Description
1/2 - 500HP

G7

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 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, 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

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Standard Drives

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	NEMA 1	
			30		
	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 **42P21**	4.8 6.2	3 3 [3]	NEMA 1	
	43P71 **44P01**	9 11	5 7.5	NEMA 1	
	45P51 **47P51**	15 21	10 15	NEMA 1	
	40111 **40151**	27 34	20 25	NEMA 1	
	40181 **40221**	42 52	30 40	NEMA 1	
	40301 **40371** **40451**	65 80 97	50 60 75	NEMA 1	
	40550 **40750**	128 165	100 125	Protected Chassis	
	40900 **41100**	195 240	150 200	Protected Chassis	
	41320 **41600**	270 302	200 [3] 250	Protected Chassis	
	41850 **42200**	370 450	300 350	Protected Chassis	
	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 Options

10% Duty

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 $	Config-uration (2)	
208V	**20P41**	1/2	Included			**034**	1		Single (3)	
	20P71	3/4 1	Included			**022**	1		Single (3)	
	21P51	2	Included			**023**	1		Single (3)	
	22P21	3				**024**	1		Single (3)	
	23P71	5	Included			**025**	1		Single (3)	
	25P51	7.5				**026**	1		Single (3)	
	27P51	10	Included			**027**	1		Single (3)	
	20111	15				**140**	1		Single (4)	
	20151	20	Included			**136**	1		Single (4)	
	20181	25	**2022B**	2		**135**	1		Dual	
	20221	30				**135**	1		Dual	
	20300	40				**129**	1		Dual	
	20370	50	**2110B**	1		**100**	1		Single	
	20450	60								
	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	Included			**034**	1		Single (3)	
		3/4				**022**	1		Single (3)	
	20P71	1	Included			**022**	1		Single (3)	
	21P51	2				**023**	1		Single (3)	
	22P21	3	Included			**024**	1		Single (3)	
	23P71	5				**025**	1		Single (3)	
	25P51	7.5	Included			**026**	1		Single (3)	
	27P51	10				**027**	1		Single (3)	
	20111	15	Included			**140**	1		Single (4)	
	20151	20				**136**	1		Single (4)	
	20181	25 30	**2022B**	2		**135**	2		Dual	
	20221	30	**2022B**	2		**135**	2		Dual	
	20300 **20370**	50 60	**2110B**	1		**100**	1		Single	
	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

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Dynamic Braking Options
10% Duty

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 2	Included			33	1		Single (3)	
	41P51 42P21	3 3	Included			34	1		Single (3)	
	43P71 44P01	5 7.5	Included			35 36	1 1		Single (3) Single (3)	
	45P51 47P51	10 15	Included			37 38	1 1		Single (3) Single (3)	
	40111 40151	20 25	Included			40	1		Single (3)	
	40181 40221	30 40	4045B	1		150 142	1 1		Single Single	
	40301 40371 40451	50 60 75	4045B	2		151 151 143	1 1 1		Dual Dual Dual	
	40550 40750	100 125	4220B	1		119	1		Single	
	40900	150	4220B	1		165	1		Single	
	41100	200	4220B & 4045B	1		165 & 142	1 each		Single Single	
	41320	200	4220B & 4045B	1		165 & 142	1 each		Single Single	
	41600	250	4220B & 4045B	1 2		165 & 143	1 each		Single Dual	
	41850 42200	300 350	4220B	2		166	1		Dual	
	43000	400	4220B	3		120 & 165	1		Dual Single	
		450 500	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, 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			125
	21P51	2	R7504	1		125
	22P21	3	R7503			120
	23P71	5	R7510	1		100
240V	20P41	1/2	R7505	1		220
	20P41	3/4	R7505			220
	20P71	1	R7505	1		125
	21P51	2	R7504			125
	22P21	3	R7503	1		120
	23P71	5	R7510			100
480V	40P41	3/4	R7508	1		230
	40P71	1	R7508	1		130
	40P71	2	R7508			130
	41P51	3	R7507	1		125
	42P21	3	R7506			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

G7

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 27P51	C	
	20111 20151	B	
	20181 20221	F E	
	20300 thru 21100	Not Available	
480V	40P41 thru 44P01	D	
	45P51 47P51	C	
	40111 40151	B	
	40181 40221	E	
	40301 thru 40451	A	
	40550 thru 43000	Not Available	

