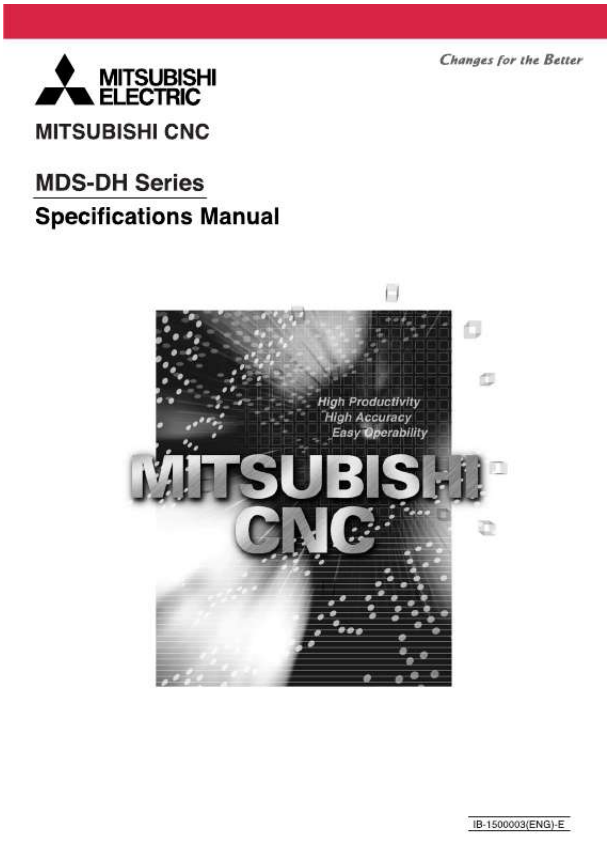

Changes for the Better

MITSUBISHI ELECTRIC

MITSUBISHI CNC

MDS-DH Series

Specifications Manual

High Productivity
High Accuracy
Easy Operability

MITSUBISHI CNC

IB-1500003(ENG)-E

Manual abstract:

@@@@@@Make sure that this instruction manual is delivered to the end user. Always store this manual in a safe place. @@The "restrictions" and "available functions" described in the manuals issued by the machine manufacturers have precedence to those in this manual. (2) This manual describes as many special operations as possible, but it should be kept in mind that items not mentioned in this manual cannot be performed. Precautions for safety Please read this manual and auxiliary documents before starting installation, operation, maintenance or inspection to ensure correct usage. Thoroughly understand the device, safety information and precautions before starting operation. The safety precautions in this instruction manual are ranked as "WARNING" and "CAUTION". DANGER When there is a potential risk of fatal or serious injuries if handling is mistaken. When a dangerous situation, or fatal or serious injuries may occur if handling is mistaken. When a dangerous situation may occur if handling is mistaken leading to medium or minor injuries, or physical damage.

WARNING CAUTION Note that some items described as CAUTION may lead to major results depending on the situation. In any case, important information that must be observed is described. The signs indicating prohibited and mandatory matters are explained below. Indicates a prohibited matter. For example, "Fire Prohibited" is indicated as .

Indicates a mandatory matter. For example, grounding is . indicated as After reading this specifications and instructions manual, store it where the user can access it easily for reference. The numeric control unit is configured of the control unit, operation board, servo drive unit, spindle drive unit, power supply, servomotor and spindle motor, etc. In this section "Precautions for safety", the following items are generically called the "motor".

· Servomotor · Linear servomotor · Spindle motor In this section "Precautions for safety", the following items are generically called the "unit". · Servo drive unit · Spindle drive unit · Power supply unit · Scale interface unit · Magnetic pole detection unit Important matters that should be understood for operation of this machine are indicated as a POINT in this manual. POINT WARNING 1. Electric shock prevention Do not open the front cover while the power is ON or during operation. Failure to observe this could lead to electric shocks. Do not operate the unit with the front cover removed. The high voltage terminals and charged sections will be exposed, and can cause electric shocks. Do not remove the front cover and connector even when the power is OFF unless carrying out wiring work or periodic inspections. The inside of the units is charged, and can cause electric shocks. Since the high voltage is supplied to the main circuit connector while the power is ON or during operation, do not touch the main circuit connector with an adjustment screwdriver or the pen tip.

Failure to observe this could lead to electric shocks. Wait at least 15 minutes after turning the power OFF, confirm that the CHARGE lamp has gone out, and check the voltage between P and N terminals with a tester, etc., before starting wiring, maintenance or inspections. Failure to observe this could lead to electric shocks. Ground the unit and motor following the standards set forth by each country. Wiring, maintenance and inspection work must be done by a qualified technician. Wire the servo drive unit and servomotor after installation. Failure to observe this could lead to electric shocks. Do not touch the switches with wet hands. Failure to observe this could lead to electric shocks.

