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You can read the recommendations in the user guide, the technical guide or the installation guide for OMRON A1000. You'll find the answers to all your questions on the OMRON A1000 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

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omron

CIMR-A
A1000

High performance Vector Control

- Current vector control, with or without PG
- High starting torque (200% / 0.3 Hz, spd range 1:200 OLV), (250% at 0 min, spd range 1:1500 OLV)
- Double rating ND 120%/1min and HD 150%/1 min
- IM&PM motor control
- Advanced Auto-Tuning for IM & PM Motors
- Open Loop Control of PM Motors
- Low-noise Low carrier technology
- 10 years lifetime design
- Screw-less terminals
- Control Terminals with memory backup
- 24 VDC control board power supply option
- Fieldbus communications: Modbus, Profibus, CanOpen, DeviceNet, ML-II
- Safety embedded: EN54-1 safety cat. 3, stop category 0, IEC EN 61508 SIL 2 and EN61800-5-1 with EDM
- CE, UL, cUL and TUV

Ratings

- 200 V Class three-phase 0.4 to 110 kW
- 400 V Class three-phase 0.4 to 315 kW



System configuration



A1000 1



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Manual abstract:

3 Hz, spd range 1:200 OLV), (200% at 0 r/min, spd range 1:1500 CLV) · Double rating ND 120%/1min and HD 150%/1 min · IM&PM motor control · Advanced Auto-Tuning for IM & PM Motors · Open Loop Control of PM Motors · Low-noise Low carrier technology · 10 years lifetime design · Screw-less terminals · Control Terminals with memory backup · 24 VDC control board power supply option · Fieldbus communications: Modbus, Profibus, CanOpen, DeviceNet, ML-II · Safety embedded: EN954-1 safety cat. 3, stop category 0, IEC EN 61508 SIL 2 and EN61800-5-1 with EDM · CE, UL, cUL and TUV Ratings · 200 V Class three-phase 0.4 to 110 kW · 400 V Class three-phase 0.4 to 315 kW System configuration Power Supply Communications cable with PC MCCB US B py Co Un it R ER CO M Co py AC Reactor CK LO 81 P-1 JVO YAS A KAW RJ-45 / USB Adapter USB Cable CX-Drive CX-One Re ad Ver ify Remote Operator Extension Cable Filter LCD Remote Operator 24 VDC Control Board Power Supply A1000 Communication Option Board Feedback Speed Option Cards Choke Motor Braking Resistor Ground DC Reactor A1000 1 Specifications Type designation C I M R AC 4 A 0 0 0 4 FA A Version AC Drive Coating specs: A: Standard Enclosure, Fin: A: IP00 F: IP20 / Nema 1 A1000 series C: European standard specifications Voltage: 2: Three-phase 200 VAC 4: Three-phase 400 VAC Rated output Current Normal Duty 0004: 3.5 [A] ~ 0675: 675 [A] A: Standard specs 200 V class Motor kW1 Three-phase: CIMR-A@2A For HD setting For ND setting Inverter capacity kVA at HD2 Inverter capacity kVA at ND2 Rated output current (A) at HD Rated output current (A) at ND3 Max. output voltage Output characteristics 0004 0.40 0.75 1.2 1.3 3.

24 3.5 0006 0.75 1.1 1.9 2.

3 54 6 0010 1.5 2.2 3 3.7 84 9.6 0012 2.

2 3.0 4.2 4.6 114 12 0021 4.0 5.5 6.7 8 21 0030 5.5 7.5 9.5 0040 7.

5 11 12.6 334 40 0056 11 15 17.9 474 56 0069 15 18.5 23 26 604 69 0081 18.5 22 29 31 754 81 0110 22 30 32 42 854 110 0138 30 37 44 53 138 0169 37 45 55 64 169 0211 45 55 69 80 211 0250 55 75 82 95 250 0312 75 90 108 119 312 0360 90 110 132 137 360 0415 110 110 158 158 415 11.4 15.2 21 30 17.54 254 1154 1455 1805 2155 2835 3465 4153 Proportional to input voltage: 0..240 V Power supply 400 Hz Max.

output frequency Rated input voltage and frequency 3-phase 200..240 V 50/60 Hz -15%..+10% Allowable voltage fluctuation Allowable frequency fluctuation Input Current (A) at HD6 Input Current (A) at ND6 +5% 2.

