channel, 0 to 10VDC (20kOhm)
- 1 channel, 4 to 20mADC (250Ohm)

Mounts at option connector 2CN

Model No. AI-14U..... List \$

Analog Input (13 Bit + Sign). This option provides for the interface of 3 high resolution analog inputs to the drive.

Signal levels (individually selectable):

- 0 to ±10VDC (20kOhm),
- 4 to 20mADC (250Ohm)

Mounts at option connector 2CN

Model No. AI-14B..... List \$

Analog Input, Isolated (13 Bit + Sign or 14 Bit). This option provides for the interface of 3 isolated, high resolution analog inputs to the drive.

Signal levels (individually selectable):

- 0 to ±10VDC (20kOhm), 13 Bit + Sign,
- 0/4 to 20mADC (250Ohm), 14 Bit

Mounts at option connector 2CN

Model No. AI-040 List \$

Trim Potentiometer. This option provides a 5kOhm potentiometer for use as a dropping resistor for maximum or minimum analog input trim.

Mounts to control terminal strip

Model No. AI-001 List \$

3-15PSI Transducer. This option provides for the interface of a 3 to 15PSI pneumatic signal, and provides a 4 to 20mA output signal proportional to the input signal to the drive.

Mounts to control terminal strip

Model No. AI-010 List \$

Analog Output Options

Analog Output (8 Bit). This option provides 2 signals for remote metering of any two of the drive's "U1" monitors. These are in addition to the two standard analog outputs.

Signal levels (fixed):

- 0 to 10VDC (20kOhm)

Mounts at option connector 3CN

Model No. AO-08 List \$

Analog Output (11 Bit + Sign). This option provides 2 signals for remote metering of any two of the drive's "U1" monitors. These are in addition to the two standard analog outputs.

Signal levels (individually selectable):

- 0 to ±10VDC (20kOhm)

Mounts at option connector 3CN

Model No. AO-12 List \$

Analog Output, Isolated (11 Bit + Sign). This option provides 2 isolated signals for remote metering of any two of the drive's "U1" parameters. These are in addition to the two standard analog outputs.

Signal levels (individually selectable):

- 0 to ±10VDC (20kOhm),
- 0 to 20mADC (500Ohm max),
- 4 to 20mADC (500Ohm max)

Mounts at option connector 3CN

Model No. AO-001 (formerly AO-12B2) List \$

Digital Input Options

Digital Input (8 Bit). This option provides for the interface of an 8 bit digital input (binary or BCD) to the drive.

Mounts at option connector 2CN

Model No. DI-08..... List \$

Digital Input (12 or 16 Bit). This option provides for the interface of a 12 or 16 bit digital input (binary or BCD) to the drive.

Mounts at option connector 2CN

Model No. DI-16H2 List \$

120VAC Logic Interface (8-Input). This option provides for the interface of 120VAC control logic circuits to the drive. This option is used for digital inputs S1 to S8.

Mounts to control terminal strip

Model No. DI-001 List \$

120VAC Logic Interface (4-Input). This option provides for the interface of 120VAC control logic circuits to the drive. This option is used for digital inputs S9 to S12.

Mounts to control terminal strip

Model No. DI-003 List \$



Control Options

Control Options (continued)

Digital Output Options

Digital Output (2 Channel). This option provides 2 additional digital outputs for use in monitoring the status outputs of the drive.

Signal levels:

2 channels, Form C, 250VAC, 30VDC, 1A
Mounts at option connector 3CN

Model No. DO-02C..... List \$

Digital Output (8 Channel). This option provides 8 additional digital outputs for use in monitoring the status outputs of the drive.

Signal levels:

2 channels, Form A, 250VAC, 30VDC, 1A
6 channels, PHC, 48VDC, 50mA, Shared Common
Mounts at option connector 3CN

Model No. DO-08List \$

Encoder Feedback Options

Single Encoder (PG) Feedback - Line Driver. This option provides velocity and direction feedback from an encoder. This is primarily used for motor speed feedback in closed loop flux vector control. A 5VDC buffered output is also included.

Signal levels:

5 or 12VDC differential line driver with compliments
Maximum input frequency: 300kHz
Phases A and B (Z required with some custom software)
Mounts at option connector 4CN

Model No. PG-X2 List \$

Single Encoder (PG) Feedback - Open Collector. This option provides velocity and direction feedback from an encoder. This is primarily used for motor speed feedback in closed loop flux vector control. A 24VDC buffered output (open collector) is also included.

Signal levels:

12VDC differential open collector with compliments
Maximum input frequency: 32kHz
Phases A and B (No marker pulse capability)

Mounts at option connector 4CN

Model No. PG-B2List \$

Dual Encoder (PG) Feedback - Line Driver. This option provides velocity and direction feedback from 2 encoders. This card is used for 2-motor operation with standard software and for some custom software titles. A 5VDC buffered output is also included.

Signal levels:

5 or 12VDC differential line driver with compliments
Maximum input frequency: 300kHz
Phases A and B (Z required with some custom software)

Mounts at option connector 4CN

Model No. PG-W2 List \$

Digital Operator Options

Digital Operator (LCD). This option is the standard digital operator found on the drive. This option is only needed if the original keypad is lost or damaged.

Features include:

LCD keypad display, 5 lines x 16 characters, backlit
7 languages
Copy function

Mounts to keypad port

Model No. 300-016-999 List \$

UL Rated Remote Operator Kits. This option is used to extend the existing Digital Operator to the wall of a separately priced, oversized UL Type 1, 3R, 4, 4X, or 12 enclosure (IPX6 environment). Price includes a faceplate bezel with digital operator carrier and membrane to cover the operator cutout in the enclosure door, a 3-foot cable, a 10-foot cable, and a 1:1 template for cutting the necessary cutouts in the enclosure. Keypad can be removed after kit installation.

Mounts to keypad port and enclosure wall.

Model No. UUX000458 (Blank Membrane)..... List \$

Model No. UUX000459 (Yaskawa Logo Membrane) List \$

Remote Operator Kit. This option is used to extend the existing Digital Operator to the wall of a separately priced, oversized NEMA 1 enclosure (No UL rating). Price includes a faceplate membrane to cover the operator cutout in the enclosure door, a 3-foot cable, a 10-foot cable, a remote digital operator carrier, and a 1:1 template for cutting the necessary cutouts in the enclosure.

Note: Keypad cannot be removed after initial installation.

Mounts to keypad port and enclosure wall.

Model No. UUX000444 (Yaskawa Logo Membrane) List \$



Communications Options - These communications options are provided loose, unmounted. Network communications are available for most popular protocols.

DeviceNet™ With ADR. Each DeviceNet network supports up to 63 drives. Controllers are available from many PLC and/or PC suppliers. The DeviceNet network communications option board is designed to comply with all pertinent aspects of the ODVA (Open DeviceNet Vendor Association) specification and AC drive profile. All parameters, diagnostics, and operational commands are accessible via DeviceNet. Automatic Device Replacement (ADR) is supported in this DeviceNet option, including the functions of Auto Baud Rate sensing and Faulted Node Recovery (using Group 4 messaging). The DeviceNet satellite board mounts integrally in the drive and provides a DeviceNet standard open tap connector. Electronic Data Sheets may be downloaded from www.yaskawa.com to assist with network configuration and drive setup.

Mounts at option connector 2CN.

Model No. CM012List \$

Other DeviceNet Options. For DeviceNet option kits CM056 and CM059, please follow the guidelines listed below. Please download the application note AN.AFD.14 from www.yaskawa.com, which details the exact differences between all the DeviceNet option kits.

New Installations

New installations without any requirements of backwards compatibility should use CM012 kit. The CM012 incorporates all the functionality of the CM056 and CM059 as well as ADR and many other new features.

Existing Installations

When replacing a failed card in the field or adding an additional drive to an existing network, it is generally recommended to use the existing kit (CM056 or CM059) found in the installation. This will ease in the support of the network.

Note: Each DeviceNet kit has unique EDS (electronic data sheets) files for each model of every drive series. These can be found on www.yaskawa.com. If you choose to replace an existing kit with a different kit, you must use the new EDS file as well.

Profibus DP. This option complies with the Profibus DP protocol specification. All parameters, diagnostics and operational commands are accessible via Profibus. The option board provides convenient Phoenix-type terminations for landing the shielded, twisted-pair wiring. Each Profibus network supports up to 99 drives. This option supports all of the Profibus data rates from 9.6 Kbps to 12 Mbps. Up to 32 bytes of input data and 32 bytes of output data are provided per message transaction. GSD files may be downloaded from www.yaskawa.com to assist with network configuration and drive setup.

