

Low Harmonics Regenerative Matrix Converter U1000

200 V Class

ND: Normal Duty, HD: Heavy Duty

Model CIMR-UA		2 0028	2 0042	2 0054	2 0068	2 0081	2 0104	2 0130	2 0154	2 0192	2 0248	
Rated Input/Output	Rated Input Current A	ND	25	38	49	62	74	95	118	140	175	226
		HD	20	25	38	49	62	74	95	118	140	175
	Rated Input Capacity*1 kVA	ND	12	17	22	28	34	43	54	64	80	103
		HD	9	12	17	22	28	34	43	54	64	80
	Rated Output Current*3, *4 A	ND	28	42	54	68	81	104	130	154	192	248
		HD	22	28	42	54	68	81	104	130	154	192
	Overload Tolerance	HD Rating: 150% of rated output current for 60 s, ND Rating: 120% of rated output current for 60 s (Derating may be required for repetitive loads)										
Carrier Frequency	4 kHz (Adjustable up to 10 kHz. Derating may be required.)											
Max. Output Voltage	Depends on input voltage											
Max. Output Frequency	400 Hz											
Power	Rated Voltage/Rated Frequency	Three-phase AC power supply: 200 to 240 Vac 50/60 Hz										
	Allowable Voltage Fluctuation	-15% to +10%										
	Allowable Frequency Fluctuation	±3% (Frequency fluctuation rate: 1 Hz/100 ms or less)										
	Allowable Power Voltage Imbalance between Phases	less than 2%										
Harmonic Current Distortion Rate*6	5% or less (IEEE 519)											
Input Power Factor	0.98 or more (for rated load)											

400 V Class

Model CIMR-UA		4 0011**	4 0014**	4 0021**	4 0027**	4 0034**	4 0040**	4 0052**	4 0065**	4 0077**	4 0096**	4 0124**	4 0156**	
Rated Input/Output	Rated Input Current A	ND	10	13	19	25	31	36	47	59	70	87	113	142
		HD	8.7	10	13	19	25	31	36	47	59	70	87	113
	Rated Input Capacity*2 kVA	ND	9	12	17	22	28	33	43	54	64	80	103	130
		HD	8	9	12	17	22	28	33	43	54	64	80	103
Rated Output Current*3, *4 A	ND	11	14	21	27	34	40	52	65	77	96	124	156	
	HD	9.6	11	14	21	27	34	40	52	65	77	96	124	
Rated output	Overload Tolerance	HD Rating: 150% of rated output current for 60 s, ND Rating: 120% of rated output current for 60 s (Derating may be required for repetitive loads)												
	Carrier Frequency	CIMR-U::4::0011 to 4::0414: 4 kHz (User adjustable up to 6 kHz. Derating may be required.) CIMR-U::4::0477 to 4::0930: 3 kHz												
	Max. Output Voltage	Depends on input voltage												
	Max. Output Frequency	400 Hz												
Power	Rated Voltage/ Rated Frequency	Three-phase AC power supply (CIMR-U::4A::/4P::): 380 to 500 Vac** 50/60 Hz Three-phase AC power supply (CIMR-U::4E::/4W::): 380 to 480 Vac 50/60 Hz												
	Allowable Voltage Fluctuation	-15% to +10%												
	Allowable Frequency Fluctuation	±3% (Frequency fluctuation rate: 1 Hz/100 ms or less)												
	Allowable Power Voltage Imbalance between Phases	less than 2%												
Harmonic Current Distortion Rate*5	5% or less (IEEE 519)													
Input Power Factor	0.98 or more (for rated load)													

*1: The rated input capacity is calculated by multiplying the power line voltage (240 V) by 1.1.

*2: The rated input capacity is calculated by multiplying the power line voltage (480 V) by 1.1.

*3: The rated output current of the drive should be equal to or greater than the motor rated current.

*4: This value assumes a carrier frequency of 4 kHz for models CIMR-U::2::0028 to 2::0248, 4::0011 to 4::0414 and a carrier frequency of 3 kHz for models CIMR-U::4::0477 to 4::0930. Increasing the carrier frequency requires a reduction in current.

*5: When the harmonic current distortion rate is 5% or less, the maximum output voltage is calculated by multiplying input power voltage by 0.87.

You must also change the parameter from the default setting.

*6: Complies with ship classification standards. Contact Yaskawa for details.

*7: Models CIMR-U::4::0720 to 4::0930 need installation of standard configuration device (harmonic filter module).

*8: Use a three-phase power supply of 380 to 480 Vac for models CIMR-U::4::0477 to 4::0930 with an EMC filter connected.