Do not damage, apply forcible stress, place heavy items on the cables or get them caught. Failure to observe this could lead to electric shocks. 2. Injury prevention The linear servomotor uses a powerful magnet on the secondary side, and could adversely affect pacemakers, etc. During installation and operation of the machine, do not place portable items that could malfunction or fail due to the influence of the linear servomotor's magnetic force.

Take special care not to pinch fingers, etc., when installing (and unpacking) the linear servomotor. In the system where the optical communication with CNC is executed, do not see directly the light generated from CN1A/CN1B connector of drive unit or the end of cable. When the light gets into eye, you may feel something is wrong for eye. (The light source of optical communication corresponds to class1 defined in JISC6802 or IEC60825-1.

) CAUTION 1. Fire prevention Install the units, motors and regenerative resistor on non-combustible material. Direct installation on combustible material or near combustible materials could lead to fires. Always install a circuit protector and contactor on the servo drive unit power input as explained in this manual. Refer to this manual and select the correct circuit protector and contactor. An incorrect selection could result in fire. Shut off the power on the unit side if a fault occurs in the units. Fires could be caused if a large current continues to flow. When using a regenerative resistor, provide a sequence that shuts off the power with the regenerative resistor's error signal. The regenerative resistor could abnormally overheat and cause a fire due to a fault in the regenerative transistor, etc.

The battery unit could heat up, ignite or rupture if submerged in water, or if the poles are incorrectly wired. Cut off the main circuit power with the contactor when an alarm or emergency stop occurs. 2. Injury prevention Do not apply a voltage other than that specified in this manual, on each terminal. Failure to observe this item could lead to ruptures or damage, etc. Do not mistake the terminal connections. Failure to observe this item could lead to ruptures or damage, etc. Do not mistake the polarity (+ ,). Failure to observe this item could lead to ruptures or damage, etc. Do not touch the radiation fin on unit back face, regenerative resistor or motor, etc.

, or place parts (cables, etc.) while the power is turned ON or immediately after turning the power OFF. These parts may reach high temperatures, and can cause burns or part damage. Structure the cooling fan on the unit back face, etc., etc so that it cannot be touched after installation.

Touching the cooling fan during operation could lead to injuries. CAUTION 3. Various precautions Observe the following precautions. Incorrect handling of the unit could lead to faults, injuries and electric shocks, etc. (1) Transportation and installation Correctly transport the product according to its weight. Use the motor's hanging bolts only when transporting the motor. Do not transport the machine when the motor is installed on the machine. Do not stack the products above the tolerable number. Follow this manual and install the unit or motor in a place where the weight can be borne.

Do not get on top of or place heavy objects on the unit. Do not hold the cables, axis or detector when transporting the motor. Do not hold the connected wires or cables when transporting the units. Do not hold the front cover when transporting the unit. The unit could drop. Always observe the installation directions of the units or motors.

Secure the specified distance between the units and control panel, or between the servo drive unit and other devices. Do not install or run a unit or motor that is damaged or missing parts. Do not block the intake or exhaust ports of the motor provided with a cooling fan. Do not let foreign objects enter the units or motors. In particular, if conductive objects such as screws or metal chips, etc., or combustible materials such as oil enter, rupture or breakage could occur. The units and motors are precision devices, so do not drop them or apply strong impacts to them. CAUTION Store and use the units under the following environment conditions. Environment Ambient temperature Unit Motor Operation: 0 to 55°C (with no freezing), Operation: 0 to 40°C (with no freezing), Storage / Transportation: -15°C to 70°C (Note 2) Storage: -15°C to 70°C (with no freezing) (with no freezing) Operation: 90%RH or less Operation: 80%RH or less (with no dew condensation) (with no dew condensation), Storage / Transportation: 90%RH or less Storage: 90%RH or less (with no dew condensation) (with no dew condensation) Indoors (no direct sunlight) With no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles Operation/Storage: 1000 meters or less above Operation: 1000 meters or less above sea level, sea level, Transportation: 13000 meters or less above sea Storage: 10000 meters or less above sea level level According to each unit or motor specification Ambient humidity Atmosphere Altitude Vibration/impact (Note 1) For details, confirm each unit or motor specifications in addition. (Note 2) -15°C to 55°C for linear servomotor.
Securely fix the servomotor to the machine. Insufficient fixing could lead to the servomotor slipping off during operation. Always install the servomotor with reduction gear in the designated direction. Failure to do so could lead to oil leaks. Structure the rotary sections of the motor so that it can never be touched during operation.
Install a cover, etc., on the shaft. When installing a coupling to a servomotor shaft end, do not apply an impact by hammering, etc. The detector could be damaged. Do not apply a load exceeding the tolerable load onto the servomotor shaft.
The shaft could break. Store the motor in the package box. When inserting the shaft into the built-in IPM motor, do not heat the rotor higher than 130°C. The magnet could be demagnetized, and the specifications characteristics will not be ensured. Always use a nonmagnetic tool (explosion-proof beryllium copper alloy safety tool: NGK Insulators, etc.) when installing the linear servomotor. Always provide a mechanical stopper on the end of the linear servomotor's travel path. If the unit has been stored for a long time, always check the operation before starting actual operation. Please contact the Service Center, Service Station, Sales Office or delayer. CAUTION (2) Wiring Correctly and securely perform the wiring.