Mounts at option connector 2CN.

Model No. CM061List \$

LonWorks. This option is compatible with the Lon Mark Interoperability Association and complies with the Functional Profile for a Variable Frequency Motor Drive. The option board features the FFT-10A Free Topology Twisted-Pair Transceiver. Network connectivity is facilitated by either a Phoenix-style screw termination or RJ-45 connector. The kit includes a 12-inch pigtail (UWR00567-1) for interface wiring of the phoenix terminal block. Optional longer pigtail assemblies are available for use when drive is mounted within another enclosure. The 20-inch cable is for wall mount enclosures. The 78-inch cable may be used with any enclosure and may be cut to any length required.

Mounts at option connector 2CN. Covers 3CN. Blocks 4CN.

Model No. CM048 List \$

Model No. UWR00567-2 (20-inch cable)..... List \$

Model No. UWR00567-3 (78-inch cable)..... List \$

Modbus Plus. This option complies with Modicon's ModConnect Partners program and provides a seamless interface to Quantum, 984 and Compact PLCs. All parameters, diagnostics and operational commands are accessible via Modbus Plus. The option board provides a 9-pin D-shell connector for easy wiring and communicates via a 1 Mbps, twisted-pair, Local Area Network. Each Modbus Plus network supports up to 63 drives.

Mounts at option connector 2CN. Covers 3CN.

Model No. CM071 List \$

Modbus TCP/IP. This option complies with the Modbus TCP/IP protocol specification. This allows for communication over 10/100 Mbps Ethernet networks. This option has the ability to configure the IP Address from a user specified IP address, from a DHCP host or from a BootP host. All parameters, diagnostics and operational commands are accessible via Modbus TCP/IP. Auto-tuning the motor is also possible through this option using the DriveWizard PC program. This option supports up to 10 simultaneous PLC/PC connections.

Mounts at option connector 2CN.

Model No. CM090 List \$

EtherNet/IP. This option complies with the EtherNet/IP protocol specification. This allows for communication over 10/100 Mbps Ethernet networks. This option has the ability to configure the IP Address from a user specified IP address, from a DHCP host or from a BootP host. All parameters, diagnostics and operational commands are accessible via EtherNet/IP. Auto-tuning the motor is also possible through this option using the DriveWizard PC program.

Mounts at option connector 2CN.

Model No. CM092 List \$

Rated Input Voltage	Drive Model Number CIMR-G7U	Rated Output Current (Amps)	Nominal HP ⁽¹⁾	Physical Dimensions (in.)			Weight (lbs.) ⁽²⁾	Standard Enclosure	Dimension Drawing Number ⁽³⁾	Heat Loss (watts) ⁽⁴⁾							
				H	W	D				Heatsink	Internal	Total					
208V/ 240V/ 230V	20P41	3.2	3/4	11.02	5.51	6.30	6.6	NEMA 1	DD.G7.FR1.N1.01	21	36	57					
	20P71	6	1							43	42	85					
	21P51	8	2							58	47	105					
	22P21	12	3	7.09	8.8	DD.G7.FR2.N1.01	83		53	136							
	23P71	18	5				122		64	186							
	25P51	27	7.5	11.81	7.87	7.87	13.2	NEMA 1	DD.G7.FR3A.N1.01	187	87	274					
	27P51	34	10							263	112	375					
	20111	49	15	13.78	9.45	8.27	24.2		NEMA 1	DD.G7.FR4A.N1.01	357	136	493				
	20151	66	20	14.96	10.00	10.24	52.8				DD.G7.FR4C.N1.01	473	174	647			
	20181	80	25 & 30	21.06						DD.G7.FR5.N1.01	599	241	840				
	20221	96	30	24.21				10.98	10.24	59	DD.G7.FR6A.N1.01	679	257	936			
	Protected Chassis	20300	130	40 & 50	23.62	14.76	11.81	125	DD.G7.FR7.IP00.01	878	362	1240					
		20370	160	60						12.99	139	DD.G7.FR8.IP00.01	1080	434	1514		
		20450	183	60	28.54	17.72	13.78	189	Protected Chassis	DD.G7.FR10.IP00.01	1291	510	1801				
		20550	224	75							191	DD.G7.FR11.IP00.01	1474	607	2081		
2075		300	100	33.46	19.69	14.17	238	DD.G7.FR11.IP00.01		2009	823	2832					
20900		358	125	34.84	22.64	14.96	330	DD.G7.FR12.IP00.01		1660	871	2531					
21100		415	150							2389	1194	3583					
480V		40P41	1.8	3/4	11.02	5.51	6.30	7.7	NEMA 1	DD.G7.FR1.N1.01	10	39	49				
		40P71	3.4	1 & 2							21	44	65				
	41P51	4.8	3	7.09							9.9	DD.G7.FR2.N1.01	33	46	79		
	42P21	6.2	3		41	49	90										
	43P71	9	5	11.81	7.87	7.87	15.4	NEMA 1		DD.G7.FR2.N1.01	77	63	140				
	44P01	11	7.5						100		66	166					
	45P51	15	10						13.78	9.45	8.27	22	NEMA 1	DD.G7.FR3A.N1.01	132	80	212
	47P51	21	15												197	107	304
	40111	27	20											21.06	10.98	10.24	64
	40151	34	25	311	135	446											
	40181	42	30	25.00	12.95	11.22	86	NEMA 1	DD.G7.FR6B.N1.01	354	174	528					
	40221	52	40							516	210	726					
	40301	65	50						DD.G7.FR9A.N1.01	633	246	879					
	40371	80	60	737	285	1022											
	40451	97	75	28.15	12.95	11.22	88		DD.G7.FR9B.N1.01	929	340	1269					
	Protected Chassis	40550	128	100	33.46	19.69	14.17	240	NEMA 1	DD.G7.FR10.IP00.01	1239	488	1727				
		40750	165	125							1554	597	2151				
		40900	195	150	36.06	22.64	14.96	363		Protected Chassis	DD.G7.FR11.IP00.01	1928	762	2690			
		41100	240	200								2299	928	3227			
		41320	270	200							51.38	27.95	16.34	579	DD.G7.FR13.IP00.01	2612	1105
		41600	302	250	3614	1501	5115										
41850		370	300	27.95	16.34	579	616	Protected Chassis	DD.G7.FR14.IP00.01		4436	1995	6431				
42200		450	350							5329	2205	7534					
43000		605	400 & 500						58.07	36.06	16.34	906	DD.G7.FR15.IP00.01	6749	2941	9690	

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) This data represents the drive weight only, not shipping weight.

(3) Please refer to Yaskawa's website at www.yaskawa.com for dimension drawings.

(4) Total Heat Loss is the amount of heat dissipated by the drive at full load. This data is separated into "Heatsink" and "Internal" values. The value in the "Heatsink" column is the amount of heat dissipated by the heatsink, and would not need to be considered when calculating the enclosure size for applications that may require mounting the heatsink out the back of the enclosure using the Ring Kit option.

Description

3/4-500HP

G7/Configured

G7C



The G7/Configured package provides a G7 drive in a NEMA 12, UL Type 1, IP22 or 54 enclosure, with space for several commonly used options, such as reactors, RFI filters, circuit breakers, etc. The G7/Configured has been designed for flexibility in providing the features and options commonly demanded by industrial control designers.

The G7 drive is the ultimate performance solution with increased speed and torque response to provide servo-like performance from an induction motor in speed, torque, or position control applications. In addition, the G7 has the world's first 480V 3-level inverter architecture that eliminates or minimizes the installation problems associated with IGBT switching and protects the entire motor-drive system. This patented design can eliminate peripheral components typically required to solve installation problems. This G7 allows motor operation at very long cable lengths, meeting NEMA MG1 Part 31, with peak voltage being 30% less than conventional drives. With motor bearing current being typically 50% less than standard drives, the G7 provides four times the motor bearing life. Audible motor noise on the 480V G7 drive is 5-10dB (20%) less than the prior generation drive, even when operating at half the carrier frequency. Common mode current is half that of conventional drives.

