



# Your PDF Guides

You can read the recommendations in the user guide, the technical guide or the installation guide for OMRON J1000. You'll find the answers to all your questions on the OMRON J1000 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

**User manual OMRON J1000**  
**User guide OMRON J1000**  
**Operating instructions OMRON J1000**  
**Instructions for use OMRON J1000**  
**Instruction manual OMRON J1000**

FIGURE NO.  
SEP-CH0002-01/01



## **J1000**

Compact General Purpose Inverter

Model: JZA

200 V Class Three-Phase Input 0.1 to 0.4 kW

200 V Class Single-Phase Input 0.1 to 1.5 kW

400 V Class Three-Phase Input 0.2 to 4.0 kW

## **USER'S MANUAL**



[You're reading an excerpt. Click here to read official OMRON J1000 user guide](http://yourpdfguides.com/dref/2888869)

<http://yourpdfguides.com/dref/2888869>

**Manual abstract:**

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*...223 8 SIEP C710606 33A OYMC AC Drive J1000 User Manual i Preface & General Safety This section provides safety messages pertinent to this product, that, if not heeded, may result in fatality, personal injury, or equipment damage. OYMC is not responsible for the consequences of ignoring these instructions. I.1 I.2 PREFACE..*

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....11 SIEP C710606 33A OYMC AC Drive J1000 User Manual 9 i.1 Preface i.1 Preface OYMC distributes products used as components in a wide variety of industrial systems and equipment. The selection and application of OYMC products remain the responsibility of the equipment manufacturer or end user. OYMC accepts no responsibility for the way its products are incorporated into the final system design. Under no circumstances should any OYMC product be incorporated into any product or design as the exclusive or sole safety control.

Without exception, all controls should be designed to detect faults dynamically and fail safely under all circumstances. All systems or equipment designed to incorporate a product distributed by OYMC must be supplied to the end user with appropriate warnings and instructions as to the safe use and operation of that part. Any warnings provided by OYMC must be promptly provided to the end user. OYMC offers an express warranty only as to the quality of its products in conforming to standards and specifications published in the OYMC manual. **NO OTHER WARRANTY, EXPRESSED OR IMPLIED, IS OFFERED.**

OYMC assumes no liability for any personal injury, property damage, losses, or claims arising from misapplication of its products. u Applicable Documentation The following manuals are available for J1000 series drives: J1000 Series Compact V/f Control Drive Quick Start Guide Read this manual first. This guide is packaged together with the product. It contains basic information required to install and wire the drive. This guide provides basic programming and simple setup and adjustment.

J1000 Series Compact V/f Control Drive User Manual This manual describes installation, wiring, operation procedures, functions, troubleshooting, maintenance, and inspections to perform before operation. u Symbols Note: Indicates a supplement or precaution that does not cause drive damage. **TERMS** Indicates a term or definition used in this manual. u Terms and Abbreviations **TERMS** · Drive: OYMC J1000 Series Drive · OYMC: Omron Yaskawa Motion Control B.V. 10 SIEP C710606 33A OYMC AC Drive J1000 User Manual i.2 General Safety i.2 General Safety u Supplemental Safety Information General Precautions · The diagrams in this manual may be indicated without covers or safety shields to show details. Restore covers or shields before operating the drive and run the drive according to the instructions described in this manual. · Any illustrations, photographs, or examples used in this manual are provided as examples only and may not apply to all products to which this manual is applicable.

· The products and specifications described in this manual or the content and presentation of the manual may be changed without notice to improve the product and/or the manual. · When ordering a new copy of the manual due to damage or loss, contact your OYMC representative or the nearest OYMC sales office and provide the manual number shown on the front cover. · If nameplate becomes worn or damaged, order a replacement from your OYMC representative or the nearest OYMC sales office. **WARNING** Read and understand this manual before installing, operating or servicing this drive. The drive must be installed according to this manual and local codes. The following conventions are used to indicate safety messages in this manual. Failure to heed these messages could result in serious or possibly even fatal injury or damage to the products or to related equipment and systems. **DANGER** Indicates a hazardous situation, which, if not avoided, will result in death or serious injury. **WARNING** Indicates a hazardous situation, which, if not avoided, could result in death or serious injury. **WARNING!** will also be indicated by a bold key word embedded in the text followed by an italicized safety message. **CAUTION** Indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury. **CAUTION!** will also be indicated by a bold key word embedded in the text followed by an italicized safety message. **NOTICE** Indicates a property damage message. **NOTICE:** will also be indicated by a bold key word embedded in the text followed by an italicized safety message. u Safety Messages **DANGER** Heed the safety messages in this manual.

Failure to comply will result in death or serious injury. The operating company is responsible for any injuries or equipment damage resulting from failure to heed the warnings in this manual. SIEP C710606 33A OYMC AC Drive J1000 User Manual 11 i.2 General Safety **DANGER** Electrical Shock Hazard Do not connect or disconnect wiring while the power is on. Failure to comply will result in death or serious injury.

Before servicing, disconnect all power to the equipment. The internal capacitor remains charged even after the power supply is turned off. The charge indicator LED will extinguish when the DC bus voltage is below 50 Vdc. To prevent electric shock, wait at least one minute after all indicators are OFF and measure the DC bus voltage level to confirm safe level. **WARNING** Sudden Movement Hazard System may start unexpectedly upon application of power, resulting in death or serious injury. Clear all personnel from the drive, motor and machine area before applying power. Secure covers, couplings, shaft keys and machine loads before applying power to the drive. **Electrical Shock Hazard** Do not attempt to modify or alter the drive in any way not explained in this manual. Failure to comply could result in death or serious injury. OYMC is not responsible for any modification of the product made by the user.



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*This product must not be modified. Do not allow unqualified personnel to use equipment. Failure to comply could result in death or serious injury. Maintenance, inspection, and replacement of parts must be performed only by authorized personnel familiar with installation, adjustment and maintenance of AC drives. Do not remove covers or touch circuit boards while the power is on. Failure to comply could result in death or serious injury. Fire Hazard Do not use an improper voltage source. Failure to comply could result in death or serious injury by fire. Verify that the rated voltage of the drive matches the voltage of the incoming power supply before applying power. Crush Hazard Do not use this drive in lifting applications without installing external safety circuitry to prevent accidental dropping of the load.*

*The drive does not possess built-in load drop protection for lifting applications. Failure to comply could result in death or serious injury from falling loads. Install electrical and/or mechanical safety circuit mechanisms independent of drive circuitry. CAUTION Crush Hazard Do not carry the drive by the front cover. Failure to comply may result in minor or moderate injury from the main body of the drive falling.*

*12 SIEP C710606 33A OYMC AC Drive J1000 User Manual i.2 General Safety NOTICE Observe proper electrostatic discharge procedures (ESD) when handling the drive and circuit boards. Failure to comply may result in ESD damage to the drive circuitry. Never connect or disconnect the motor from the drive while the drive is outputting voltage. Improper equipment sequencing could result in damage to the drive.*