Failure to do so could lead to abnormal operation of the motor. Do not install a condensing capacitor, surge absorber or radio noise filter on the output side of the drive unit. Correctly connect the output side of the drive unit (terminals U, V, W). Failure to do so could lead to abnormal operation of the motor. When using a power regenerative power supply unit, always install an AC reactor for each power supply unit. In the main circuit power supply side of the unit, always install an appropriate circuit protector or contactor for each unit. Circuit protector or contactor cannot be shared by several units. Always connect the motor to the drive unit's output terminals (U, V, W). Do not directly connect a commercial power supply to the servomotor. Failure to observe this could result in a fault.
When using an inductive load such as a relay, always connect a diode as a noise measure parallel to the load. When using a capacitance load such as a lamp, always connect a protective resistor as a noise measure serial to the load. Do not reverse the direction of a diode which connect to a DC relay for the control output signals such as contractor and motor brake output, etc. to suppress a surge. Connecting it backwards could cause the drive unit to malfunction so that signals are not output, and emergency stop and other safety circuits are inoperable.
Servodrive unit COM (24VDC) Servodrive unit COM (24VDC) Control output signal RA Control output signal RA Do not connect/disconnect the cables connected between the units while the power is ON. Securely tighten the cable connector fixing sc the machine so that personal safety can be ensured even if the machine starts suddenly.) (6) Maintenance, inspection and part replacement Always backup the programs and parameters before starting maintenance or inspections. The capacity of the electrolytic capacitor will drop over time due to self-discharging, etc. To prevent secondary disasters due to failures, replacing this part every five years when used under a normal environment is recommended.
Contact the Service Center, Service Station, Sales Office or delayer for repairs or part replacement. Do not perform a megger test (insulation resistance measurement) during inspections. If the battery low warning is issued, back up the machining programs, tool data and parameters with an input/output unit, and then replace the battery. Do not short circuit, charge, overheat, incinerate or disassemble the battery. The heat radiating fin used in some units contains substitute Freon as the refrigerant.Take care not to damage the heat radiating fin during maintenance and replacement work. (7) Disposal Do not dispose of this type of unit as general industrial waste. Always contact the Service Center, Service Station, Sales Office or delayer for repairs or part replacement. Do not disassemble the unit or motor. Dispose of the battery according to local laws.

Always return the secondary side (magnet side) of the linear servomotor to the Service Center or Service Station. When incinerating optical communication cable, hydrogen fluoride gas or hydrogen chloride gas which is corrosive and harmful may be generated. For disposal of optical communication cable, request for specialized industrial waste disposal services that has incineration facility for disposing hydrogen fluoride gas or hydrogen chloride gas. CAUTION (8) Transportation The unit and motor are precision parts and must be handled carefully. According to a United Nations Advisory, the battery unit and battery must be transported according to the rules set forth by the International Civil Aviation Organization (ICAO), International Air Transportation Association (IATA), International Maritime Organization (IMO), and United States Department of Transportation (DOT), etc.

(9) General precautions The drawings given in this manual show the covers and safety partitions, etc., removed to provide a clearer explanation. Always return the covers or partitions to their respective places before starting operation, and always follow the instructions given in this manual. Treatment of waste The following two laws will apply when disposing of this product. Considerations must be made to each law.

The following laws are in effect in Japan. Thus, when using this product overseas, the local laws will have a priority. If necessary, indicate or notify these laws to the final user of the product. 1. Requirements for "Law for Promotion of Effective Utilization of Resources" (1) Recycle as much of this product as possible when finished with use.

(2) When recycling, often parts are sorted into steel scraps and electric parts, etc., and sold to scrap contractors. Mitsubishi recommends sorting the product and selling the members to appropriate contractors. 2. Requirements for "Law for Treatment of Waste and Cleaning" (1) Mitsubishi recommends recycling and selling the product when no longer needed according to item (1) above.