Performance Features

- Ratings: 1/2 to 150HP, 208 VAC
1/2 to 150HP, 240 VAC
3/4 to 500HP, 480 VAC
- Overload capacity: heavy duty, 150% for 1 min, 200% Peak
- Starting torque: 150% at 1Hz (V/f), at 0.5 Hz (open loop), at 0.3 Hz (closed loop)
- Output frequency: 0.01 to 400Hz
- Speed control range: 40:1 (V/f), 200:1 (open loop), 1000:1 (closed loop)
- Speed regulation: 1% (V/f), 0.2% (open loop), 0.01% (closed loop)
- Speed response: 60Hz
- Torque response: 300Hz
- Speed reference resolution: 0.01% with digital reference, 0.1% with analog reference, 0.01 Hz with network input
- Speed/Torque/Position Control
- Zero-servo mode
- Adjustable accel/decel: 0.01 to 6000 seconds
- S-Curve: adjustable 0.00 to 2.50 seconds, for each corner
- Stall prevention
- Inertia and Power loss ride-thru
- Programmable auto restart after momentary power loss

Protective Features

- DC bus CHARGE indicator
- Optically-Isolated controls
- Phase-to-phase / phase-to-neutral short circuit protection
- Ground fault protection
- Electronic motor overload (UL508C)
- Current and torque limit (four quadrant)
- Over-torque / under-torque detection
- Over-current, over-voltage, and overtemperature
- Motor thermistor input
- Input/output phase loss

Design Features

- LCD keypad display: 5 lines x 16 characters, backlit, 7 languages, copy function
- Simplified programming: Quick Start and modified parameter groups
- Microprocessor logic: 32 bit
- Memory type: Flash memory for easy upgrades, custom software applications, and non-volatile program retention
- Control logic: 24VDC (sinking or sourcing)
- Terminal strip: Quick disconnect
- Front cover: Split for easy wiring
- Heat sink fan: Plug-in with on/off control
- Motor auto-tuning: Static and rotational
- Speed search: Bi-directional into rotating motor
- Process control: PID, reference with PID trim
- Motor parameters: 2 sets
- Stopping methods: Ramp stop, coast stop, fast stop, or high slip braking
- DC injection braking: Adjustable level, time
- Speed reference presets: 17 available
- Timer function: Programmable on/off delay
- Digital M.O.P.: Up/down/hold/reset reference
- Bias and gain: All analog and pulse train I/O
- Common DC bus capability: All models
- Dynamic braking transistor: 20 HP and below (240VAC), 25 HP and below (460VAC)
- Bus Reactor: 25 HP and above (240VAC), 30HP and above (460VAC)
- Twelve-pulse capability: 25 HP and above (240VAC), 30HP and above (460VAC)

Service Conditions

- Enclosure: NEMA 1 or protected chassis
- Ambient service temperatures: -10 to 40°C (104°F) NEMA1, -10 to 45°C (113°F) protected chassis
- Input frequency: 50/60Hz ± 5%
- Input voltage: +10% / -15%, 3 phase, 240 or 480VAC, phase insensitive
- Humidity: non-condensing 95% max
- Altitude: to 3300 feet (1000 meters) w/o derate
- Vibration: 1G or less (10 to 20Hz), 0.6G or less (20 to 55Hz)

Inputs and Outputs

- Analog inputs: 3 (2 programmable), ±10VDC (20K ohms) or 4 to 20 mA (250 ohm), 11 bit plus sign
- Analog outputs: 2 programmable, ±10VDC or 4- to 20mA, 9 bit plus sign
- Digital inputs: 12 (10 programmable), sinking or sourcing
- Digital outputs: 5 programmable, 3 form A and two open collector
- Pulse train input: 1 programmable, 32 KHz max
- Pulse train output: 1 programmable, 32 KHz max
- Fault contacts: 1 form C
- RS-232/422/485: Modbus RTU

Standards & Reliability

- UL 508C (Power Conversion)
- CSA 22.2 No. 14-95 (Industrial Control Equipment)
- UL, cUL listed; CE marked
- UL 1995 (Plenum)
- EN 50178 (LVD)
- EN 61800-3 (w/ External Filter)
- IEC 529, 146
- FCC CFR 47 Part 15 Subpart B (w/ External Filter)

Configured Options

- Encoder feedback cards
- Input/Output expansion cards
- DriveWizard™ software (upload / download)
- Network cards such as Ethernet, DeviceNet, Profibus-DP, and others
- Custom drive software
- Input breaker
- Input disconnect
- Input fuses
- 120 VAC logic interface
- Analog input trim pot
- Input reactor
- Input filter
- Bus Reactor (25HP and below)
- Dynamic braking



Description

3/4-500HP
G7/Configured

Model Number Configuration & Pricing:

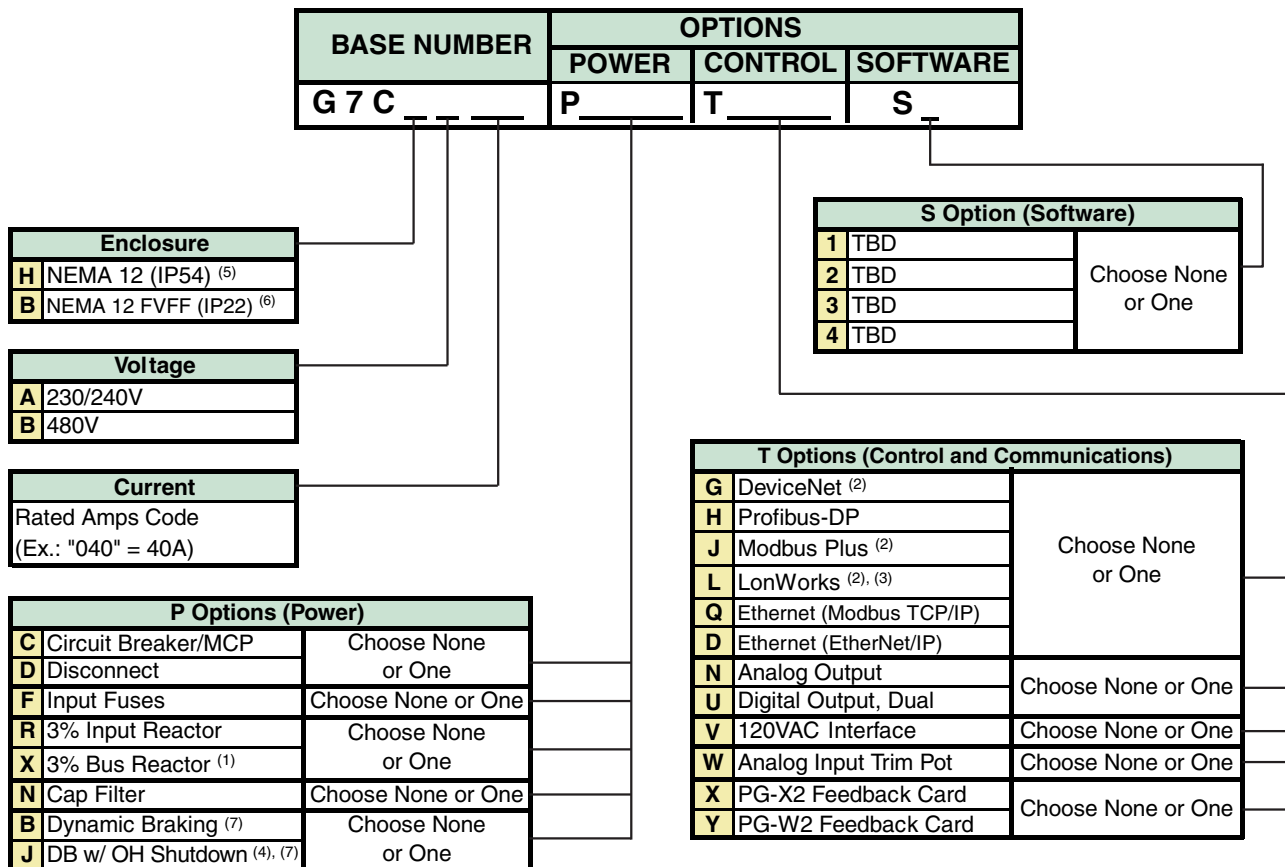
Step 1. Step 1. First complete the Base Number for the required enclosure type, voltage and current rating.

Step 2. Step 2. Add the Option code letter for each required option. Any Power option must be preceded by (P); any Control Option by (T), and Software Option by (S). No more than seven options may be selected. The letters P, T or S must be deleted if no options of that type are selected.

Step 3. Step 3. Find the list price for the Base Number selected from the following pages. Add the list price of each selected option to this base price.