*Do not perform a withstand voltage test on any part of the drive. Failure to comply could result in damage to the sensitive devices within the drive. Do not operate damaged equipment. Failure to comply could result in further damage to the equipment. Do not connect or operate any equipment with visible damage or missing parts. Install adequate branch circuit short circuit protection per applicable codes. Failure to comply could result in damage to the drive.*

*The drive is suitable for circuits capable of delivering not more than 30,000 RMS symmetrical Amperes, 240 Vac maximum (200 V Class) and 480 Vac maximum (400 V Class). Do not expose the drive to halogen group disinfectants. Failure to comply may cause damage to the electrical components in the drive.*

*Do not pack the drive in wooden materials that have been fumigated or sterilized. Do not sterilize the entire package after the product is packed. u Drive Label Warnings Always heed the warning information listed in Figure i.1 in the position shown in Figure i.2. WARNING Risk of electric shock. Read manual before installing. Wait 1 minute for capacitor discharge after disconnecting power supply. To conform to requirements, make sure to ground the supply neutral for 400V class. Figure i.*

*1 Warning Information Figure i.2 Warning Information Position u Warranty Information n Restrictions The J1000 was not designed or manufactured for use in devices or systems that may directly affect or threaten human lives or health. SIEP C710606 33A OYMC AC Drive J1000 User Manual 13 i.2 General Safety Customers who intend to use the product described in this manual for devices or systems relating to transportation, health care, space aviation, atomic power, electric power, or in underwater applications must first contact their OYMC representatives or the nearest OYMC sales office. This product has been manufactured under strict quality-control guidelines.*

*However, if this product is to be installed in any location where failure of this product could involve or result in a life-and-death situation or loss of human life or in a facility where failure may cause a serious accident or physical injury, safety devices must be installed to minimize the likelihood of any accident. u Quick Reference Run a Motor of One-Frame Larger Capacity When using this drive for variable torque loads such as fans and pumps, a motor one frame size larger can be used. Know the Details of Safety Measures The functions listed below affect the safe operation of the drive. Ensure that the settings fit the application requirements prior to operation. Safe operations.*

*Run by power on. Parameter setting b1-17. LED operator stop key priority selection. Parameter o2-02. Enter press required after changing the keypad frequency reference. Parameter o2-05. Operation interlock when program mode is selected. Parameter b1-08. Standards Compliance Refer to European Standards on page 212 and Refer to UL Standards on page 218. C UL R US LISTED 14 SIEP C710606 33A OYMC AC Drive J1000 User Manual 1 Receiving This chapter describes the proper inspections to perform after receiving the drive and illustrates the different enclosure types and components.*

*1.1 1.2 1.3 SECTION SAFETY.....*

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...19 SIEP C710606 33A OYMC AC Drive J1000 User Manual 15 1.1 Section Safety 1.

1 Section Safety CAUTION Do not carry the drive by the front cover. Failure to comply may cause the main body of the drive to fall, resulting in minor or moderate injury. NOTICE Observe proper electrostatic discharge procedures (ESD) when handling the drive and circuit boards. Failure to comply may result in ESD damage to the drive circuitry. A motor connected to a PWM drive may operate at a higher temperature than a utility-fed motor and the operating speed range may reduce motor cooling capacity. Ensure that the motor is suitable for drive duty and/or the motor service factor is adequate to accommodate the additional heating with the intended operating conditions. 16 SIEP C710606 33A OYMC AC Drive J1000 User Manual 1.2 Model Number and Nameplate Check 1.2 Model Number and Nameplate Check Please perform the following tasks after receiving the drive: · Inspect the drive for damage. If the drive appears damaged upon receipt, contact the shipper immediately.

· Verify receipt of the correct model by checking the information on the nameplate. · If you have received the wrong model or the drive does not function properly, contact your supplier. u Nameplate Heavy Duty Amps / Normal Duty Amps AC Drive Model Input Specifications Output Specifications Lot Number Serial Number Yaskawa Ref. Number JZAB0P1BAA 0.6 CIMR-JZBA0001BAA 5010 Software Version IP 20 PASS RoHS Enclosure Type Figure 1.1 Nameplate Information JZ J1000 Series No. Z Type European Standard No. A No. B 2 4 A B 0P1 No. B B Enclosure Type IP20 A A Receiving Design Revision Order Customized Specifications Standard model Voltage Class 1-phase, 200-240 Vac 3-phase, 200-240 Vac 3-phase, 380-480 Vac No. A M N S Environmental Specification <1> Standard Humidity- and dust-resistant Oil-resistant Vibration-resistant 1 n Single-Phase 200 V No. B0P1 B0P2 B0P4 B0P7 B1P5 Heavy Duty Max.



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Motor Capacity kW 0.1 0.2 0.

4 0.75 1.5 Rated Output Current A 0.8 1.6 3.

0 5.0 8.0 No. B0P1 B0P2 B0P4 B0P7 B1P5 Normal Duty Max. Motor Capacity kW 0.2 0.4 0.75 1.1 2.2 Rated Output Current A 1.

2 1.9 3.3 6.0 9.6 SIEP C710606 33A OYMC AC Drive J1000 User Manual 17 1.2 Model Number and Nameplate Check n Three-Phase 200 V No. 20P1 20P2 20P4 20P7 21P5 22P2 24P0 Heavy Duty Max Motor Capacity kW 0.1 0.2 0.4 0.

75 1.5 2.2 4.0 Rated Output Current A 0.8 1.

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5 No. 20P1 20P2 20P4 20P7 21P5 22P2 24P0 Normal Duty Max. Motor Capacity kW 0.2 0.4 0.75 1.1 2.2 3.0 3.7 Rated Output Current A 1.

2 1.9 3.5 6.0 9.6 12.0 17.5 n Three-Phase 400 V No. 40P2 40P4 40P7 41P5 42P2 43P0 44P0 Heavy Duty Max. Motor Capacity kW 0.2 0.

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0 Rated Output Current A 1.2 1.8 3.4 4.8 5.

5 7.2 9.2 No. 40P2 40P4 40P7 41P5 42P2 43P0 44P0 Normal Duty Max. Motor Capacity kW 0.4 0.75 1.5 2.2 3.0 4.

0 5.5 Rated Output Current A 1.2 2.1 4.1 5.4 6.9 8.8 11.1 <1> Drives with these specifications do not guarantee complete protection for the specified environmental condition. 18 SIEP C710606 33A OYMC AC Drive J1000 User Manual 1.