The user should make an effort to reduce waste in this manner. (2) When disposing a product that cannot be resold, it shall be treated as a waste product. (3) The treatment of industrial waste must be commissioned to a licensed industrial waste treatment contractor, and appropriate measures, including a manifest control, must be taken. (4) Batteries correspond to "primary batteries", and must be disposed of according to local disposal laws. CONTENTS 1. Introduction 1-1 Servo/spindle drive system configuration.....

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... 1-9 1-1 1. Introduction 1-1 Servo/spindle drive system configuration 1-1-1 System configuration 1-axis servo drive unit (MDS-DH-V1) 2-axis servo drive unit (MDS-DH-V2) Spindle drive unit (MDS-DH-SP) Power supply unit (MDS-DH-CV) From NC L+ L- Circuit protector or Protection fuse (Note) Prepared by user Contactor (Note) Prepared by user AC reactor (DH-AL) To 2nd and 3rd axis servo Servomotor Spindle motor Circuit protector (Note) Prepared by user Linear scale (for full closed control) (Note) Prepared by user Cell battery built in drive unit (ER6V-C119B) Spindle side detector 3-phase 400VAC power supply In addition to the cell battery in the above, the external battery unit (MDS-A-BT) can be also used. 1-2 1. Introduction 1-2 Explanation of type 1-2-1 Servomotor type AC SERVO MOTOR MITSUBISHI SER. X X X X X X X X X X Motor type Rated output Rated rotation speed Serial No. HF-HxxxBS INPUT 3AC 456 V xxx A OUTPUT x.xkW IEC34-1 1994 3000r/min IP65 CI.
F xx kg SER.No.xxxxxxxx DATE 04-1 MITSUBISHI ELECTRIC MADE IN JAPAN 00395298-01 ROTARY DETECTOR OSA166S5 DATE 0401 MITSUBISHI ELECTRIC CORP. MADE IN JAPAN Detector type D A2 Serial No. Detector rating nameplate Motor rating nameplate (1) HF-H Series HF-H (1) (2) (3) - (4) (4) Detector Symbol A51 A74 (3) Shaft end structure Symbol S T Shaft end structure Straight Taper (Note) "Taper" is available for the motor whose flange size is 90mm or 130mm.*
Detection method Absolute position Resolution 1,000,000 p/rev 16,000,000 p/rev Detector type OSA105S5 OSA166S5 (2) Magnetic brakes Symbol None B Magnetic brakes None With magnetic brakes (1) Rated output · Maximum rotation speed Symbol 75 105 54 104 154 204 354 453 703 903 Rated output 0.75 kW 1.0 kW 0.5 kW 1.0 kW 1.
5 kW 2.0 kW 3.5 kW 4.5 kW 7.0 kW 9.0 kW Maximum rotation speed 5000 r/min 5000 r/min 4000 r/min 4000 r/min 4000 r/min 4000 r/min 4000 r/min 3500 r/min 3000 r/min 3000 r/min Flange size 90 mm 90 mm 130 mm 130 mm 130 mm 176 mm 176 mm 176 mm 176 mm 204 mm 1-3 1. Introduction (2) HP-H Series HP-H (1) (2) (3) - (4) (4) Detector Symbol A51 A74 (3) Shaft end structure Symbol S T Shaft end structure Straight Taper (Note) "Taper" is available for the motor whose flange size is 130mm. Detection method Absolute position Resolution 1,000,000 p/rev 16,000,000 p/rev Detector type OSA105S5 OSA166S5 (2) Magnetic brakes Symbol None B Magnetic brakes None With magnetic brakes (1) Rated output · Maximum rotation speed Symbol 54 104 154 224 204 354 454 704 903 1103 Rated output 0.5 kW 1.0 kW 1.