Example: G7 Configured package (**G7CB**) with a 30HP, 480V, (**B040**), with Circuit Breaker and 3% Bus reactor (**P** followed by **CX**), Profibus-DP network communication capability (**T** followed by **H**) and no software option (delete the **S**). Model number is:

G7CBB040PCXTH



- (1) 3% Bus Reactors are only available as an option on base numbers up to and including G7C_A068 and B034; larger drives have a Bus Reactor as standard
- (2) When this option is selected, port 3CN "Control Output" options **N** and **U** cannot be used
- (3) When this option is selected, port 4CN "Feedback" options **X** and **Y** cannot be used
- (4) When this option is selected, Power options **C** and **D** are not available
- (5) Enclosure type "H" is available 20HP (230V), 25HP (480V) and smaller.
- (6) Enclosure type "B" is available 25HP (230V), 30HP (480V) and larger.
- (7) Resistors for Dynamic Braking are NOT included, NOT factory-mounted. Price from DB section.

Configured Option Descriptions:

Enclosure Options

- (H) **NEMA 12:** The drive and configured controls are provided in a NEMA 12 (IP54, UL Type 1) enclosure, large enough to accommodate any or all of the Configured package options.
- (B) **NEMA 12 FVFF:** The drive and configured controls are provided in a NEMA 12 (IP22, UL Type 1) force-ventilated fan-filtered enclosure, large enough to accommodate any or all of the configured package options.

P Options (Power)

- (C) **Circuit Breaker:** The standard configuration provides no branch short circuit protection or input disconnecting means. This option provides a thermal-magnetic circuit breaker that meets NEC branch circuit protection requirements, with a flange-mounted operating handle.
- (D) **Disconnect:** The standard configuration provides no input disconnecting means. This option provides a non-fused disconnect with a flange-mounted operating handle.
- (F) **Input Fuses:** The standard configuration does not include Drive Input Fuses. This option provides high-speed semi-conductor drive input fuses, rated for 200,000 amp RMS symmetrical interrupting capacity, that provides both drive input I2T protection and NEC approved branch circuit and short circuit protection.
- (R) **Input Reactor:** No form of input impedance is normally required for the Configured Drive. A 3% line reactor is available if additional impedance is desired (usually to reduce the effects of line-side transients and input THD).
- (X) **DC Bus Reactor:** No form of bus impedance is normally required for the Configured Drive. A 3% bus reactor is available if additional impedance is desired (usually to reduce the effects of line-side transients and input THD).
- (N) **Input Filter:** The standard configuration does not include a filter. The cap filter is a delta-wye capacitive network.
- (B) **Dynamic Braking:** This option is used to enhance the drive's ability to brake/stop the motor. The braking transistor module is included in the Configured package, and is sized for standard duty (10-15%). This option does NOT include DB resistors or any other DB resistor overtemp protection. See Dynamic Braking Section to select DB resistor.
- (J) **Dynamic Braking with Overtemp Shutdown:** This option is used to enhance the drive's ability to brake/stop the motor. The braking transistor module is included in the Configured package along with a shunt trip MCP and power circuitry to disconnect the input power from the drive, should the DB resistor overtemperature switch activate. The braking transistor is sized for standard duty (10-15%). This option does NOT include DB resistors, and cannot be ordered with Power Options (C) or (D). See Dynamic Braking Section to select DB resistor.

T Options (Control and Communications)

- (G) **DeviceNet:** This option complies with the ODVA (Open DeviceNet Vendor Association) specification and AC drive profile. All parameter, diagnostics, and operational commands are accessible via DeviceNet. The option board provides a DeviceNet standard open tap connector. Each DeviceNet network supports up to 63 drives. Controllers are available from many PLC and/or PC suppliers. Electronic Data Sheets may be downloaded from www.yaskawa.com to assist with network configuration and drive setup. (CM057)
- (H) **Profibus-DP:** This option complies with the Profibus DP protocol specification. All parameters, diagnostics and operational commands are accessible via Profibus. The option board provides convenient Phoenix-type terminations for landing the shielded, twisted-pair wiring. Each Profibus network supports up to 99 drives. This option supports all of the Profibus data rates from 9.6 Kbps to 12 Mbps. Up to 32 bytes of input data and 32 bytes of output data are provided per message transaction. GSD files may be downloaded from www.yaskawa.com to assist with network configuration and drive setup. (CM061)

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Configured Option Descriptions (continued):

T Options (Control and Communications) (continued)

- (J) Modbus Plus:** This option complies with Modicon's ModConnect Partners program and provides a seamless interface to Quantum, 984 and Compact PLCs. All parameters, diagnostics and operational commands are accessible via Modbus Plus. The option board provides a 9-pin D-shell connector for easy wiring and communicates via a 1 Mbps, twisted-pair, Local Area Network. Each Modbus Plus network supports up to 63 drives. (CM071)
- (L) LonWorks:** This option is compatible with the Lon Mark Interoperability Association and complies with the Functional Profile for a Variable Frequency Motor Drive. The option board features the FFT-10A Free Topology Twisted-Pair Transceiver. Network connectivity is facilitated by either a Phoenix-style screw termination or RJ-45 connector. (CM048)
- (Q) Modbus TCP/IP:** This option complies with the Modbus TCP/IP protocol specification. This allows for communication over 10/100 Mbps Ethernet networks. This option has the ability to configure the IP Address from a user specified IP address, from a DHCP host, or from a BootP host. All parameters, diagnostics and operational commands are accessible via Modbus TCP/IP. Auto-tuning the motor is also possible through this option using the DriveWizard PC program. This option supports up to 10 simultaneous PLC/PC connections. (CM090)
- (D) EtherNet/IP:** This option complies with the EtherNet/IP protocol specification. This allows for communication over 10/100 Mbps Ethernet networks. This option has the ability to configure the IP Address from a user specified IP address, from a DHCP host, or from a BootP host. All parameters, diagnostics and operational commands are accessible via EtherNet/IP. Auto-tuning the motor is also possible through this option using the DriveWizard PC program. (CM092)
- (N) Analog Output, Bi-polar, 12 Bit:** This option provides 2 signals for remote metering of any two of the drive's "U1" monitors. These are in addition to the two standard analog outputs.
Signal levels (individually selectable): $\pm 10\text{VDC}$ (20kOhm), 11 bit + sign (AO-12)
- (R) Analog Output, Isolated, Bi-polar, 12 Bit:** This option provides 2 isolated signals for remote metering of any two of the drive's "U1" parameters. These are in addition to the two standard analog outputs.
Signal levels (individually selectable): 0 to $\pm 10\text{VDC}$ (20kOhm), 0/4 to 20mADC (500Ohm max), 11 bit + sign (AO-001)
- (U) Digital Output, Dual Relay:** This option provides 2 additional digital outputs for use in monitoring the status outputs of the drive. These are in addition to the 5 standard digital outputs.
Signal levels: 2 channels, Form C, 250VAC, 30VDC, 1A (DO-02C)
- (V) 120VAC Input:** This option provides for the interface of 120VAC control logic circuits to the drive. This option is used for digital inputs S1 to S12 and is comprised of 2 option cards. (DI-001 & DI-003)
- (W) Analog Input Trim Pot:** This option provides a 5kOhm potentiometer for use as a dropping resistor for maximum or minimum analog input trim. This voltage in turn can be used to supply a remote speed pot. (AI-001)
- (X) Single Encoder Feedback:** This option provides velocity and direction feedback from an encoder. This is primarily used for motor speed feedback in closed loop flux vector control. A 5VDC buffered output is also included. Signal levels: 5 or 12VDC differential line driver with compliments, maximum input frequency of 300kHz, phases A and B (Z required with some custom software). (PG-X2)
- (Y) Dual Encoder Feedback:** This option provides velocity and direction feedback from 2 encoders. This card is used for 2-motor operation with standard software and for some custom software titles. A 5VDC buffered output is also included. Signal levels: 5 or 12VDC differential line driver with compliments, maximum input frequency of 300kHz, phases A and B (Z required with some custom software). (PG-W2)

S Options (Software)

None at this time.