Common Specifications

Item	Specifications	
Control Method	V/f Control, V/f Control with PG, Open Loop Vector Control, Closed Loop Vector Control, Open Loop Vector Control for PM, Advanced Open Loop Vector Control for PM, Closed Loop Vector Control for PM	
Frequency Control Range	0.01 to 400 Hz	
Frequency Accuracy (Temperature Fluctuation)	Digital reference: within $\pm 0.01\%$ of the max. output frequency (-10 to $+40^{\circ}\text{C}$) Analog reference: within $\pm 0.1\%$ of the max. output frequency ($25 \pm 10^{\circ}\text{C}$)	
Frequency Setting Resolution	Digital reference: 0.01 Hz, Analog reference: 0.03 Hz / 60 Hz (11 bit)	
Output Frequency Resolution	0.001 Hz	
Frequency Setting Resolution	Main frequency reference: -10 to $+10$ Vdc, 0 to 10 Vdc (20 k), 4 to 20 mA (250), 0 to 20 mA (250) Main speed reference: Pulse train input (max. 32 kHz)	
Starting Torque	V/f Control 150%/3 Hz Open Loop Vector Control 200%/0.3 Hz*9 Open Loop Vector Control for PM 100%/5% Speed Closed Loop Vector Control for PM 200%/0 min ^{-1*9}	V/f Control with PG 150%/3 Hz Closed Loop Vector Control 200%/0 min ^{-1*9} Advanced Open Loop Vector Control for PM 200%/0 min ^{-1*9}
	V/f Control 1:40 Open Loop Vector Control 1:200 Open Loop Vector Control for PM 1:20 Closed Loop Vector Control for PM 1:1500	V/f Control with PG 1:40 Closed Loop Vector Control 1:1500 Advanced Open Loop Vector Control for PM 1:100
Speed Control Range	V/f Control 1:40 Open Loop Vector Control 1:200 Open Loop Vector Control for PM 1:20 Closed Loop Vector Control for PM 1:1500	V/f Control with PG 1:40 Closed Loop Vector Control 1:1500 Advanced Open Loop Vector Control for PM 1:100
Speed Control Accuracy	$\pm 0.2\%$ in Open Loop Vector Control ($25 \pm 10^{\circ}\text{C}$), $\pm 0.02\%$ in Closed Loop Vector Control ($25 \pm 10^{\circ}\text{C}$)*10	
Speed Response	10 Hz in Open Loop Vector Control ($25 \pm 10^{\circ}\text{C}$), 250 Hz in Closed Loop Vector Control ($25 \pm 10^{\circ}\text{C}$) (excludes temperature fluctuation when performing Rotational Auto-Tuning)	
Torque Limit	Parameters setting allow separate limits in four quadrants (available in OLV, CLV, AOLV/PM, CLV/PM)	
Accel/Decel Time	0.00 to 6000.0 s (4 selectable combinations of independent acceleration and deceleration settings)	
Braking Torque	Same value as overload tolerance	
V/f Characteristics	User-selected programs and V/f preset patterns possible	
Main Control Functions	Torque Control, Droop Control, Speed/Torque Control switch, Feed Forward Control, Zero Servo Control, Momentary Power Loss Ride-Thru, Speed Search, Synchronous Transfer with Commercial Power Supply, Overtorque detection, torque limit, 17 Step Speed (max.), accel/decel time switch, S-curve accel/decel, 3-wire sequence, Auto-Tuning (rotational, stationary), Dwell function, cooling fan on/off switch, slip compensation, torque compensation, Frequency Jump, Upper/lower limits for frequency reference, DC Injection Braking at start and stop, High Slip Braking, PID control (with Sleep function), Energy Saving Control, MEMOBUS/Modbus (RTU mode) Communications (RS-485/422, max. 115.2 kbps), Fault Restart, Application Presets, DriveWorksEZ (customized functions), Removable Terminal Block with Parameter Backup, Online Tuning, Overexcitation Deceleration, Inertia (ASR) Tuning, High Frequency Injection, etc.	
Standards Compliance	<ul style="list-style-type: none"> · UL508C · IEC/EN61800-3, IEC/EN61800-5-1 · ISO/EN13849-1 Cat.3 Ple, IEC/EN61508 SIL3 (Two Safe Disable inputs and one EDM output) 	
Ship Classification Standards*11	<ul style="list-style-type: none"> · NK (Nippon Kaiji Kyokai) · LR (Lloyd' s Register of Shipping) · BV (Bureau Veritas) 	<ul style="list-style-type: none"> · DNV GL (DNV GL AS) · ABS (American Bureau of Shipping) · KR (Korean Register of Shipping)
Protection Design	IP00 open-chassis, UL Type 1 enclosure*12, *13, *14	

*9: The capacity of the drive and motor must be considered.

*10: Speed control accuracy may vary slightly depending on installation conditions or motor used. Contact Yaskawa for consultation.

*11: Available for models CIMR-UA4E0011 to CIMR-UA4E0414.

Peripheral devices must be installed and parameters changed to comply with ship classification standards.

*12: Optional UL Type 1 kit is required.

*13: Removing the top protective cover on an UL Type 1 enclosure drive converts this drive to an IP20 conformity.

*14: The UL Type 1 enclosure does not support models CIMR-U□4□0720 to 4□0930.