5 kW 2.2 kW 2.0 kW 3.5 kW 4.5 kW 7.0 kW 9.0 kW 11.0 kW Maximum rotation speed 4000 r/min 4000 r/min 4000 r/min 4000 r/min 4000 r/min 4000 r/min 4000 r/min 4000 r/min 3000 r/min 3000 r/min Flange size 130 mm 130 mm 130 mm 130 mm 180 mm 180 mm 180 mm 180 mm 220 mm 220 mm (3) HC-H Series HC-H (1) S- S10 - (2) (2) Detector Symbol A51 A74 Detection method Absolute position Resolution 1,000,000p/rev 16,000,000p/rev Detector type OSA105S5 OSA166S5 Compatible with DH series (1) Rated output · Maximum rotation speed Symbol 1502 Rated output 15.0kW Maximum rotation speed 2500r/min Flange size 280 mm 1-4 1. Introduction 1-2-2 Servo drive unit type Output MITSUBISHI TYPE Applicable standard Software No.
*SERVO DRIVE UNIT MDS-DH-V1-80 Type Input/output conditions POWER 9.0kW INPUT 6A DC513-648V 0.1A 1PH380-440/380-480V 50/60Hz OUTPUT 15A 3PH 456V 0-240Hz EN50178 MANUAL #IB11500002 S/W BND5xxW000A0 H/W VER. * SERIAL# HVACQFXJK50 DATE 04/01 MITSUBISHI ELECTRIC CORPORATION * HV ACQ FXJ K 5 0 JAPAN %* Manual No. Serial No.*
Rating nameplate MDS-DH- (1) 1-axis servo drive unit (1) Type Nominal MDS-DH- maximum current V1-10 V1-20 V1-40 V1-80 V1-80W V1-160 V1-160W V1-200 10A 20A 40A 80A 80A 160A 160A 200A 90mm 120mm 150mm 240mm (Note) 60mm Unit width HF-H Compatible motor HP-H HC-H 75 105 54 104 154 204 354 453 703 903 54 104 154 224 204 354 454 704 903 1103 1502S-S10 (Note) DC connection bar is required. Always install a large capacity drive unit in the left side of power supply unit, and connect with DC connection bar. Indicates the compatible motor for each servo drive unit. 2-axis servo drive unit (1) Type MDS-DHV2-1010 V2-2010 V2-2020 V2-4020 V2-4040 V2-8040 V2-8080 Nominal maximum current 10+10A 20+10A 20+20A 40+20A 40+40A 80+40A 80+80A 90mm 60mm HF-H Unit width Axis 75 105 54 104 154 204 354 453 703 903 54 104 154 224 204 354 454 704 903 1103 LM L M LM L M LM L M LM Compatible motor HP-H Indicates the compatible motor for each servo drive unit. CAUTION The dynamic brake unit (MDS-D-DBU) is required for the MDS-DH-V1-160W or larger.
1-5 1. Introduction 1-2-3 Spindle motor type MITSUBISHI AC SPINDLE MOTOR TYPE SJ-4-V5.5-01T SI CONT kW 3.

7 2.8 S2 kW 5.5 4.1 r/min 1500-6000 8000 30 min r/min 1500-6000 8000 S3 A (~) max 4 POLE WIND 3 PHASES CONNECT 82 % 25 17 50 % A (~) max P OW ER FAC TOR MOTOR INPUT (~) 137 162 V AMP INPUT (~) 200-230V 50/60Hz 33 23 INSULATION CLASS F AMB TEMP. SERIAL DATE 0-40ºC FRAME D90F WEIGHT 49 kg IP 44 IEC 34-1 1994 SPEC No.RSV00023 MADE IN JAPAN 995291-01 MITSUBISHI ELECTRIC CORPORATION A19103-01 Rating nameplate (1) Standard spindle motor series SJ-4- (1) (2) - (3) (4) T For MDS-DH motor (4) Special specifications Symbol None Z Special specifications None High-speed (3) Specification code The SJ-4-V Series is indicated with a specification code (01 to 99). (2) Short time rated output Symbol 2.*

2 3.7 5.5 7.5 11 15 18.5 22 26 37 45 55 Short time rated output 2.2 kW 3.7 kW 5.5 kW 7.5 kW 11 kW 15 kW 18.5 kW 22 kW 26 kW 37 kW 45 kW 55 kW (Note) For the short time rated output of the wide range constant output, high-speed and hollow shaft series, refer to the specifications of each spindle motor. (1) Motor series Symbol V VS Motor series Compact medium to large capacity Hollow shaft (Note) The built-in spindle motor is available by special order. 1-6 1. Introduction 1-2-4 Spindle drive unit type Output MITSUBISHI SERVO DRIVE UNIT TYPE MDS-DH-SP-200 Applicable standard Software No. POWER 37kW INPUT 99A DC513-648V 0.1A 1PH380-440/380-480V 50/60Hz OUTPUT 85A 3PH 340V 0-1167Hz EN50178 MANUAL #IB1500003 Type Input/output conditions S/W BND5xxW000A0 H/W VER.
** SERIAL# HVA79G06K0R DATE 04/01 MITSUBISHI ELECTRIC CORPORATION JAPAN *HV A7 9 G 0 6 K0 R G* Manual No. Serial No. Rating nameplate MDS-DH - (1) (1) Capacity Symbol SP-20 SP-40 SP-80 SP-100 SP-160 SP-200 SP-320 SP-480 Nominal maximum current 20A 40A 80A 100A 160A 200A 320A 480A 90mm wide 120mm wide 150mm wide 240mm wide (Note) 300mm wide (Note) Unit width 60mm wide (Note) DC connection bar is required. Always install a large capacity drive unit in the left side of power supply unit, and connect with DC connection bar. 1-7 1.*
*Introduction 1-2-5 Power supply unit type Output MITSUBISHI TYPE Applicable standard Software No. SERVO DRIVE UNIT MDS-DH-CV-450 Type Input/output conditions POWER 37kW INPUT 87A 3PH 380- 440/480V 50/60Hz 0.1A 1PH 380- 440/480V 50/60Hz OUTPUT 99A DC513-648V EN50178 MANUAL #IB1500003 S/W BND5xxW000A0 H/W VER. * SERIAL# HVA3EG1796L DATE 04/01 MITSUBISHI ELECTRIC CORPORATION JAPAN *HV A3 EG 1 7 9 6 L M* Manual No. Serial No. Rating nameplate MDS-DH- (1) Power supply unit (1) Type MDS-DHCV-37 CV-75 CV-110 CV-185 CV-300 CV-370 CV-450 CV-550 CV-750 Rated output 3.7 kW 7.5 kW 11.0 kW 18.5 kW 30.*