Configured Drives and Options

G7 Configured Drives - 3/4-500HP, 208-230/240 or 480V, 3-phase input, NEMA 12 enclosure, with factory-installed and wired options

Rated Input Voltage	Rated Output Current (Amps) ⁽⁴⁾	Base Number				P Options (Power)											
		Nominal HP ⁽¹⁾	Configured Enclosure		Circuit Breaker		Input Fuses	Line Impedance		Input Filter	Dynamic Braking ⁽⁵⁾						
			V=NEMA 12, IP54 B=NEMA 12 FVFF, IP22		C=MCP	D=Disconnect	F=Fuses	R=3% Input Reactor X=3% Bus Reactor		N=Cap Filter	B=Standard Duty J=Standard Duty w/ Overtemp Shutdown						
			G7CV	Base List \$	G7CB	Base List \$	C List \$	D List \$	F List \$	R List \$	X List \$	N List \$	B List \$	J List \$			
240V	3.2	3/4	A003		---												
	4.2	1	A004		---												
	6.8	2	A006		---												
	9.6	3	A009		---												
	15.2	5	A015		---												
	22	7.5	A022		---												
	28	10	A028		---												
	42	15	A042		---												
	54	20	A054		---												
	68	25	---		A068												
80	30	---		A080													
104	40	---		A104													
130	50	---		A130													
230V	154	60	---		A154												
	192	75	---		A192												
	248	100	---		A248												
	312	125	---		A312												
	360	150	---		A360												
480V	1.6	3/4	B001		---												
	2.1	1	B002		---												
	3.4	2	B003		---												
	4.8	3	B004		---												
	7.6	5	B007		---												
	11	7.5	B011		---												
	14	10	B014		---												
	21	15	B021		---												
	27	20	B027		---												
	34	25	B034		---												
	40	30	---		B040												
	52	40	---		B052												
	65	50	---		B065												
	77	60	---		B077												
	96	75	---		B096												
	124	100	---		B124												
	156	125	---		B156												
	180	150	---		B180												
	240	200	---		B240												
302	250	---		B302													
361	300	---		B361													
414	350	---		B414													
477	400	---		B477													
515	450	---		B515													
590	500	---		B590													

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) This is the maximum rated output for the configured drive package, not the drive's output current rating.

(3) Resistors for Dynamic Braking are NOT included, NOT factory-mounted. Price from DB section.



G7 Configured (Continued)

Rated Input Voltage	Rated Output Current (Amps) ⁽⁴⁾	Nominal HP ⁽¹⁾	T Options (Control and Communication)													S Options		Uses Drive Model Number CIMR-G7U	
			Network Communication						Control Outputs			Term. 1	Term. 2	Encoder Feedback	Software				
			G=DeviceNet H=Profibus-DP J=Modbus Plus (2) L=LonWorks (2) (3) Q=Modbus TCP/IP D=EtherNet/IP						N=Analog Output R=Analog Output, Isolated U=Digital Output			V=120 VAC Interface	W=Trim Pot	X=PG-X2 Y=PG-W2		None available at this time			
			G List \$	H List \$	J List \$	L List \$	Q List \$	D List \$	N List \$	R List \$	U List \$	V List \$	W List \$	X List \$	Y List \$	List \$	List \$		
240V	3.2	3/4																	20P41
	4.2	1																	20P71
	6.8	2																	21P51
	9.6	3																	22P21
	15.2	5																	23P71
	22	7.5																	25P51
	28	10																	27P51
	42	15																	20111
	54	20																	20151
	68	25																	20181
230V	80	30																	20181
	104	40																	20300
	130	50																	20300
	154	60																	20370
	192	75																	20550
	248	100																	20750
480V	312	125																	20900
	360	150																	21100
	1.6	3/4																	40P41
	2.1	1																	40P71
	3.4	2																	40P71
	4.8	3																	41P51
	7.6	5																	43P71
	11	7.5																	44P01
	14	10																	45P51
	21	15																	47P51
	27	20																	40111
	34	25																	40151
	40	30																	40181
	52	40																	40221
	65	50																	40301
	77	60																	40371
	96	75																	40451
	124	100																	40550
156	125																	40750	
180	150																	40900	
240	200																	41100	
302	250																	41600	
361	300																	41850	
414	350																	42200	
477	400																	43000	
515	450																	43000	
590	500																	43000	

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) When this option is selected, port 3CN "Control Output" options (N, U) cannot be used
- (3) When this option is selected, port 4CN "Encoder Feedback" options (X, Y) cannot be used
- (4) This is the maximum rated output for the configured drive package, not the drive's output current rating.



Heatsink Filter Kit Options

Heatsink Filter Kit Option (only for Configured product) - The filter kit is mounted to the back of the enclosure, providing additional protection to the exposed drive heatsink and fan assemblies. It has been designed for extremely dirty or dusty environments in which cooling fans and heatsink fins could easily become clogged. The kit contains a duct and a pair of filters, which can be removed and cleaned, increasing fan life and cooling efficiency.

Rated Input Voltage	Configured Package Model Number G7CH	Heatsink Filter Kit		Replacement Filter	
		Model Number	List Price \$	Model Number	List Price \$
208-230V/240V	A003 thru A015	UFL00003-1		UFL00002-1	
	A022, A028	UFL00003-2		UFL00002-2	
	A042, A054	UFL00003-3		UFL00002-3	
480V	B001 thru B011	UFL00003-1		UFL00002-1	
	B014, B021	UFL00003-2		UFL00002-2	
	B027, B034	UFL00003-3		UFL00002-3	



Rated Input Voltage	Configured G7CH or G7CB	Rated Output Current (Amps) ⁽²⁾	Nominal HP ⁽¹⁾	Physical Dimensions (in.)			Weight (lbs.) ⁽³⁾	Configured Enclosure	Dimension Drawing Number ⁽⁴⁾
				H	W	D			
240V	A003	3.2	3/4	28.50	17.50	11.75	87	NEMA 12	DD.AFD.129.01
	A004	4.2	1				87		
	A006	6.8	2				90		
	A009	9.6	3				92		
	A015	15.2	5				102		
	A022	22	7.5	34.50	20.00	15.00	128	NEMA 12	DD.AFD.130.01
	A028	28	10				138		
	A042	42	15	39.50	25.00	15.50	192	NEMA 12	DD.AFD.131.01
	A054	54	20				225		
	A068	68	25	52.00	29.00	19.75	301	NEMA 12 FVFF	DD.AFD.132.01
A080	80	30	346						
A104	104	40	84.00	38.00	27.00	804	DD.AFD.095.01		
230V	A130	130	50	84.00	37.75	27.00	804	NEMA 12 FVFF	DD.AFD.095.01
	A154	154	60				820		
	A192	192	75				880		
	A248	248	100				880		
	A312	312	125	84.00	73.25	27.00	1340	NEMA 12 FVFF	DD.AFD.096.01
A360	360	150				1450			
480V	B001	1.6	3/4	28.50	17.50	11.75	87	NEMA 12	DD.AFD.129.01
	B002	2.1	1				87		
	B003	3.4	2				88		
	B004	4.8	3				96		
	B007	7.6	5				93		
	B011	11	7.5				101		
	B014	14	10	34.50	20.00	15.00	134	NEMA 12	DD.AFD.130.01
	B021	21	15				138		
	B027	27	20	39.50	25.00	15.50	178	NEMA 12	DD.AFD.131.01
	B034	34	25				196		
	B040	40	30	52.00	29.00	19.75	295	NEMA 12 FVFF	DD.AFD.132.01
	B052	52	40				295		
	B065	65	50				366		
	B077	77	60				370		
	B096	96	75				387		
	B124	124	100	84.00	37.75	27.00	890	NEMA 12 FVFF	DD.AFD.095.01
	B156	156	125				890		
	B180	180	150				890		
B240	240	200	925						
B302	302	250				1075			
B361	361	300	84.00	73.25	27.00	1740	NEMA 12 FVFF	DD.AFD.096.01	
B414	414	350				1800			
B477	477	400				1800			
B515	515	450				2125			
B590	590	500				2125			

- (1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors
- (2) This is the maximum rated output for the configured drive package, not the drive's output current rating.
- (3) Data represents the total approx. weight of the drive with all possible standard options, not shipping weight.
- (4) Please refer to Yaskawa's website at www.yaskawa.com for dimension drawings.

Software, Drawings, Manuals

Software

DriveWizard Software Kit. This software package allows uploading and downloading of parameters via a PC for data storage and for programming of a drive. The software includes graphing and monitoring tools. It is a Windows-based program designed to make startup, commissioning, and troubleshooting of Yaskawa drives as simple as possible. Refer to our website at www.yaskawa.com for more information, including minimum system requirements. This kit includes the DriveWizard program on CD and a PC interface cable.

Model No. DWST616-C2\$

DriveWizard Software. Software CD only. The software can also be downloaded for free on our website www.yaskawa.com.

Model No. CD.DW.01 \$

PC Interface Cable. This 6 foot cable interconnects the drive keypad port to the 9-pin communications port on a PC. This cable is used in conjunction with DriveWizard software.

Model No. UWR00468-2\$

Drawings

Approval/Special Drawings. Pricing for drives and options is based on standard documentation, which consists of one Technical Manual, standard Instruction Sheets, Wiring Diagrams and Outline Drawings. When approval or special drawings must be prepared and submitted to the customer, a Drawing Price Addition must be made for each different drive being offered. Material procurement and manufacture will not commence until written drawing approval is received by the factory.