9 3.9 5.8 7.3 7.5 11 18.

9 24 28 37 37 52 52 68 68 80 80 96 82 111 111 136 136 164 164 200 200 271 271 324 324 394 394 471 10.8 13.9 1. 2. 3. 4. 5. 6. Based on a standard 4-pole motor for maximum applicable motor output: Rated Motor Capacity is calculated with a rated output voltage of 220 V: Carrier frequency is set to 2kHz.

@@Higher carrier frequency settings require derating: Carrier frequency can be increased up to 5 kHz while keeping this current rating.

Higher carrier frequency settings require derating: Assumes operation at rated output current. Input current rating varies depending on the power supply transformer, input reactor, Wiring conditions, and power supply impedance: 400 V class Motor kW1 Three-phase: CIMR-A@4A For HD setting For ND setting Inverter capacity kVA at HD2 Inverter capacity kVA at ND2 Rated output current (A) at HD Rated output current (A) at ND3 Max. output voltage Output characteristics 0002 0.4 0.75 1.4 1.6 1.84 2.1 0004 0.75 1.

5 2.6 3.1 3.44 4.1 0005 1.

5 2.2 3.7 4.1 4.84 5.

4 0007 2.2 3.0 4.2 5.3 5.54 6.9 0009 3.0 4.0 5.5 6.

7 7.24 8.8 0011 4.0 5.5 7 8.5 9.24 11.1 0018 5.5 7.5 11.

3 13.3 14.84 17.5 0023 7.5 11 13.

7 17.5 184 23 0031 11 15 18.3 24 244 31 0038 15 18.5 24 29 314 38 0044 18.5 22 30 34 394 44 0058 22 30 34 44 454 58 380.

.480V (proportional to input voltage) Power supply 400 Hz Max. @@output voltage Max. @@2. 3. 4. 5. @@@@Higher carrier frequency settings require derating: Carrier frequency can be increased up to 5 kHz while keeping this current rating. Higher carrier frequency settings require derating: Assumes operation at rated output current. Input current rating varies depending on the power supply transformer, input reactor, Wiring conditions, and power supply impedance: Common specifications Model number CIMR-A Control methods Output frequency range Frequency tolerance Resolution of frequency set value Resolution of output frequency Frequency set value Control functions Starting Torque Speed Control Range Speed Control Accuracy Speed Response Torque Limit Accel/Decel Time Specifications Sine wave PWM (V/f control, V/f control with PG, Open loop vector control, Closed loop vector control, Open loop vector control for PM, Closed loop vector control for PM, Advanced Open Loop Vector Control for PM) 0.

01..400 Hz Digital set value: $\pm 0.01\%$ of the max. output frequency (-10..+40 °C) Analogue set value: $\pm 0.1\%$ of the max. output frequency (25 ± 10 °C) Digital set value: 0.01 Hz Analogue set value: 0.

03 Hz / 60 Hz (11 bit) 0.001 Hz -10..+10 V (20 k), 0.

10 V (20 k), 4..20 mA (250), Pulse train input, frequency setting value (selectable) 150%/3Hz (V/f control, V/f control with PG), 200%/0.3Hz*1 (Open loop vector control), 200%/0 r/min*1 (Closed loop vector control, Closed loop vector control for PM, Advanced Open Loop Vector Control for PM), 100% / 5% speed (Open loop vector control for PM), 1:1500 (Closed loop vector control, Closed loop vector control for PM), 1:200 (Open loop vector control), 1:40 (V/f control, V/f control with PG), 1:20 (Open Loop Vector Control for PM), 1:100 (Advanced Open Loop Vector Control for PM) $\pm 0.2\%$ in Open loop vector control (25 ± 10 °C) *2, 0.

02% in Closed loop vector control (25 ± 10 °C) 10 Hz in Open loop vector control (25 ± 10 °C), 50Hz in Closed loop Vector Control (25 ± 10 °C), (excludes temperature fluctuation when performing Rotational Auto-Tuning) All Vector Control allows separate settings in four quadrants 0.00 to 6000.0 s (4 selectable combinations of independent acceleration and deceleration settings) Drives of 200/400 V 30 kW or less have a built-in braking transistor. 1. Short-time decel torque*3, over 100% for 0.4/0.75 kW motors, over 50% for 1.5 kW motors, and over 20% for 2.2 kW and above motors (over excitation braking/High-Slip Braking approx. 40%) 2.