3 Component Names 1.3 Component Names This section illustrates the drive components as they are mentioned in this manual. u IP20/Open-Chassis n Single-Phase AC200 V JZAB0P1B ~ JZAB0P4B Three-Phase AC200 V JZA20P1B ~ JZA20P7B K J I H B F G C E A B C D E F Fan cover <1> Mounting hole Heatsink Cable cover Terminal cover Front cover screw A D G Option connector cover H Front cover I LED operator Refer to Using the Digital LED Operator on page 54 J Case K Cooling fan <1> Receiving Figure 1.2 Exploded View of IP20/Open-Chassis Type Components Three-Phase AC200 V JZA20P7B <1> The drives JZAB0P1B ~ JZAB0P4B and JZA20P1B ~ JZA20P4B do not have a cooling fan or a cooling fan cover. 1 SIEP C710606 33A OYMC AC Drive J1000 User Manual 19 1.

3 Component Names n Single-Phase AC200 V JZAB0P7B ~ B1P5B Three-Phase AC200 V JZA20P1B ~ 24P0B Three-Phase AC400 V JZA40P2B ~ 44P0B L K J I B A G H D F E C A B C D E F Mounting hole Heatsink Cable cover Terminal cover Bottom cover Front cover screw G Option connector cover H Front cover I LED operator Refer to Using the Digital LED Operator on page 54 J Case K Cooling fan <1> L Fan cover <1> Figure 1.3 Exploded view of IP20/Open-Chassis Type Components Three-Phase AC200 V JZA22P2B <1> The drives JZAB0P7B and 40P2B ~ 40P7B do not have a cooling fan or a cooling fan cover. 20 SIEP C710606 33A OYMC AC Drive J1000 User Manual 1.3 Component Names u Front Views JZA20P7 JZA22P2 A G B C F D E G A B C F D E E Ground terminal F Terminal cover G Option unit connector Refer to Communication Options on page 159 A DIP switch S1 Refer to DIP Switch S1 Analog Input Signal Selection on page 46 B DIP switch S3 Refer to Sinking/Sourcing Mode Switch on page 44 C Control circuit terminal Refer to Control Circuit Wiring on page 40 D Main circuit terminal Refer to Wiring the Main Circuit Terminal on page 39 Figure 1.4 Front Views of Drives SIEP C710606 33A OYMC AC Drive J1000 User Manual 21 Receiving 1 1.

3 Component Names This Page Intentionally Blank 22 SIEP C710606 33A OYMC AC Drive J1000 User Manual 2 Mechanical Installation This chapter explains how to properly mount and install the drive. 2.1 2.2 SECTION SAFETY.....

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.....24 MECHANICAL INSTALLATION.....

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.....26 SIEP C710606 33A OYMC AC Drive J1000 User Manual 23 2.1 Section Safety 2.1 Section Safety WARNING Fire Hazard Provide sufficient cooling when installing the drive inside an enclosed panel or cabinet. Failure to comply could result in overheating and fire.

When multiple drives are placed inside the same enclosure panel, install proper cooling to ensure air entering the enclosure does not exceed 40 °C.

CAUTION Crush Hazard Do not carry the drive by the front cover. Failure to comply may result in minor or moderate injury from the main body of the drive falling. NOTICE Observe proper electrostatic discharge (ESD) procedures when handling the drive. Failure to comply could result in ESD damage to the drive circuitry.

It may be difficult to perform maintenance on the cooling fans of drives installed in a vertical row inside an enclosure. Ensure adequate spacing at the top of

*the drive to perform cooling fan replacement when required. Operating the motor in the low-speed range diminishes the cooling effects, increases motor temperature, and may lead to motor damage by overheating. Reduce the motor torque in the low-speed range whenever using a standard blower cooled motor. If 100% torque is required continuously at low speed, consider using a special drive or vector motor.*

*Select a motor that is compatible with the required load torque and operating speed range. Do not operate motors above the maximum rated RPM. Failure to comply may lead to bearing or other mechanical motor failures. The speed range for continuous operation differs according to the lubrication method and motor manufacturer. If the motor is to be operated at a speed higher than the rated speed, consult with the manufacturer. Continuously operating an oil-lubricated motor in the low-speed range may result in burning. 24 SIEP C710606 33A OYMC AC Drive J1000 User Manual 2.1 Section Safety NOTICE When the input voltage is 440 V or higher or the wiring distance is greater than 100 meters, pay special attention to the motor insulation voltage or use a drive-rated motor. Failure to comply could lead to motor winding failure. Motor vibration may increase when operating a machine in variable-speed mode, if that machine previously operated at a constant speed.*

*Install vibration-proof rubber on the motor base or use the frequency jump function to skip a frequency resonating the machine. The motor may require more acceleration torque with drive operation than with a commercial power supply. Set a proper V/f pattern by checking the load torque characteristics of the machine to be used with the motor. The rated input current of submersible motors is higher than the rated input current of standard motors. Select an appropriate drive according to its rated output current. When the distance between the motor and drive is long, use a cable thick enough to connect the motor to the drive to prevent motor torque reduction. When using an explosion-proof motor, it must be subject to an explosion-proof test in conjunction with the drive. This is also applicable when an existing explosion-proof motor is to be operated with the drive. Since the drive itself is not explosion-proof, always install it in a safe place. Do not use a drive for a single-phase motor.*

*Replace the motor with a three-phase motor. If an oil-lubricated gearbox or speed reducer is used in the power transmission mechanism, oil lubrication will be affected when the motor operates only in the low speed range.*



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The power transmission mechanism will make noise and experience problems with service life and durability if the motor is operated at a speed higher than the rated speed. SIEP C710606 33A OYMC AC Drive J1000 User Manual 25 Mechanical Installation 2.2 Mechanical Installation 2.

2 Mechanical Installation This section outlines specifications, procedures, and environment for proper mechanical installation of the drive. u Installation Environment To help prolong the optimum performance life of the drive, install the drive in the proper environment. The table below provides a description of the appropriate environment for the drive. Environment Installation Area Ambient Temperature Humidity Storage Temperature Table 2.1 Installation Environment Conditions Indoors -10 °C to +50 °C (IP20/Open-Chassis) Drive reliability improves in environments without wide temperature fluctuations. When using an enclosure panel, install a cooling fan or air conditioner in the area to ensure that the air temperature inside the enclosure does not exceed the specified levels. Do not allow ice to develop on the drive. 95% RH or less and free of condensation -20 °C to +60 °C Install the drive in an area free from: · oil mist and dust · metal shavings, oil, water or other foreign materials · radioactive materials · combustible materials (e.g., wood) · harmful gases and liquids · excessive vibration · chlorides · direct sunlight 1000 m or lower 10 to 20 Hz at 9.8 m/s2 20 to 55 Hz at 5.9 m/s2 Install the drive vertically to maintain maximum cooling effects. Surrounding Area Altitude Vibration Orientation NOTICE: Prevent foreign matter such as metal shavings or wire clippings from falling into the drive during installation and project construction. Failure to comply could result in damage to the drive. Place a temporary cover over the top of the drive during installation.