Manuals/CDs

Technical Manuals. One manual and CD-ROM is included with each drive at no charge when shipped from the factory.

Additional copies of Manual or CD-ROM:

Part No. TM.G7.01 \$

Part No. CD.AFD7.01 \$

In today's world of global competition, it is impossible for a company to survive without “state-of-the-art” technically trained associates and customers. Yaskawa Technical Training Services (TTS) is comprised of engineers who are specialists in their field.

Yaskawa Electric America has three training facilities in the United States. The primary training facility is in Yaskawa Electric America's North American Headquarters in Waukegan, Illinois (45 miles north of Chicago, 50 miles south of Milwaukee). This facility has six training rooms; two lecture halls, two training rooms and two training labs.

Besides the possibility of attending training classes in Waukegan and Los Angeles, Yaskawa Electric America can also bring training to the customer. On-site classes are available in two varieties. The first is to duplicate the official training classes at the customer's location. Full functioning demo units, data projector, computer and documentation can be shipped to recreate the official class on-site. The second variety is road show training. Road show training is a one-day training class that is specifically tailored to the students' needs and questions. Only basic demos are used and the topics covered in class are generated by the students in attendance.

The Yaskawa Virtual Training Room is another training option. All you need is an Internet connection and a telephone. This is a live, interactive training class, which gives you the ability to talk to the instructor as well as other students. The Internet connection allows us to show slides and demonstrate software packages. The telephone is for the audio portion of the training class. Web classes can be found on the Yaskawa formal training schedule and can also be done on-demand, per the time and preference of the customer.

Training Classes Available

G7 Sales/Web Class

Short, information packed class designed to present ample specific product information in a short amount of time, typically 1-3 hours. Can be done live or over the web.

To enroll, contact Technical Training Services.

Phone: 1-800-Yaskawa (1-800-927-5292) and (then dial 2 for “Drives” and 4 for “Training”)

Fax: 847-785-2724

E-mail: training@yaskawa.com

Check out the latest class schedule and cut sheets at www.yaskawa.com

Terms and Conditions

YASKAWA ELECTRIC AMERICA, INC. - STANDARD TERMS AND CONDITIONS OF SALE

1. GENERAL:

- (a) Any sale of products or services by Yaskawa Electric America, Inc. ("YEA") is governed exclusively by these Standard Terms and Conditions of Sale ("Standard Terms") and shall supersede any inconsistent or additional terms on Buyer's purchase order or any other document. These Standard Terms constitute the final, complete and exclusive agreement between YEA and the Buyer as to the subject matter hereof. YEA hereby objects to any inconsistent or additional terms. This Agreement may be amended only in writing signed by an authorized representative of YEA.
- (b) Any order placed with YEA must be in the form of a written purchase order or letter from Buyer ("Order") and shall set forth all information necessary for YEA to fill the Order, if accepted. All proposals, quotations or similar communications from YEA will be considered invitations to Buyer to submit an Order. A binding sales contract will result only when YEA accepts Buyer's Order, at YEA's office in Waukegan, Illinois or such other place as designated by YEA. YEA reserves the right to bill any Order at a minimum of \$100, plus any additional charges provided for herein.
- (c) All products shall be packaged for domestic shipment in accordance with YEA's standard specifications. If special packaging is required, it must be clearly requested on Buyer's Order. The price for any special packaging shall be billed to Buyer.

2. WARRANTY:

- (a) YEA warrants that each new and unused product sold by YEA shall be free of defects in material workmanship for a period of one (1) year from the date the product is first used by Buyer, or 18 months from the date of shipment, whichever occurs first. YEA warrants that its services shall be free of defects in workmanship for a period of ninety (90) days from the date they are first provided. Within the applicable warranty period, YEA will, at its sole discretion, either repair, replace or return the purchase price paid to YEA for any product, part or service found by YEA to be defective; provided that the subject product is used under normal conditions for which it was designed and installed, operated and maintained in accordance with YEA's instructions and (subject always to such instructions) in accordance with generally accepted industrial practices.
- (b) YEA's warranty obligation shall be conditioned upon receipt by YEA of written notice of any alleged defects within sixty (60) days after discovery. YEA will not be responsible or accept invoices for unauthorized repairs to any products, even if defective. YEA shall not be responsible for any products which have been altered, abused, misused, or improperly installed or repaired, or for any loss, damage, defect, claim or non-performance resulting from or attributable to Buyer's specifications.
- (c) Where Buyer requests that YEA supply non-stock products or component parts manufactured by a third-party, YEA will, to the extent permitted, pass through to Buyer any warranty of the manufacturer. As to such items, Buyer's sole remedy for breach of warranty shall be the remedy offered by and available from the manufacturer. YEA shall have no liability, whether in contract, tort or otherwise, for such products.
- (d) YEA does not guarantee production rates or the quality of goods made using YEA's products or services, nor shall any longer warranty periods apply, except as agreed in writing signed by an authorized YEA representative.
- (e) YEA's WARRANTY HEREIN IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES OF YEA AND ALL PARENT OR AFFILIATED COMPANIES OF YEA. ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE OR USE, ARE HEREBY EXCLUDED.
- (f) UNDER NO CIRCUMSTANCES SHALL YEA, OR ANY PARENT OR AFFILIATED COMPANY OF YEA, BE LIABLE TO BUYER OR ANY ENTITY FOR ANY SPECIAL, INDIRECT OR

CA.G7.01, 6/1/08

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Yaskawa Electric America

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3. DRAWINGS/MEASUREMENTS:

All drawings, tables, graphs and the like submitted by YEA or contained in YEA's publications shall be regarded as approximations only. Weights, measurements, capacities and all other particulars of products or services offered by YEA are approximations only. YEA is not responsible for such approximations, including, in particular, based on data supplied by Buyer.

4. INFRINGEMENT:

YEA's liability for infringement (and the liability of any parent or affiliated company of YEA) is limited to YEA's defense of any suit or proceeding brought against Buyer based on a claim that products sold hereunder, when employed in the manner intended by YEA, constitutes an infringement of any patent of the United States. If Buyer's use of the products in the manner intended by YEA is finally enjoined in such action, YEA shall, at its option, procure for Buyer the right to continue using the products, replace the same with non-infringing products, modify the products so that they become non-infringing equivalent products, or refund the purchase price (less allowance for use, damage or obsolescence). YEA makes no warranty against patent infringement resulting from portions of the products made to Buyer's specifications or the use of products in combination with any other products or in the practice of any process, and if a claim, suit or action is brought against YEA or any parent or affiliate of YEA, Buyer shall defend, indemnify and save YEA (and its parent/affiliates) harmless from and against any and all claims, losses or damages arising therefrom.

5. SHIPMENT, FORCE MAJEURE, PRICES AND ERROR:

- (a) Shipment/delivery dates are approximations only. YEA shall not be liable to pay any penalty or damages, including consequential damages, for any delay in shipment.
- (b) In no event shall YEA be liable for any damages, including consequential damages, caused by delays or non-performance resulting from or related to force majeure or other causes beyond YEA's reasonable control, including, but not limited to, war, blockade, civil disturbances, strikes and lockouts, labor shortages, fire and other casualties, acts of nature, accidents and governmental acts (including regulations concerning export and import licensing and currency exchange). In case of non-delivery, YEA's obligation shall be limited to the refund of any advance payment received from Buyer.
- (c) All claims for loss of or damage to products, whether concealed or obvious, must be made, in writing, to the carrier and to YEA by Buyer as soon as possible after receipt of shipment, and in no case beyond 30 days of shipment, or such claims shall be deemed waived. YEA will render reasonable assistance in providing information necessary for Buyer to process such damage claims with the carrier or any insurance company.

Terms and Conditions

(d) YEA's quoted prices are firm for thirty (30) days from the date of YEA's written proposal. Thereafter, the applicable prices are those in effect at the time Buyer's Order is placed with YEA. YEA will notify Buyer of any price changes for incorporation into a revised Order prior to acceptance by YEA. Pricing based on volume discounts is subject to adjustment by YEA if actual shipping volumes do not meet minimum volume requirements of agreement. Clerical errors in any element of a proposal, purchase order, invoice or contract are subject to correction by YEA.

(e) (1) Buyer agrees to accept delivery within fifteen (15) days following the anticipated date of delivery. If Buyer refuses to take delivery within the fifteen (15) day period, YEA reserves the right to charge Buyer for storage charges plus interest.