Continuous regen, torque approx. 20% (approx. 125% with dynamic braking resistor option*4, 10% ED, 10 s, internal braking transistor) User-selected programs and V/f preset patterns possible Torque Control, Droop control, Speed/torque control switching, Feedforward control, Zero-servo control, Momentary power loss ride-thru, Speed search, Overtorque detection, Torque Limit, 17-step speed (max), Accel/Decel time switch S-curve Accel/Decel, 3-wire sequence, Auto-tuning (rotational, stationary), Online Tuning, Dwell Cooling fan on/off switch, slip compensation, Torque compensation, Frequency Jump, Upper/lower limits for frequency, DC injection braking at start and stop, Over excitation braking, High Slip braking, PID control (with sleep function), Energy saving control, MEMOBUS comm.



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1 4.1 5.4 6.9 8.8 11.1 17.

5 23 31 38 44 58 72 88 103 139 165 208 250 296 362 414 515 675 20 32 45 62 66 89 177 216 295 340 390 471 605 684 848 1215 1557 1800 2379 2448 3168 3443 4850 4861 Interior Unit Loss (W) 48 49 53 59 60 73 108 138 161 182 209 215 265 308 357 534 668 607 803 905 1130 1295 1668 2037 Total Loss (W) 68 81 97 121 126 162 285 354 455 521 599 686 870 993 1205 1749 2224 2408 3182 3353 4298 4738 6518 6898 10 Frequency inverters Connections for braking unit and braking resistor Thermal relay Power supply Braking resistor Braking Resistor Overheat Contact (Thermal Relay Trip Contact) MCCB MC R/L1 B1 S/L2 T/L3 B2 U/T1 V/T2 W/T3 +3 Motor - 1 P B 2 Braking Resistor Unit THRX OFF ON MC A1000 SA - Level Detector + +0 -0 MC THRX MASTER A1000 Thermal relay switch for external braking resistor MC SA SLAVE +15 5 6 1 2 TRX SA TRX FLT-A FLT-B Braking Unit 1 3 4 Fault contact Cooling Fin Overheat Contact (Thermoswitch Contact) AC reactor AC reactor Power supply MCCB U V W X Y Z R/L1 S/L2 T/L3 A1000 Max. applicable motor output kW 0.4 0.75 1.5 2.2 4.0 5.5 7.5 11 15 18.5 22 30 37 45 55 75 90 110 200 V class Current value A 2.

5 5 10 15 20 30 40 60 80 90 120 160 200 240 280 360 500 600 - Inductance mH 4.2 2.1 1.1 0.71 0.

53 0.35 0.265 0.18 0.13 0.

12 0.09 0.07 0.05 0.044 0.039 0.026 0.02 0.02 Max. applicable motor output kW 0.

4 0.75 1.5 2.2 4.0 5.5 7.5 11 15 18.5 22 30 37 45 55 75 90/110 132/160 160/185/220 315 400 V class Current value A 1.3 2.5 5 7.

5 10 15 20 30 40 50 60 80 90 120 150 200 250 330 490 660 Inductance mH 18 8.4 4.2 3.6 2.2 1.

42 1.06 0.7 0.53 0.42 0.

36 0.28 0.24 0.18 0.15 0.11 0.09 0.06 0.04 0.03 DC reactor A1000 Power supply MCCB R/L1 S/L2 T/L3 +1 +2 DC reactor Max.

applicable motor output kW 0.4 0.75 1.5 2.2 4.0 5.5 7.5 11 15 18.5 22 to 110 200 V class Current value A 5.4 18 36 72 90 Built-in Inductance mH 8 3 1 0.

5 0.4 Max. applicable motor output kW 0.4 0.75 1.

5 2.2 4.0 5.5 7.5 11 15 18.