Remove the temporary cover before startup, as the cover will reduce ventilation and cause the drive to overheat. 26 SIEP C710606 33A OYMC AC Drive J1000 User Manual 2.2 Mechanical Installation u Installation Orientation and Spacing Install the drive upright as illustrated in Figure 2.1 to maintain proper cooling. A B B A Correct B Incorrect Figure 2.1 Correct Installation Orientation n Single Drive Installation Figure 2.2 explains the required installation spacing to maintain sufficient space for airflow and wiring. Install the heatsink against a closed surface to avoid diverting cooling air around the heatsink. Side Clearance A A C Top/Bottom Clearance B C A 30 mm minimum B Airflow direction C 100 mm minimum Figure 2.2 Correct Installation Spacing Mechanical Installation n Multiple Drive Installation When installing multiple drives into the same enclosure panel, mount the drives according to Figure 2.

2. When mounting drives with a minimum side-by-side clearance of 2 mm according to Figure 2.3, derating must be considered and parameter L8-35 must be set. Refer to Parameter List on page 169. A B 2 mm B C 2 D C A Line up the tops of the drives.

B 30 mm minimum C 100 mm minimum D Airflow direction Figure 2.3 Space Between Drives (Side-by-Side Mounting) Note: When installing drives of different heights in the same enclosure panel, the tops of the drives should line up. Leave space between the top and bottom of stacked drives for cooling fan replacement if required. Using this method, it is possible to replace the cooling fans later. u Exterior and Mounting Dimensions Refer to NEMA Type 1 Kit on page 156 for exterior and mounting dimensions for NEMA Type 1.

SIEP C710606 33A OYMC AC Drive J1000 User Manual 27 2.2 Mechanical Installation n IP20/Open-Chassis Drives Table 2.2 IP20/Open-Chassis (without an EMC filter) D2 W1 2-M4 t1 H2 H1 H W D1 D Voltage Class Single-Phase 200 V Class Three-Phase 200 V Class Drive Model JZA B0P1B B0P2B B0P4B 20P1B 20P2B 20P4B 20P7B W 68 68 68 68 68 68 H 128 128 128 128 128 128 D 76 76 118 76 76 108 128 W1 56 56 56 56 56 56 Dimensions (mm) H1 H2 D1 118 5 6.5 118 5 6.5 118 5 38.5 118 5 6.5 118 5 6.5 118 5 38.5 118 5 58.5 D2 67.

5 67.5 109.5 67.5 67.5 99.5 119.5 t1 3 3 5 3 3 5 5 Weight (kg) 0.6 0.6 1.0 0.

6 0.6 0.9 1.1 Table 2.3 IP20/Open-Chassis (without an EMC filter) W1 4-M4 D2 H1 H W H2 t1 D1 D Voltage Class Single-Phase 200 V Class Three-Phase 200 V Class Three-Phase 400 V Class Drive Model JZA B0P7B B1P5B 21P5B 22P2B 24P0B 40P2B 40P4B 40P7B 41P5B 42P2B 43P0B 44P0B W 108 108 108 108 140 108 108 108 108 108 140 H 128 128 128 128 128 128 128 128 128 128 128 D 137.

5 154 129 137.5 143 81 99 137.5 154 154 154 143 W1 96 96 96 96 128 96 96 96 96 96 128 Dimensions (mm) H1 H2 D1 118 5 58 118 5 58 118 5 58 118 5 65 118 5 10 118 5 28 118 5 58 118 5 58 118 5 58 118 5 58 118 5 65 D2 129 145.5 120.5 129 134. 5 72.5 90.5 129 145.5 145.5 134.5 t1 5 5 5 5 5 5 5 5 5 5 5 Weight (kg) 1.7 1.8 1.7 1.

7 2.4 1.0 1.2 1.7 1.7 1.7 1.7 2.4 28 SIEP C710606 33A OYMC AC Drive J1000 User Manual 3 Electrical Installation This chapter explains proper procedures for wiring the control circuit terminals, motor and power supply. 3.

1 3.2 3.3 3.4 3.5 3.

6 3.7 3.8 3.9 3.10 3.

11 3.12 SECTION SAFETY.....

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...30 STANDARD CONNECTION DIAGRAM.....

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..32 MAIN CIRCUIT CONNECTION DIAGRAM.....

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*....47 INTERLOCKING WITH CONNECTED MACHINERY.....*

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*...48 WIRING CHECKLIST.....*

*.49 SIEP C710606 33A OYMC AC Drive J1000 User Manual 29 3.1 Section Safety 3.1 Section Safety DANGER Electrical Shock Hazard Do not connect or disconnect wiring while the power is on. Failure to comply will result in death or serious injury. WARNING Electrical Shock Hazard Do not operate equipment with covers removed. Failure to comply could result in death or serious injury. The diagrams in this section may show drives without covers or safety shields to show details. Be sure to reinstall covers or shields before operating the drives and run the drives according to the instructions described in this manual. Always ground the motor-side grounding terminal.*

*Improper equipment grounding could result in death or serious injury by contacting the motor case. Do not perform work on the drive while wearing loose clothing, jewelry or without eye protection. Failure to comply could result in death or serious injury. Remove all metal objects such as watches and rings, secure loose clothing, and wear eye protection before beginning work on the drive. Do not remove covers or touch circuit boards while the power is on. Failure to comply could result in death or serious injury. Do not allow unqualified personnel to perform work on the drive. Failure to comply could result in death or serious injury.*



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Installation, maintenance, inspection, and servicing must be performed only by authorized personnel familiar with installation, adjustment, and maintenance of AC drives. Do not touch any terminals before the capacitors have fully discharged.

Failure to comply could result in death or serious injury. Before wiring terminals, disconnect all power to the equipment. The internal capacitor remains charged even after the power supply is turned off. The charge indicator LED will extinguish when the DC bus voltage is below 50 Vdc. To prevent electric shock, wait at least one minute after all indicators are off and measure the DC bus voltage level to confirm safe level. Fire Hazard Tighten all terminal screws to the specified tightening torque. Loose electrical connections could result in death or serious injury by fire due to overheating of electrical connections. Do not use improper combustible materials. Failure to comply could result in death or serious injury by fire. Attach the drive to metal or other noncombustible material.

Do not use an improper voltage source. Failure to comply could result in death or serious injury by fire. Verify that the rated voltage of the drive matches the voltage of the incoming power supply before applying power. 30 SIEP C710606 33A OYMC AC Drive J1000 User Manual 3.1 Section Safety NOTICE Observe proper electrostatic discharge procedures (ESD) when handling the drive and circuit boards. Failure to comply may result in ESD damage to the drive circuitry. Never connect or disconnect the motor from the drive while the drive is outputting voltage. Improper equipment sequencing could result in damage to the drive. Do not use unshielded cable for control wiring. Failure to comply may cause electrical interference resulting in poor system performance.