0 kW 37.0 kW 45.0 kW 55.0 kW 75.0 kW Unit width Under development Under development 90mm wide 150mm wide (Note 2) 300mm wide (Note 2) DH-AL-11K DH-AL-18.5K DH-AL-30K DH-AL-37K DH-AL-45K DH-AL-55K DH-AL-75K DH-AL-7.5K Compatible AC reactor Compatible contactor (Mitsubishi) (Note 1) Compatible circuit protector (Mitsubishi) (Note 1) NF63-CW3P-10A S-N12-AC400V NF63-CW3P-20A S-N21-AC400V S-N25-AC400V S-N50-AC400V S-N65-AC400V S-N80-AC400V S-N150-AC400V NF63-CW3P-30A NF63-CW3P-50A NF125-CW3P-75A NF125-CW3P-100A NF125-CW3P-125A NF250-CW3P-150A NF250-CW3P-200A (Note 1) This is an optional part, and must be prepared by the user. (Note 2) When connecting with a large capacity drive unit, DC connection bar is required. Always install a large capacity drive unit in the left side of power supply unit, and connect with DC connection bar. 1-8 1.
Introduction 1-2-6 AC reactor type Type DH-AL-18.5K Nameplate Top surface of AC reactor DH-AL- (1) AC reactor (1) Type Capacity DH-AL7.5K 11K 18.5K 30K 37K 45K 55K 75K 7.5 kW 11.
0 kW 18.5 kW 30.0 kW 37.0 kW 45.0 kW 55.
0 kW 75.0 kW Compatible power supply unit MDS-DH-CV-37 MDS-DH-CV-75 MDS-DH-CV-110 MDS-DH-CV-185 MDS-DH-CV-300 MDS-DH-CV-370 MDS-DH-CV-450 MDS-DH-CV-550 MDS-DH-CV-750 1-9 2. Specifications 2-1 Servomotor.....

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6 28.7 28.0 58.8 10 0.75 1.
4 1.8 1.6 2.0 4000 5000 7.0 8.
0 12.3 2.6 2.8 3000 54.2 152.0 32.2 154.0 163.7 102.0 208.

0 42.1 196.0 205.7 7.75 11.0 11.2 5.1 5.3 Maximum motor shaft conversion load inertia ratio Motor side detector Structure Ambient temperature Ambient humidity Environment Atmosphere Altitude Vibration Weight [kg] Without/with brake Armature insulation class High-speed, high-accuracy machine : 3 times or less of motor inertia General machine tool (interpolation axis) : 5 times or less of motor inertia General machine (non-interpolation axis) : 7 times or less of motor inertia Resolution per motor revolution A74: 16,000,000 pulse/rev, A51: 1,000,000 pulse/rev Fully closed, self-cooling (Protection method: IP67) (Note3) Operation: 0 to 40°C (with no freezing), Storage: -15°C to 70°C (with no freezing) Operation: 80%RH or less (with no dew condensation), Storage: 90%RH or less (with no dew condensation) Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust Operation: 1000 meters or less above sea level, Storage: 10000 meters or less above sea level 2 2 X: 19.6m/s (2G) Y: 19.
6m/s (2G) 2.5/ 3.9 4.3/ 5.7 4.
8/ 6.8 6.5/ 8.5 8.3/ 12.
0/ 10.3 18.0 Class F 19.0/ 25.0 26.0/ 32.0 32.0/ 38.0 45.0/ 51.

0 (Note 1) The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit. (Note 2) Use the HF-H motor in combination with the MDS-DH Series drive unit compatible with the 400VAC input. This motor is not compatible with the conventional MDS-B/C1/CH Series.