5 22 to 315 400 V class Current value A 3.2 5.7 12 23 33 47 Built-in Inductance mH 28 11 6.3 3.6 1.9 1.3 A1000 11 Safety System - A1000 provides Safe Torque Off (STO) functional safety in compliance with EN954-1 safety category 3 stop category 0, EN ISO 13849-1, PLC, IEC/EN61508 SIL2. - An External Device Monitor (EDM) function has also been added to monitor the safety status of the drive. EN954-1 Safety Cat.3 Compliance Power supply Safety controller Feedback loop Controller Motor 12 Frequency inverters Ordering information Power Supply C Communications cable with PC MCCB US B py Co Un it R ER CO M C RJ-45 / USB Adapter C USB Cable Co py D CX-Drive CX-One AC Reactor Re ad Ver ify CK LO 81 P-1 JVO YAS A KAW C A Filter Remote Operator Extansion Cable C LCD Remote Operator C 24 VDC Control Board Power Supply B A1000 Communication Option Board A Choke F Feedback Speed Option Cards E Motor Braking Resistor DC Reactor Ground A1000 0.

4 kW 0.75 kW 1.5 kW 2.2 kW 4.0 kW 5.5 kW 7.5 kW 11 kW 15 kW 18.5 kW 22 kW 30 kW 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 0.4 kW 0.75 kW 1.

5 kW 2.2 kW 3.0 kW 4.0 kW 5.5 kW 7.

5 kW 11 kW 15 kW 18.5 kW 22 kW 30 kW 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 132 kW 160 kW 185 kW 220 kW 315 kW Specifications Heavy Duty 3.2 A

5.0 A 8.0 A 11.

0 A 17.5 A 25.0 A 33.0 A 47.0 A 60.0 A 75 A 85 A 115 A 145 A 180 A 215 A 283 A 346 A 415 1.8 A 3.4 A 4.8 A 5.5 A 7.

2 A 9.2 A 14.8 A 18.0 A 24.0 A 31.0 A 39 A 45 A 60 A 75 A 91 A 112 A 150 A 180 A 216 A 260 A 304 A 370 A 450 A 605 A Normal Duty 0.75 kW 1.1 kW 2.2

kW 3.0 kW 5.

5 kW 7.5 kW 11.0 kW 15.0 kW 18.5 kW 22 kW 30 kW 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 110 kW 0.

75 kW 1.5 kW 2.2 kW 3.0 kW 4.0 kW 5.

5 kW 7.5 kW 11.0 kW 15.0 kW 18.5 kW 22 kW 30 kW 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 132 kW 160 kW 185 kW 220 kW 250 kW 355 kW 3.5 A 6.0 A

9.6 A 12.0 A 21.0 A 30.

0 A 40.0 A 56.0 A 69.0 A 81 A 110 A 138 A 169 A 211 A 250 A 312 A 360 A 415 A 2.1 A 4.1 A 5.4 A 6.9 A 8.8 A 11.1 A 17.

5 A 23.0 A 31.0 A 38.0 A 44 A 58 A 72 A 88 A 103 A 139 A 165 A 208 A 250 A 296 A 362 A 414 A 515 A 675 A Model Standard CIMR-AC2A0004FAA CIMR-

AC2A0006FAA CIMR-AC2A0010FAA CIMR-AC2A0012FAA CIMR-AC2A0021FAA CIMR-AC2A0030FAA CIMR-AC2A0040FAA CIMR-AC2A0056FAA

CIMR-AC2A0069FAA CIMR-AC2A0081FAA CIMR-AC2A0110AAA CIMR-AC2A0138AAA CIMR-AC2A0169AAA CIMR-AC2A0211AAA CIMR-

AC2A0250AAA CIMR-AC2A0312AAA CIMR-AC2A0360AAA CIMR-AC2A0415AAA CIMR-AC4A0002FAA CIMR-AC4A0004FAA CIMR-AC4A0005FAA

CIMR-AC4A0007FAA CIMR-AC4A0009FAA CIMR-AC4A0011FAA CIMR-AC4A0018FAA CIMR-AC4A0023FAA CIMR-AC4A0031FAA CIMR-AC4A0033FAA CIMR-

AC4A0038FAA CIMR-AC4A0044FAA CIMR-AC4A0058AAA CIMR-AC4A0072AAA CIMR-AC4A0088AAA CIMR-AC4A0103AAA CIMR-AC4A0139AAA

CIMR-AC4A0165AAA CIMR-AC4A0208AAA CIMR-AC4A0250AAA CIMR-AC4A0296AAA CIMR-AC4A0362AAA CIMR-AC4A0414AAA CIMR-

AC4A0515AAA CIMR-AC4A0675AAA 200 V 400 V A1000 13 A Line filters Inverter Voltage Model CIMR-A 2CA0004 / 2CA0006 / 2CA0008 2CA0010 /