Use shielded, twisted-pair wires and ground the shield to the ground terminal of the drive. Check all the wiring to ensure that all connections are correct after installing the drive and connecting any other devices. Failure to comply could result in damage to the drive. Do not modify the drive circuitry. Failure to comply could result in damage to the drive and will void warranty.

OYMC is not responsible for any modification of the product made by the user. This product must not be modified. SIEP C710606 33A OYMC AC Drive J1000 User Manual 31 Electrical Installation 3.2 Standard Connection Diagram 3.2 Standard Connection Diagram Connect the drive and peripheral devices as shown in Figure 3.

1. It is possible to run the drive via the digital operator without connecting digital I/O wiring. This section does not discuss drive operation; Refer to Start-Up Programming & Operation on page 51 for instructions on operating the drive. NOTICE: Inadequate branch short circuit protection could result in damage to the drive. Install adequate branch circuit short circuit protection per applicable codes. The drive is suitable for circuits capable of delivering not more than 30,000 RMS symmetrical amperes, 240 Vac maximum (200 V Class) and 480 Vac maximum (400 V Class). NOTICE: When the input voltage is 440 V or higher or the wiring distance is greater than 100 meters, pay special attention to the motor insulation voltage or use a drive duty motor. Failure to comply could lead to motor insulation breakdown. NOTICE: Do not connect AC control circuit ground to drive enclosure. Improper drive grounding can cause control circuit malfunction.

NOTICE: The minimum load for the multi-function relay output MA-MB-MC is 10 mA. \_ Terminals +1, +2, , B1, and B2 are for connecting options. Never connect power supply lines to these terminals. 2 MCCB For single phase 200 V r1 power supply, use s1 R/L1 and S/L2. t1 MC 1 MCCB Three phase R/L1 power supply S/L2 200 to 240 V T/L3 Forward run/stop DC reactor (option) Jumper +2 +1 <1> - <3> Thermal relay Braking resistor (option) (option) <2> Motor FU FV FW U V W M Cooling fan M r1 B1 B2 s1 t1 U/T1 V/T2 W/T3 R/L1 S/L2 T/L3 J1000 Main circuit Control circuit <4> S1 S2 S3 S4 S5 2 MCCB THRX OFF ON MC SA MC THRX Thermal relay for motor cooling fan MC MC MA Reverse run/stop External fault Fault reset Multi-step speed 1 main/aux switch Option unit connector DIP switch S1 I V Ground 10 or less (400 V class) 100 or less (200 V class) Digital output 250 Vac, 10 mA to 1 A 30 Vdc, 10 mA to 1 A (default setting) SA TRX SA TRX +24 V 8 mA MA Fault MB Digital inputs (default setting) SC <6> Fault relay <5> DIP switch S3 Sink Source 24 V MC Shield ground terminal 2k Main speed frequency reference. Multi-function programmable +V Setting power supply +10.5 max. 20 mA AM AC Analog monitor AM + output 0 to +10 Vdc A1 0 to +10 V (20 k ) (0)4 to 20 mA (250 ) AC - (2 mA) <7> Monitor output shielded line main circuit terminal twisted-pair shielded line control terminal Figure 3.1 Drive Standard Connection Diagram (200 V Class Example) <1> <2> <3> <4> <5> Remove the jumper when installing an optional DC reactor. The MC on the input side of the main circuit should open when the thermal relay is triggered.

Self-cooled motors do not require separate cooling fan motor wiring. Connected using sequence input signal (S1 to S5) from NPN transistor; Default: sink mode (0 V com). Use only a +24 V internal power supply in sinking mode; the source mode requires an external power supply Refer to I/O Connections on page 44. <6> Minimum load: 5 Vdc, 10 mA (reference value). 32 SIEP C710606 33A OYMC AC Drive J1000 User Manual 3.

2 Standard Connection Diagram <7> Monitor outputs work with devices such as analog frequency meters, ammeters, voltmeters and wattmeters; they are not intended for use as a feedback-type of signal. WARNING! Sudden Movement Hazard. Do not close the wiring for the control circuit unless the multifunction input terminal parameter is properly set (S5 for 3-Wire; H1-05 = "0"). Improper sequencing of run/stop circuitry could result in death or serious injury from moving equipment. WARNING! Sudden Movement Hazard.

Ensure start/stop and safety circuits are wired properly and in the correct state before energizing the drive. Failure to comply could result in death or serious injury from moving equipment. When programmed for 3-Wire control, a momentary closure on terminal S1 may cause the drive to start. WARNING! When 3-Wire sequence is used, set the drive to 3-Wire sequence before wiring the control terminals and ensure parameter b1-17 is set to 0 (drive does not accept a run command at power up (default). If the drive is wired for 3-Wire sequence but set up for 2Wire sequence (default) and if parameter b1-17 is set to 1 (drive accepts a Run command at power up), the motor will rotate in reverse direction at power up of the drive and may cause injury. Figure 3.2 illustrates an example of a 3-Wire sequence.



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Stop relay (N.C.) Run relay (N.

O.) Drive S1 S2 S5 SC Run command (run on momentary close) Stop command (stop on momentary open) Forward/reverse command (multi-function input: H1-05 = 0) Sequence input common Figure 3.2 3-Wire Sequence SIEP C710606 33A OYMC AC Drive J1000 User Manual 33 Electrical Installation 3 3.3 Main Circuit Connection Diagram 3.3 Main Circuit Connection Diagram Refer to diagrams in this section for the Main Circuit wiring connections.

Connections may vary based on drive capacity. The main circuit DC power supply powers the control circuit. NOTICE: Do not use the negative DC bus terminal "-" as a ground terminal. This terminal is at high voltage DC potential. Improper wiring connections could result in damage to the drive.

u Single-Phase 200 V Class (JZAB0P1 ~ B1P5) DC reactor (option) Jumper +2 R/L1 S/L2 +1 Braking Resistor Unit (option) B1 B2 Drive U/T1 V/T2 W/T3 Motor Single-phase 200 Vac Figure 3.3 Connecting Single-Phase Main Circuit Terminals NOTICE: Do not connect T/L3 terminal when using single-phase power supply input. Incorrect wiring may damage the drive. u Three-Phase 200 V Class (JZA20P1 ~ 24P0); Three-Phase 400 V Class (JZA40P2 ~ 44P0) DC reactor (option) Jumper +2 +1 R/L1 S/L2 T/L3 Three phase 200 Vac (400 Vac) -- Braking Resistor Unit (option) B1 B2 Drive U/T1 V/T2 W/T3 Motor Figure 3.4 Connecting Three-Phase Main Circuit Terminals 34 SIEP C710606 33A OYMC AC Drive J1000 User Manual 3.