(f) (2) All shipments are F.O.B. YEA's (or its suppliers') manufacturing plant or warehouse. YEA will, at Buyer's expense, arrange for the transportation of the products from the manufacturing plant or warehouse designated by YEA. Buyer is responsible to timely procure all necessary export and import licenses and all permits required for the consummation of the transaction.

6. TERMS OF PAYMENT:

(a) All payments are due within thirty (30) days of YEA's invoice. YEA reserves the right to require payment in advance, or satisfactory security, for any shipment or sale. YEA may cancel any shipment or Order for any Buyer which has failed to make payment or comply with any other provision of these Standard Terms. YEA reserves the right to seek any other remedy available at law or equity. Payment shall be made at the agreed time, to the place specified, and in the currency indicated on YEA's invoice. Buyer's failure to pay at the agreed time and place constitutes a waiver of Buyer's right to demand YEA's performance under the contract.

(b) When an account becomes past due according to its payment terms, Buyer shall pay interest on the balance due, at the greater of 1.50% per month (18% per annum) or the maximum permitted by law, until paid in full.

(c) If delivery and/or payment in installments are accepted by YEA, Buyer's failure to pay any installment when due shall give YEA the right to suspend work or delivery until such payment is made. In the event that any such default by Buyer continues for more than fifteen (15) days, YEA may then cancel the contract by written notice to Buyer. Upon cancellation of an installment contract, all items already delivered to and paid for in full by Buyer will be transferred to Buyer "AS IS, WHERE IS," without any warranty.

(d) All duties, tariffs, fees, costs and other charges connected with shipment, insurance, exportation and importation of the products are the responsibility of Buyer, and, if paid by YEA, such expenses may be recovered by YEA from Buyer, and Buyer shall indemnify YEA against claims for the same. Buyer is responsible for all taxes applicable or related to this transaction, including all sales, use and excise taxes.

7. RISK OF LOSS:

Risk of loss and/or damage to the products shall pass to Buyer upon delivery thereof to Buyer or its representative, or to a carrier for shipment to Buyer or its designated customer, as the case may be, at the manufacturing plant or warehouse of YEA or its supplier. Buyer is responsible to obtain insurance coverage on all shipments of products supplied by YEA.

8. RETURNS/CANCELLATION CHARGES:

Buyer shall not return any product to YEA without the written consent of, and upon terms agreed to, by YEA. If Buyer refuses to accept delivery, or improperly revokes acceptance of product, Buyer shall be responsible for YEA's cancellation charges and expenses.

Before returning products, a Return Merchandise Authorization ("R.M.A.") number must be obtained from YEA. Products returned without an R.M.A. number clearly marked on the outside of the shipping carton will be refused. Except for approved warranty returns, YEA will only accept for return and credit new, unused, current stock items, in the original packaging and undamaged. Buyer shall be responsible for all freight charges, import/export charges, duties, tariffs, taxes, insurance and risk of loss/damage regarding return shipment to YEA.

9. SECURITY INTEREST:

To secure any indebtedness due and owing from Buyer from time to time, Buyer hereby grants to YEA, and YEA hereby reserves, a continuing purchase money security interest in all Yaskawa-brand and other products heretofore or hereafter sold and delivered to Buyer by YEA, and all related parts, components and accessories therefor, and all proceeds arising from the sale or other disposition of the foregoing, including, but not limited to, cash, accounts, contract rights, accounts receivable, instruments and chattel paper. Buyer shall at no time grant any security interest that conflicts with that granted to YEA herein. Buyer shall cooperate with YEA, and hereby appoints YEA as its attorney-in-fact, to execute and file, on Buyer's behalf, any documents necessary to evidence and perfect YEA's security interest.

10. GOVERNING LAW, FORUM AND JURY WAIVER:

These Standard Terms and the relationship of the parties hereto shall be governed by the internal laws of the State of Illinois, U.S.A., without regard to its choice of law rules. For all claims or disputes arising out of or relating to the sale of products or services by YEA and/or the relationship of Buyer and YEA, Buyer shall file any and all lawsuits or claims exclusively in the state or federal courts located in Cook County, Illinois. Buyer hereby submits to the personal jurisdiction of said courts and waives any claim of improper or inconvenient venue. To the fullest extent permitted by law, Buyer hereby agrees to waive the right to trial by jury for all claims or disputes arising out of or relating to the sale of products or services by YEA and/or the relationship of Buyer and YEA. The parties agree that U.N. Convention of Contracts for the International Sale of Goods shall not apply to their relationship or the sale of products by YEA.

11. MISCELLANEOUS:

(a) Failure on the part of YEA to enforce any of its rights derived from this contract shall never be construed as a waiver of any of YEA's rights.

(b) The invalidity of one or more of the clauses herein shall not affect the validity of the other clauses, which for this purpose are considered severable.

(c) Any use by Buyer of any YEA trademark must be approved by YEA in writing.

(d) Buyer may not delegate its performance or assign its rights under this Agreement except upon the express written consent of YEA. In any case, these Standard Terms shall be binding upon the successors and legal representatives of Buyer.

(e) Buyer shall comply with all applicable laws and regulations regarding the use, import and export of the products sold hereunder. The products and services to be sold hereunder are not intended for use in any nuclear, chemical or weapons production or environmental damage. If Buyer uses the products or services for such or other impermissible purposes, it shall indemnify, hold harmless and defend YEA, all parent and affiliated companies of YEA, from and against all related claims and damages.

(f) All rights and remedies available to YEA under the Uniform Commercial Code and other applicable law are reserved to YEA as remedies in the event of Buyer's default.

Model/ Part Number	Description	List Price \$	Old Model/Part Number
05P00620-0015	Reactor, 600V, 2A, Enclosed		
05P00620-0016	Reactor, 600V, 2A, Enclosed		
05P00620-0020	Reactor, 600V, 4A, Enclosed		
05P00620-0021	Reactor, 600V, 4A, Enclosed		
05P00620-0022	Reactor, 600V, 4A, Enclosed		
05P00620-0027	Reactor, 600V, 8A, Enclosed		
05P00620-0028	Reactor, 600V, 8A, Enclosed		
05P00620-0029	Reactor, 600V, 8A, Enclosed		
05P00620-0030	Reactor, 600V, 8A, Enclosed		
05P00620-0032	Reactor, 600V, 12A, Enclosed		
05P00620-0033	Reactor, 600V, 12A, Enclosed		
05P00620-0034	Reactor, 600V, 12A, Enclosed		
05P00620-0036	Reactor, 600V, 18A, Enclosed		
05P00620-0037	Reactor, 600V, 18A, Enclosed		
05P00620-0038	Reactor, 600V, 18A, Enclosed		
05P00620-0041	Reactor, 600V, 25A, Enclosed		
05P00620-0042	Reactor, 600V, 25A, Enclosed		
05P00620-0043	Reactor, 600V, 18A, Enclosed		
05P00620-0046	Reactor, 600V, 35A, Enclosed		
05P00620-0047	Reactor, 600V, 35A, Enclosed		
05P00620-0048	Reactor, 600V, 35A, Enclosed		
05P00620-0050	Reactor, 600V, 45A, Enclosed		
05P00620-0051	Reactor, 600V, 45A, Enclosed		
05P00620-0054	Reactor, 600V, 55A, Enclosed		
05P00620-0055	Reactor, 600V, 55A, Enclosed		
05P00620-0056	Reactor, 600V, 55A, Enclosed		
05P00620-0058	Reactor, 600V, 80A, Enclosed		
05P00620-0059	Reactor, 600V, 80A, Enclosed		
05P00620-0060	Reactor, 600V, 80A, Enclosed		
05P00620-0062	Reactor, 600V, 100A, Enclosed		
05P00620-0063	Reactor, 600V, 100A, Enclosed		
05P00620-0066	Reactor, 600V, 130A, Enclosed		
05P00620-0067	Reactor, 600V, 130A, Enclosed		
05P00620-0068	Reactor, 600V, 130A, Enclosed		
05P00620-0072	Reactor, 600V, 160A, Enclosed		
05P00620-0073	Reactor, 600V, 160A, Enclosed		
05P00620-0074	Reactor, 600V, 160A, Enclosed		
05P00620-0077	Reactor, 600V, 200A, Enclosed		
05P00620-0078	Reactor, 600V, 200A, Enclosed		
05P00620-0079	Reactor, 600V, 200A, Enclosed		
05P00620-0082	Reactor, 600V, 250A, Enclosed		
05P00620-0083	Reactor, 600V, 250A, Enclosed		
05P00620-0084	Reactor, 600V, 250A, Enclosed		
05P00620-0087	Reactor, 600V, 320A, Enclosed		