(Note 3) The shaft-through portion is excluded. 2-2 2. Specifications HP-H Series HP-H Series Servomotor type HP-H 54 Compatible servo drive MDS-DH-V1/2unit Rated output [kW] Continuous characteristics Rated current [A] Rated torque Stall current Stall torque Rated rotation speed Maximum rotation speed Maximum current Maximum torque Power rate at continuous rated torque Motor inertia Motor inertia with brake [N·m] [A] [N·m] [r/min] [r/min] [A] [N·m] [kW/s] [kg·cm2] [kg·cm2] 8.4 11.0 5.5 4.
6 5.1 12.8 19.2 13.0 7.
7 8.2 26.0 36.5 19.0 12.
0 12.5 4000 28.5 46.0 20.0 20.0 25.5 28.5 43.0 14.0 29.

0 34.5 58.0 66.0 33.0 37.0 42.5 58.0 95.0 36.0 55.
0 60.5 58.0 120.0 59.0 82.
0 87.5 20 0.5 0.9 1.6 1.
8 3.0 HP-H 104 20 1.0 1.8 3.2 3.4 5.9 ABS specifications: HP-H HP-H HP-H HP-H HP-H 154 224 204 354 40 1.5 2.5 4.8 4.

7 9.0 40 2.2 3.7 6.4 7.0 12.0 40 2.0 3.6 6.4 7.
7 13.7 80 3.5 7.6 11.1 15.
5 22.5 -A74/-A51 HP-H HP-H 454 704 80 4.5 7.1 14.3 16.
0 31.9 80W 7.0 9.6 22.3 21.0 49.0 HP-H 903 160 9.0 11.1 28.7 27.

0 70.0 HP-H 1103 160W 11.0 12.6 35.0 39.5 110.0 3000 3000 86.0 170.0 52.0 225.
0 249.0 106.0 260.0 48.0 300.
0 324.0 Maximum motor shaft conversion load inertia ratio Motor side detector Structure Ambient temperature Ambient humidity Environment Atmosphere Altitude Vibration Weight [kg] Without/with brake Armature insulation class High-speed, high-accuracy machine : 3 times or less of motor inertia General machine tool (interpolation axis) : 5 times or less of motor inertia General machine (non-interpolation axis) : 10 times or less of motor inertia Resolution per motor revolution A74: 16,000,000 pulse/rev, A51: 1,000,000 pulse/rev Fully closed, self-cooling (Protection method: IP67) (Note3) Operation: 0 to 40°C (with no freezing), Storage: -15°C to 70°C (with no freezing) Operation: 80%RH or less (with no dew condensation), Storage: 90%RH or less (with no dew condensation) Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust Operation: 1000 meters or less above sea level, storage: 10000 meters or less above sea level 2 2 X: 19.6m/s (2G) Y: 19.6m/s (2G) 6.0/ 7.
3 7.0/ 8.5 8.0/ 9.5 12.0/ 13.9 14.0/ 17.0/ 15.9 22.

0 Class F 21.0/ 26.0 37.0/ 43.0 51.0/ 61.4 74.0/ 84.4 (Note 1) The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit.
(Note 2) Use the HP-H motor in combination with the MDS-DH Series drive unit compatible with the 400VAC input. This motor is not compatible with the conventional MDS-B/C1/CH Series. (Note 3) The shaft-through portion is excluded. 2-3 2. Specifications HC-H Series HC-H Series Servomotor type ABS specifications: HC-H HC-H1502S-S10 Compatible servo drive MDS-DH-V1unit Rated output [kW] Continuous characteristics Rated current [A] Rated torque Stall current Stall torque Rated rotation speed Maximum rotation speed Maximum current Maximum torque Power rate at continuous rated torque Motor inertia Motor inertia with brake [N·m] [A] [N·m] [r/min] [r/min] [A] [N·m] [kW/s] [kg·cm] [kg·cm] 2 2 -A74/-A51 200 15.
0 38.8 71.6 76.8 146.0 2000 2500 160.
0 280.0 104.5 550 --High-speed, high-accuracy machine : 3 times or less of motor inertia General machine tool (interpolation axis) : 5 times or less of motor inertia General machine (non-interpolation axis) : 10 times or less of motor inertia Resolution per motor revolution A74: 16,000,000 pulse/rev, A51: 1,000,000 pulse/rev Fully closed, self-cooling (Protection method: IP67) (Note3) 3-phase 400V 85W Operation: 0 to 40°C (with no freezing), Storage: -15°C to 70°C (with no freezing) Operation: 80%RH or less (with no dew condensation), Storage: 90%RH or less (with no dew condensation) Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust Operation: 1000 meters or less above sea level, storage: 10000 meters or less above sea level 2 2 X: 9.8m/s (2G) Y: 9.8m/s (2G) 160/--Class F Maximum motor shaft conversion load inertia ratio Motor side detector Structure Cooling fan Input voltage Maximum power consumption Ambient temperature Ambient humidity Environment Atmosphere Altitude Vibration Weight [kg] Without/with brake Armature insulation class (Note 1) The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit. (Note 2) Use the HC-H motor in combination with the MDS-DH Series drive unit compatible with the 400VAC input. This motor is not compatible with the conventional MDS-B/C1/CH Series. (Note 3) The shaft-through portion is excluded. 2-4 2.