2CA0012 / 2CA0018 / 2CA0021 3-Phase 200 VAC 2CA0030 / 2CA0040 / 2CA0056 2CA0069 / 2CA0081 2CA00110 / 2CA0138 2CA0169 / 2CA0211

4CA0002 / 4CA0004 / 4CA0005 / 4CA0007 4C0009 / 4C0011 4CA0018 / 4CA0023 / 4CA0031 4CA0038 / 4CA0044 / 4CA0058 3-Phase 400 VAC 4CA0072

/4CA0088 4CA0103 / 4CA0139 / 4CA0165 4CA0208 / 4CA0250 4CA0296 / 4CA0362 4CA0414 / 4CA0515 4CA0675 Reference 3G3RV-PFI3010-SE 3G3RV-

PFI3018-SE 3G3RV-PFI2035-SE 3G3RV-PFI2060-SE 3G3RV-PFI2100-SE 3G3RV-PFI3170-SE 3G3RV-PFI3010-SE 3G3RV-PFI3018-SE 3G3RV-

PFI3035-SE 3G3RV-PFI3060-SE 3G3RV-PFI3100-SE 3G3RV-PFI3170-SE 3G3RV-PFI3200-SE 3G3RV-PFI3400-SE 3G3RV-PFI3600-SE 3G3RV-

PFI3800-SE Line filter Rated current (A) 10 18 35 60 100 170 10 18 35 60 100 170 250 400 600 800 Weight (kg) 1.2 1.

3 1.4 3 4.9 6.0 1.2 1.

3 2.2 4.0 4.5 6.0 11 8.5 11.0 31.0 Chokes Model Diameter Description Recommended for motors below 2.2 KW Recommended for motors below 15 KW

Recommended for motors below 45 KW Recommended for motors above 45 KW A1000-FEV2102-RE A1000-FEV2515-RE A1000-FEV5045-RE

A1000-FEV6045-RE 21 25 50 60 B Communication cards Type Model SI-N3 Communication option board Description DeviceNet option card Function ·

Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through

DeviceNet communication with the host controller. · Used for running or stopping the inverter, setting or referencing parameters, and monitoring output

frequency, output current, or similar items through PROFIBUS-DP communication with the host controller.

@@@Applicable Motor kW 132 160 400 V Class 185 220 250 315 355 1. Braking unit Model Model No. of CIMR- CDBR_ used A@2A_ 0250

ND 4220B 1 0296 HD 0296 ND 4220B 1 0362 HD 0362 ND 4220B 1 0414 HD 0414 ND 1 4220B 0515 HD 0515 ND 4220B 1 0675 HD 4220B 2 0675 ND
4220B 2 Model A1000-RE_ - Braking Resistor I Type Braking Specifications of Model Qty torque % Resistor LKEB(3% ED) 4045 4045 4045 4037 4045
Braking Min Specifications of Qty torque % Resist Resistor (10% ED) Value 9600W 9600W 9600W 9600W 9600W 13.



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6 13.6 13.6 16 13.6 4 4 4 5 6 140 120 100 110 95 105 90 3.2 3.2 3.2 3.

2 3.2 3.2 When connecting a mounting type resistor or braking resistor unit, set system constant L3-04 to 0 (Stall prevention disabled during deceleration). Motor will not stop at set deceleration time if this constant is not changed. Additionally the Internal braking transistor protection (L8-55) should be set to "0" when a external braking unit (CDBR-) is used.

F Feedback speed option card Type PG option card Model PG-B3 Description Complementary PG Function · For speed feedback input by connecting a motor encoder Input: 3 track (one or two tracks), for HTL encoder connection, 50 KHz max Output: 3 track open collector Encoder power supply: 12 V, 200 mA max · For speed feedback input by connecting a motor encoder Input: 3 track, line driver, 300 kHz max Output: 3 track, line driver Encoder power supply: 5 V or 12 V, 200 mA max PG-X3 Line Driver PG ALL DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. 179E-EN-01 In the interest of product improvement, specifications are subject to change without notice. 16 Frequency inverters .



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