Model/ Part Number	Description	List Price \$	Old Model/Part Number
05P00620-0088	Reactor, 600V, 320A, Enclosed		
05P00620-0089	Reactor, 600V, 320A, Enclosed		
05P00620-0092	Reactor, 600V, 400A, Enclosed		
05P00620-0093	Reactor, 600V, 400A, Enclosed		
05P00620-0096	Reactor, 600V, 500A, Enclosed		
05P00620-0097	Reactor, 600V, 500A, Enclosed		
05P00620-0100	Reactor, 600V, 600A, Enclosed		
05P00620-0101	Reactor, 600V, 600A, Enclosed		
05P00620-0111	DC Bus Reactor, 9A		
05P00620-0120	DC Bus Reactor, 32A		
05P00620-0123	DC Bus Reactor, 40A		
05P00620-0124	DC Bus Reactor, 40A		
05P00620-0129	DC Bus Reactor, 80A		
05P00620-0172	Reactor, 600V, 100A, Enclosed		
05P00620-0173	Reactor, 600V, 400A, Enclosed		
05P00620-0174	Reactor, 600V, 500A, Enclosed		
05P00652-0213	DC Bus Reactor, 12A		
05P00652-0216	DC Bus Reactor, 18A		
AI-001	Analog Input Trim Potentiometer Kit		UTC000043
AI-010	Analog Input 3-15 PSI Transducer Kit		USNN0001
AI-040	Analog Input Isolated (3 Inputs, 14 Bit)		AI-14B2
AI-14B	Analog Input Kit (3 Inputs, 12 Bit)		ICG352, DS387
AI-14U	Analog Input Kit (1 Input, 14 Bit)		ICG351, DS386
AO-001	Analog Output Isolated Kit, (2 Outputs, 11 Bit + Sign)		AO-12B2
AO-08	Analog Output Kit (2 Outputs, 8 Bit)		ICG355, DS390
AO-12	Analog Output Kit (2 Outputs, 11 Bit + Sign)		ICG356, DS391
CD.DW.01	DriveWizard Software CD		
CDBR-2022B	Dynamic Braking Transistor Module		46S03331-0020
CDBR-2110B	Dynamic Braking Transistor Module		
CDBR-4045B	Dynamic Braking Transistor Module		46S03331-0060
CDBR-4220B	Dynamic Braking Transistor Module		46S03331-0090
CM048	LonWorks Communication Kit		
CM057	DeviceNet Communication Kit, G7		
CM059	DeviceNet Communication Kit (SI-N1 Board)		SI-N1
CM061	Profibus DP Communication Kit (Includes Profibus II)		SI-P1
CM071	Modbus Plus Communication Kit		
CM090	Modbus TCP/IP Communication Kit		
CM092	EtherNet/IP Communication Kit		
DI-001	120VAC Logic Interface Kit (8 Inputs)		UTC000040
DI-003	120VAC Logic Interface Kit (4 Inputs)		
DI-08	Digital Input Kit (8 Data Inputs, BCD or Binary)		ICG353, DS388
DI-16H2	Digital Input Kit (12/16 Data Inputs, BCD or Binary)		CDR001021, DS390
DO-02C	Digital Output Kit (2 Form C, 250VAC, 30VDC, 1A)		CDR001023, DS011
DO-08	Digital Output Kit (2 Form A and 6 PHC)		ICG367, DS383
DWST616-C2	DriveWizard Kit (Software and Cable)		

Options Matrix

Model/ Part Number	Description	List Price \$	Old Model/Part Number
PG-W2	PG Feedback Kit, Dual		CDR001040, DS014
PG-B2	PG Feedback Kit		
PG-X2	PG Feedback Kit		CDR001015, DS003
R7503	DB Resistor, Heat Sink Mt, 3% Duty Cycle, 70 Ohm		50185432
R7504	DB Resistor, Heat Sink Mt, 3% Duty Cycle, 100 Ohm		50185431
R7505	DB Resistor, Heat Sink Mt, 3% Duty Cycle, 200 Ohm		50185430
R7506	DB Resistor, Heat Sink Mt, 3% Duty Cycle, 300 Ohm		50185532
R7507	DB Resistor, Heat Sink Mt, 3% Duty Cycle, 400 Ohm		50185531
R7508	DB Resistor, Heat Sink Mt, 3% Duty Cycle, 750 Ohm		50185530
R7510	DB Resistor, Heat Sink Mt, 3% Duty Cycle, 62 Ohm		50185433
UDA00365-C	End Cap Kit		
UDA00365-E	End Cap Kit		
UDA00365-F	End Cap Kit		
UDA00365-P	End Cap Kit		
UOP000008	LCD Digital Operator (Same as Supplied with Drive)		
UOPN0005	Remote Operator Kit (Cable, Carrier, and Membrane)		
URS000096	Dynamic Braking Resistor		
URS000097	Dynamic Braking Resistor		
URS000100	Dynamic Braking Resistor		
URS000119	Dynamic Braking Resistor		
URS000120	Dynamic Braking Resistor		
URS000127	Dynamic Braking Resistor		
URS000128	Dynamic Braking Resistor		
URS000129	Dynamic Braking Resistor		
URS000135	Dynamic Braking Resistor		
URS000136	Dynamic Braking Resistor		
URS000140	Dynamic Braking Resistor		
URS000142	Dynamic Braking Resistor		
URS000143	Dynamic Braking Resistor		
URS000150	Dynamic Braking Resistor		
URS000151	Dynamic Braking Resistor		
URS000165	Dynamic Braking Resistor		
URS000166	Dynamic Braking Resistor		
URS000167	Dynamic Braking Resistor		
URX000039	DC Bus Reactor, 2A		
URX000040	DC Bus Reactor, 4A		
URX000041	DC Bus Reactor, 4A		
URX000042	DC Bus Reactor, 4A		
URX000044	DC Bus Reactor, 9A		
URX000045	DC Bus Reactor, 12A		
URX000046	DC Bus Reactor, 12A		
URX000048	DC Bus Reactor, 18A		
URX000049	DC Bus Reactor, 18A		
URX000051	DC Bus Reactor, 25A		
URX000052	DC Bus Reactor, 25A		

Model/ Part Number	Description	List Price \$	Old Model/Part Number
URX000053	DC Bus Reactor, 25A		
URX000054	DC Bus Reactor, 25A		
URX000055	DC Bus Reactor, 32A		
URX000056	DC Bus Reactor, 32A		
URX000057	DC Bus Reactor, 40A		
URX000058	DC Bus Reactor, 40A		
URX000063	DC Bus Reactor, 62A		
URX000065	DC Bus Reactor, 62A		
URX000069	DC Bus Reactor, 80A		
USR000022	DB Resistor. 10% Duty Cycle, 200 Ohm, 250W		05P00041-0825
USR000023	DB Resistor. 10% Duty Cycle, 100 Ohm, 250W		05P00041-0826
USR000024	DB Resistor. 10% Duty Cycle, 70 Ohm, 250W		05P00041-0827
USR000025	DB Resistor. 10% Duty Cycle, 40 Ohm, 846W		05P00041-0828
USR000026	DB Resistor. 10% Duty Cycle, 30 Ohm, 824W		05P00041-0829
USR000027	DB Resistor. 10% Duty Cycle, 20 Ohm, 1260W		05P00041-0830
USR000032	DB Resistor. 10% Duty Cycle, 750 Ohm, 600W		05P00041-0835
USR000033	DB Resistor. 10% Duty Cycle, 400 Ohm, 500W		05P00041-0836
USR000034	DB Resistor. 10% Duty Cycle, 250 Ohm, 500W		05P00041-0837
USR000035	DB Resistor. 10% Duty Cycle, 150 Ohm, 500W		05P00041-0838
USR000036	DB Resistor. 10% Duty Cycle, 100 Ohm, 975W		05P00041-0839
USR000037	DB Resistor. 10% Duty Cycle, 75 Ohm, 1050W		05P00041-0840
USR000038	DB Resistor. 10% Duty Cycle, 50 Ohm, 1600W		05P00041-0841
USR000040	DB Resistor. 10% Duty Cycle, 32 Ohm, 2340W		05P00041-0843
UWR00468-2	Computer Interface Cable, 6 feet (2 meter)		
UWR0051	Remote Operator Cable, 3 feet (1 meter)		DS071
UWR0052	Remote Operator Cable, 10 feet (3 Meter)		DS073

G7 Drives Catalog

Data Subject to change without notice.



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