4 Terminal Block Configuration 3.4 Terminal Block Configuration The figures in this section provide illustrations of the main circuit terminal block configurations of the different drive sizes. Models: JZAB0P1, B0P2, B0P4 JZA20P1, 20P2, 20P4, 20P7 Models: JZAB0P7, B1P5 JZA21P5, 22P2, 24P0 JZA40P2, 40P4, 40P7, 41P5 JZA42P2, 43P0, 44P0 Figure 3.5 Main Circuit Terminal Block Configurations SIEP C710606 33A OYMC AC Drive J1000 User Manual 35 Electrical Installation 3 3.5 Protective Covers 3.

5 Protective Covers Follow the procedure below to remove the protective covers before wiring the drive and to reattach the covers after wiring is complete. u IP20/Open-Chassis Cover Removal and Installation n Removing the Protective Covers 1. Loosen the screw that locks the front cover in place to remove. Figure 3.6 Remove the Front Cover on an IP20/Open-Chassis Drive 2. Apply pressure to the tabs on each side of the terminal cover. Pull the terminal cover away from the drive while pushing in on the tabs to pull the cover free. Figure 3.7 Remove the Terminal Cover on an IP20/Open-Chassis Drive n Reattaching the Protective Covers Properly connect all wiring and route power wiring away from control signal wiring. Reattach all protective covers when wiring is complete.

Apply only a small amount of pressure to lock the cover back into place. Figure 3.8 Reattach the Protective Covers on an IP20/Open-Chassis Drive 36 SIEP C710606 33A OYMC AC Drive J1000 User Manual 3.6 Main Circuit Wiring 3.6 Main Circuit Wiring This section describes the functions, specifications, and procedures required to safely and properly wire the main circuit of the drive. NOTICE: Do not solder the ends of wire connections to the drive. Soldered wiring connections can loosen over time. Improper wiring practices could result in drive malfunction due to loose terminal connections. u Main Circuit Terminal Functions Terminal R/L1 S/L2 T/L3 U/T1 V/T2 W/T3 B1 B2 +1 +2 +1 (2 terminals) Type Main circuit power supply input Drive output Braking resistor DC reactor connection DC power supply input Ground Table 3.1 Main Circuit Terminal Functions Function Connects line power to the drive. Drives with single-phase 200 V input power use terminals R/L1 and S/L2 only (T/L3 must not be used). Connects to the motor. Available for connecting a braking resistor or the braking resistor unit option. These terminals are shorted at shipment. Remove the shorting bar between +1 and +2 when connecting a DC reactor to this terminal.

For connecting a DC power supply. Grounding Terminal For 200 V class: 100 or less For 400 V class: 10 or less Reference 34 38 47 153 38 u Wire Gauges and Tightening Torque Select the appropriate wires and crimp terminals from Table 3.2 through Table 3.4. Note: 1.

Wire gauge recommendations based on drive continuous current ratings using 75 °C 600 Vac vinyl-sheathed wire assuming ambient temperature within 30 °C and wiring distance less than 100 m. 2. Terminals +1, +2, B1 and B2 are for connecting optional devices such as a DC reactor or braking resistor. Do not connect other non-specified devices to these terminals. n Single-Phase 200 V Class Model JZA B0P1 B0P2 B0P4 B0P7 B1P5 , +1, +2, B1, B2 M4 Table 3.2 Wire Gauge and Torque Specifications Applicable Tightening Gauge Terminal Screw Size Torque N-m (lb.in.) mm2 (AWG) R/L1, S/L2, U/T1, V/T2, W/T3,

, +1, +2, B1, B2, R/L1, S/L2, U/T1, V/T2, W/T3, , +1, +2, B1, B2, R/L1, S/L2, U/T1, V/T2, W/T3, M3.5 M4 M4 0.8 to 1.

0 (7.1 to 8.9) 1.2 to 1.5 (10.6 to 13.3) 1.2 to 1.5 (10.6 to 13.

3) 1.2 to 1.5 (10.6 to 13.3) 0.

75 to 2.5 (18 to 14) 2.5 to 6 (14 to 10) 2.5 to 6.0 (14 to 10) 2.

5 to 6.0 (14 to 10) Recommended Gauge mm2 (AWG) 2.5 (14) 2.5 (14) 4 (12) 6 (10) n Three-Phase 200 V Class Table 3.3 Wire Gauge and Torque Specifications Model JZA 20P1 20P2 20P4 20P7 Terminal R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, , +1, +2, B1, B2, Screw Size M3.5 Tightening Torque N-m (lb.in.) 0.8 to 1.0 (7.

1 to 8.9) Applicable Gauge mm2 (AWG) 0.75 to 2.5 (18 to 14) Recommended Gauge mm2 (AWG) 2.5 (14) SIEP C710606 33A OYMC AC Drive J1000 User Manual 37 Electrical Installation · Consider the amount of voltage drop when selecting wire gauges. Increase the wire gauge when the voltage drop is greater than 2% of motor rated voltage. Ensure the wire gauge is suitable for the terminal block. Use the following formula to calculate the amount of voltage drop: ·

Line drop voltage (V) = 3 x wire resistance (/km) x wire length (m) x current (A) x 10<sup>-3</sup> · Refer to instruction manual TOBPC72060000 for braking unit or braking resistor unit wire gauges. · Refer to UL Standards Compliance on page 218 for information on UL compliance. 3 3.

6 Main Circuit Wiring Model JZA 21P5 22P2 24P0 Terminal R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, , +1, +2, B1, B2 R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, , +1, +2, B1, B2, R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, , +1, +2, B1, B2, Screw Size M4 M4 M4 M4 Tightening Torque N-m (lb.in.) 1.2 to 1.5 (10.

6 to 13.3) 1.2 to 1.5 (10.6 to 13.

3) 1.2 to 1.5 (10.6 to 13.3) 1.2 to 1.5 (10.6 to 13.3) Applicable Gauge mm2 (AWG) 2.5 to 6 (14 to 10) 2.

5 to 6 (14 to 10) 2.5 to 6 (14 to 10) 2.5 to 6 (14 to 10) Recommended Gauge mm2 (AWG) 2.5 (14) 4 (12) 4 (12) 6 (10) n Three-Phase 400 V Class Table 3.4 Wire Gauge and Torque Specifications Model JZA 40P2 40P4 40P7 41P5 42P2 43P0 Terminal Screw Size Tightening Torque Applicable Gauge N-m (lb.



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in.) mm<sup>2</sup> (AWG) 1.2 to 1.5 (10.6 to 13.3).

3) 1.2 to 1.5 (10.6 to 13.3) 1.

2 to 1.5 (10.6 to 13.3) 1.2 to 1.

5 (10.6 to 13.3) 1.2 to 1.5 (10.6 to 13.3) 2.5 to 6.0 (14 to 10) 2.5 to 6 (14 to 10) 2.