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 20370	C	31.85	14.96	No Change	
	20450 20550	E	40.43	17.83	No Change	
	20750	F	48.94	19.84	No Change	
	20900 21100	Not Available				
480V	40P41 thru 40451	Not Required				
	40550 40750	E	40.43	17.83	No Change	
	40900 41100	F	48.94	19.84	No Change	
	41320 41600	P	52.13	22.80	No Change	
	41850 42200 43000	Not Available				

Reactor Options

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				
					Dimensions (in)					Dimensions (in)		
			Part Number 05P00620-	List Price $	H	L	W	Part Number 05P00620-	List Price $	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		13.0	13.0	13.0	0036		8.0	8.0	6.0
	25P51	27	0046					0047		13.0	13.0	13.0
	27P51	34	0050		13.0	13.0	13.0	0048		13.0	13.0	13.0
	20111	49	0054					0055				
	20151	66	0058		13.0	13.0	13.0	0059		13.0	13.0	13.0
	20181	80	0172					0062				
	20221	96	0066		13.0	13.0	13.0	0067		13.0	13.0	13.0
	20300	130	0066					0067				
	20370	160	0072		13.0	13.0	13.0	0073		13.0	13.0	13.0
	20450	183	0077					0078				
	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		24.0	17.0	17.0	0092		24.0	17.0	17.0
	21100	415	0174					0096				
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		13.0	13.0	13.0	0051		13.0	13.0	13.0
	20111	49	0054					0055				
	20151	66	0058		13.0	13.0	13.0	0059		13.0	13.0	13.0
	20181	80	0172					0062				
	20221	96	0172		13.0	13.0	13.0	0062		13.0	13.0	13.0
	20300	130	0066					0067				
	20370	160	0072		13.0	13.0	13.0	0073		13.0	13.0	13.0
	20450	183	0077					0078				
	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		24.0	17.0	17.0	0092		24.0	17.0	17.0
	21100	415	0174					0096				

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				
					Dimensions (in)					Dimensions (in)		
			Part Number 05P00620-	List Price $	H	L	W	Part Number 05P00620-	List Price $	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**				

Bus Reactor Options

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

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

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 (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-08 ..... List $

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 24DC 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-B2 ..... List $

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. CM012 .....List $

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 teminations 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. CM061

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
Model No. UWR00567-2 (20-inch cable)
Model No. UWR00567-3 (78-inch cable)

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

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

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

Dimensions and Data

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		DD.G7.FR3A.N1.01	187	87	274
	27P51	34	10				15.4			263	112	375
	20111	49	15	13.78	9.45	8.27	24.2		DD.G7.FR4A.N1.01	357	136	493
	20151	66	20	14.96					DD.G7.FR4C.N1.01	473	174	647
	20181	80	25 & 30	21.06	10.00	10.24	52.8		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
	20300	130	40 & 50	23.62	14.76	11.81	125	Protected Chassis	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		DD.G7.FR10.IP00.01	1291	510	1801
	20550	224	75				191			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						DD.G7.FR2.N1.01	77	63	140
	44P01	11	7.5							100	66	166
	45P51	15	10	11.81	7.87	7.87	15.4		DD.G7.FR3A.N1.01	132	80	212
	47P51	21	15							197	107	304
	40111	27	20	13.78	9.45	8.27	22		DD.G7.FR4B.N1.01	246	116	362
	40151	34	20							311	135	446
	40181	42	25	21.06	10.98	10.24	64		DD.G7.FR6B.N1.01	354	174	528
	40221	52	30							516	210	726
	40301	65	40	25.00	12.95	11.22	86		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
	40550	128	100	28.54	17.72	13.78	198	Protected Chassis	DD.G7.FR10.IP00.01	1239	488	1727
	40750	165	125				200			1554	597	2151
	40900	195	150	33.46	19.69	14.17	240		DD.G7.FR11.IP00.01	1928	762	2690
	41100	240	200				279			2299	928	3227
	41320	270	200	36.06	22.64	14.96	363		DD.G7.FR13.IP00.01	2612	1105	3717
	41600	302	250				385			3614	1501	5115
	41850	370	300	51.38	27.95	16.34	579		DD.G7.FR14.IP00.01	4436	1995	6431
	42200	450	350				616			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.