5 to 6 (14 to 10) 2.5 to 6 (14 to 10) 2.5 to 6 (14 to 10) Recommended Gauge mm<sup>2</sup> (AWG) 2.5 (14) 2.5 (14) 4 (12) 2.5 (14) 4 (12) R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, , +1, +2, B1, B2, R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, , +1, +2, B1, B2 M4 M4 M4 M4 M4 44P0

u Main Circuit Terminal Power Supply and Motor Wiring This section outlines the various steps, precautions, and checkpoints for wiring the main circuit terminals and motor terminals. NOTICE: When connecting the motor to the drive output terminals U/T1, V/T2, and W/T3, the phase order for the drive and motor should match. Failure to comply with proper wiring practices may cause the motor to run in reverse if the phase order is backward. NOTICE: Do not connect phase-advancing capacitors or LC/RC noise filters to the output circuits. Improper application of noise filters could result in damage to the drive. NOTICE: Do not connect the AC power line to the output motor terminals of the drive. Failure to comply could result in death or serious injury by fire as a result of drive damage from line voltage application to output terminals. n Cable Length Between Drive and Motor When the cable length between the drive and the motor is too long (especially at low frequency output), note that the cable voltage drop may cause reduced motor torque. Drive output current will increase as the leakage current from the cable increases. An increase in leakage current may trigger an overcurrent situation and weaken the accuracy of the current detection.

Adjust the drive carrier frequency according to the following table. If the motor wiring distance exceeds 100 m because of the system configuration, reduce the ground currents. Refer to Table 3.5 to set the carrier frequency to an appropriate level. Cable Length Carrier Frequency Table 3.

5 Cable Length Between Drive and Motor 50 m or less 100 m or less 15 kHz or less 5 kHz or less Greater than 100 m 2 kHz or less Note: When setting carrier frequency, calculate the cable length as the total distance of wiring to all connected motors when running multiple motors from a single drive. n Ground Wiring Follow the precautions to wire the ground for one drive or a series of drives. WARNING! Electrical Shock Hazard. Always use a ground wire that complies with technical standards on electrical equipment and minimize the length of the ground wire. Improper equipment grounding may cause dangerous electrical potentials on equipment chassis, which could result in death or serious injury. WARNING! Electrical Shock Hazard. Be sure to ground the drive ground terminal. (200 V Class: Ground to 100 or less, 400 V Class: Ground to 10 or less). Improper equipment grounding could result in death or serious injury by contacting ungrounded electrical equipment. NOTICE: Do not share the ground wire with other devices such as welding machines or large-current electrical equipment.

Improper equipment grounding could result in drive or equipment malfunction due to electrical interference. 38 SIEP C710606 33A OYMC AC Drive J1000 User Manual 3.6 Main Circuit Wiring NOTICE: When using more than one drive, ground multiple drives according to instructions. Improper equipment grounding could result in abnormal operation of drive or equipment. Refer to Figure 3.9 when using multiple drives. Do not loop the ground wire. A B A Correct B Incorrect Figure 3.9 Multiple Drive Wiring n Wiring the Main Circuit Terminal WARNING! Electrical Shock Hazard. Shut off the power supply to the drive before wiring the main circuit terminals.

Failure to comply may result in death or serious injury. Note: A cover placed over the DC Bus and braking circuit terminals prior to shipment helps prevent miswiring. Cut away covers as needed for terminals with a needle-nose pliers. A A Protective Cover to Prevent Miswiring Main Circuit Connection Diagram Refer to section 3.3 Main Circuit Connection Diagram on page 34 for drive main power circuit connections.

WARNING! Fire Hazard. The braking resistor connection terminals are B1 and B2. Do not connect braking resistors to any other terminals. Improper wiring connections could cause the braking resistor to overheat and cause death or serious injury by fire. Failure to comply may result in damage to the braking circuit or drive.

SIEP C710606 33A OYMC AC Drive J1000 User Manual 39 Electrical Installation 3.7 Control Circuit Wiring 3.7 Control Circuit Wiring J1000 Control circuit S1 S2 S3 S4 S5 +24 V 8 mA Digital inputs (default setting) MA MB MC NOTICE: Do not solder the ends of wire connections to the drive. Soldered wire connections can loosen over time. Improper wiring practices could result in drive malfunction due to loose terminal connections. <1> Forward run/stop Reverse run/stop External fault Fault reset Multi-step speed 1 main/aux switch Option unit connector DIP switch S1 1 V Digital output 250 Vac, 10 mA to 1 A 30 Vdc, 10 mA to 1 A (default setting) <3> <2> SC DIP switch S3 Sink Source 24 V Shield ground terminal 2k Main speed frequency reference. Multi-function programmable +V Setting power supply +10.5 max. 20 mA Analog monitor AI 0 to +10 V (20 k ) (0)4 to 20 mA (250 ) AC AM AC AM + output - (2 mA) 0 to +10 Vdc shielded line main circuit terminal twisted-pair shielded line control terminal Monitor output Figure 3.10 Control Circuit Connection Diagram <1> Connected using sequence input signal (S1 to S5) from NPN transistor; Default: sink mode (0 V com) <2> Use only the +24 V internal power supply in sinking mode; the source mode requires an external power supply.

Refer to I/O Connections on page 44. <3> Minimum load: 5 Vdc, 10 mA (reference value). u Control Circuit Terminal Block Functions Drive parameters determine which functions apply to the multi-function digital inputs (S1 to S5), multi-function digital outputs (MA, MB, MC), and multi-function analog output (AM). The default is called out next to each terminal in Figure 3.10. WARNING! Sudden Movement Hazard. Always check the operation and wiring of control circuits after being wired. Operating a drive with untested control circuits could result in death or serious injury. WARNING! Confirm the drive I/O signals and external sequence before starting test run. Failure to comply may result in death or serious injury.

n Input Terminals Type Table 3.6 Control Circuit Input Terminals No. Terminal Name (Function) Function (Signal Level) Default Setting Multi-function input 1 (Closed: Forward run, Open: S1 Stop) 24 Vdc, 8 mA S2 Multi-function input 2 (Closed: Reverse run, Open: Note: Drive preset to sinking mode. When using source mode, set Stop) DIP switch S3 to allow for a 24 Vdc (±10%) external power supply.



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S3 Multi-function input 3 (External fault (N.

O.) Refer to Sinking/Sourcing Mode Switch on page 44. S4 Multi-function input 4 (Fault reset) S5 Multi-function input 5 (Multi-step speed reference 1) SC Multi-function input common (Control common) Sequence common Multi-Function Digital Inputs 40 SIEP C710606 33A OYMC AC Drive J1000 User Manual 3.7 Control Circuit Wiring Type Main Frequency Reference Input No. AI +V AC Terminal Name (Function) Frequency reference Analog input power supply Frequency reference common Function (Signal Level) Default Setting Input voltage or input current (Selected by DIP switch S1 and H3-01) 0 to +10 Vdc (20 k), Resolution: 1/1000 4 to 20 mA (250 ) or 0 to 20 mA (250 ), Resolution: 1/500 +10.

5 Vdc (max allowable current 20 mA) 0 Vdc n Output Terminals Type Multi-Function Digital Output Monitor Output No. MA MB MC AM AC Table 3.7 Control Circuit Output Terminals Terminal Name (Function) Function (Signal Level) Default Setting N.O. output (fault) Digital output N.C. output (fault) 30 Vdc, 10 mA to 1 A; 250 Vac, 10 mA to 1 A Minimum load: 5 Vdc, 10 mA (reference value) Digital output common Analog monitor output 0 to 10 Vdc (2 mA or less) Resolution: 1/256 Monitor common 0V u Terminal Configuration S1 S2 S3 S4 S5 SC AI +V AC AM AC MA MB MC Figure 3.11 Control Circuit Terminal n Wire Size and Torque Specifications Select appropriate wire type and size from Table 3.8. For simpler and more reliable wiring, crimp ferrules to the wire ends.

Refer to Table 3.9 for ferrule terminal types and sizes. Table 3.8 Wire Size and Torque Specifications (Same for All Models) Bare Wire Terminal Ferrule-Type Terminal Tightening Tightening Applicable Applicable wire Recomm. Torque Torque Recomm. wire size size Wire Type mm2 N-m (in-lbs) mm2 mm2 (AWG) 2

(AWG) mm (AWG) (AWG) 0.5 to 0.6 4.4 to 5.3 Stranded: 0.

25 to 1.5 (24 to 16) Single: 0.25 to 1.5 (24 to 16) Stranded: 0.25 to 1.

0 (24 to 18) Single: 0.25 to 1.5 (24 to 16) 0.75 (18) 0.25 to 1.

0 (24 to 17) 0.5 (20) Shielded line, etc. 0.75 (18) 0.25 to 0.5 (24 to 20) 0.5 (20) Terminal Screw Size MA, MB, MC M3 S1-S5, SC, +V, AI, AC, AM M2 0.22 to 0.25 1.9 to 2.

2 n Ferrule-Type Wire Terminations Crimp a ferrule to signal wiring to improve wiring simplicity and reliability. Use CRIMPFOX ZA-3, a crimping tool manufactured by PHOENIX CONTACT. SIEP C710606 33A OYMC AC Drive J1000 User Manual 41 Electrical Installation 3 3.7 Control Circuit Wiring d1 6 mm d2 Figure 3.12 Ferrule Dimensions Table 3.9 Ferrule Terminal Types and Sizes Size (AWG) 0.25 (24) 0.34 (22) 0.5 (20) 0.75 (18) 1.

0 mm2 Type AI 0.25-6YE AI 0.34-6TQ AI 0.5-6WH AI 0.75-6GY AI 1-6RD L (mm) 10.

5 10.5 12 12 12 d1 (mm) 0.8 0.8 1.1 1.

3 1.5 d2 (mm) 2.0 2.0 2.5 2.8 3.0 Manufacturer L PHOENIX CONTACT u Wiring Procedure This section describes the proper procedures and preparations for wiring the control terminals. WARNING! Electrical Shock Hazard. Do not remove covers or touch the circuit boards while the power is on. Failure to comply could result in death or serious injury.

NOTICE: Separate control circuit wiring from main circuit wiring (terminals R/L1, S/L2, T/L3, B1, B2, U/T1, V/T2, W/T3, -, +1, +2) and other high-power lines. Improper wiring practices could result in drive malfunction due to electrical interference. NOTICE: Separate wiring for digital output terminals MA, MB and MC from wiring to other control circuit lines. Improper wiring practices could result in drive or equipment malfunction or nuisance trips. NOTICE:

Use a class 2 power supply (UL standard) when connecting to the control terminals. Improper application of peripheral devices could result in drive performance degradation due to improper power supply. NOTICE: Insulate shields with tape or shrink tubing to prevent contact with other signal lines and equipment. Improper wiring practices could result in drive or equipment malfunction due to short circuit. NOTICE: Connect the shield of shielded cable to the appropriate ground terminal. Improper equipment grounding could result in drive or equipment malfunction or nuisance trips.

Wire the control terminals using Figure 3.13 as a guide. Prepare the ends of the control circuit wiring as shown in Figure 3.14. Refer to Wire Size and Torque Specifications on page 41.

NOTICE: Do not tighten screws beyond the specified tightening torque. Failure to comply may damage the terminal. NOTICE: Use shielded twisted-pair cables as indicated to prevent operating faults. Improper wiring practices could result in drive or equipment malfunction due to electrical interference.

Connect control wires as shown in the following figure: D Preparing wire terminal ends A S1 S2 S3 S4 S5 SC AI +V AC AM AC E B C A Control terminal block B Avoid fraying wire strands when stripping insulation from wire.

Strip length 5.5 mm. C Single wire or stranded wire D Loosen screw to insert wire. E Blade depth of 0.4 mm or less Blade width of 2.5 mm or less Figure 3.13 Terminal Board Wiring Guide 42 SIEP C710606 33A OYMC AC Drive J1000 User Manual 3.7 Control Circuit Wiring F C A D B E A Drive side B Connect shield to ground terminal of drive. C Insulation D Control device side E Shield sheath (Insulate with tape) F Shield Figure 3.14 Preparing the Ends of Shielded Cables When setting the frequency by analog reference from an external potentiometer, use shielded twisted-pair wires and ground the shield of twisted-pair wires to the ground terminal of the drive.

NOTICE: The analog signal lines between the drive and the operator station or peripheral equipment should not exceed 50 meters when using an analog signal from a remote source to supply the frequency reference. Failure to comply could result in poor system performance. A B +V AI C D AC A Drive B Ground terminal (shield connection) C (+V) Frequency setting power source +10.5 Vdc maximum 20 mA D (AI) Main speed frequency reference 0 to +10

Vdc (20 k) or 4 to 20 mA (250 )/0 to 20 mA (250 ) Figure 3.15 Wiring the Frequency Reference to the Control Circuit Terminals (External Reference)

Electrical Installation 3 SIEP C710606 33A OYMC AC Drive J1000 User Manual 43 3.8 I/O Connections 3.8 I/O Connections u Sinking/Sourcing Mode Switch Set the DIP switch S3 on the front of the drive to switch the digital input terminal logic between sinking mode and sourcing mode; the drive is preset to sinking mode. Set Value SINK SOURCE Table 3.10 Sinking/Sourcing Mode Setting Details Sinking Mode (0 V common): default setting Sourcing Mode (+24 V common) DIP Switch S3 SOURCE SINK Figure 3.16 DIP Switch S3 n Transistor Input Signal Using 0 V Common/Sink Mode When controlling the digital inputs by NPN transistors (0 V common/sinking mode), set the DIP switch S3 to SINK and use the internal 24 V power supply.



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