Specifications 2-1-2 Torque characteristics (1) HF-H Series [HF-H75] 10 12 [HF-H105] 7.5 Torque [N.m] Torque [N.m] 9 5 Short time operation range 6 Short time operation range 2.5 Continuous operation range 3 Continuous operation range 0 0 2000 4000 5000 0 0 2000 4000 5000 Rotation speed [r/min] Rotation speed [r/min] [HF-H54] 15 12 Torque [N.m] Torque [N.m] 9 6 Short time operation range [HF-H104] 25 20 15 Short time operation range [HF-H154] 50 40 Torque [N.m] 30 Short time operation range 10 5 20 10 3 0 Continuous operation range Continuous operation range 0 2000 Rotation speed [r/min] 4000 0 0 2000 Rotation speed [r/min] 4000 0 Continuous operation range 0 2000 Rotation speed [r/min] 4000 [HF-H204] 50 40 Torque [N.m] 30 20 10 Continuous operation range [HF-H354] 100 80 60 Short time operation range HF-H453 125 100 Torque [N.m] 75 Short time operation range Short time operation range 40 20 0 Continuous operation range 50 25 Continuous operation range 0 0 2000 Rotation speed [r/min] 4000 0 2000 Rotation speed [r/min] 4000 0 0 1000 2000 3000 3500 Rotation speed [r/min] [HF-H703] 160 240 [HF-H903] 120 Torque [N.
m] Torque [N.m] 180 80 Short time operation range 120 Short time operation range (Note) The above graphs show the data when applied the input voltage of 380VAC. When the input voltage is 380VAC or less, the short time operation range is limited. 40 60 Continuous operation range Continuous operation range 0 0 1000 2000 3000 0 0 1000 2000 3000 Rotation speed [r/min] Rotation speed [r/min] 2-5 2. Specifications (2) HP-H Series [HP-H54] 12 20 [HP-H104] 40 [HP-H154] 9 15 Torque [N.
m] Torque [N.m] 30 Torque [N.m] 6 Short time operation range 10 Short time operation range 20 Short time operation range 3 Continuous operation range 5 Continuous operation range 10 0 0 2000 Rotation speed [r/min] 4000 0 0 2000 Rotation speed [r/min] 4000 0 Continuous operation range 0 2000 Rotation speed [r/min] 4000 [HP-H224] 50 40 Torque [N.m] Torque [N.m] 30 Short time operation range [HP-H204] 50 40 Torque [N.

m] 30 Short time operation range [HP-H354] 75 50 45 Short time operation range 20 10 Continuous operation range 20 10 Continuous operation range 30 15 Continuous operation range 0 0 2000 Rotation speed [r/min] 4000 0 0 2000 Rotation speed [r/min] 4000 0 0 2000 Rotation speed [r/min] 4000 [HP-H454] 100 80 Torque [N.m] 60 Short time operation range [HP-H704] 150 120 Torque [N.m] 90 Short time operation range [HP-H903] 180 135 Torque [N.m] Short time operation range 90 40 20 Continuous operation range 60 30 Continuous operation range 45 Continuous operation range 0 2000 Rotation speed [r/min] 4000 0 0 2000 Rotation speed [r/min] 4000 0 0 1500 Rotation speed [r/min] 3000 [HP-H1103] 300 240 Torque [N.m] 180 Short time operation range (Note) The above graphs show the data when applied the input voltage of 380VAC. When the input voltage is 380VAC or less, the short time operation range is limited. 120 60 Continuous operation range 0 0 1500 Rotation speed [r/min] 3000 2-6 2. Specifications (3) HC-H Series HC-H1502S-S10 400 300 Torque [N.m] Short time operation range 200 (Note) 100 Continuous operation range The above graphs show the data when applied the input voltage of 380VAC. When the input voltage is 380VAC or less, the short time operation range is limited.

0 0 1000 2000 2500 Rotation speed [r/min] 2-7 2. Specifications 2-2 Spindle motor 2-2-1 Specifications Base rotation speed 1150r/min series , 1500r/min series Spindle motor type 2.2 -03T Compatible spindle drive unit type MDS-DHOutput capacity Continuous rating [kW] 30-minute rating 50%ED rating [kW] [r/min] 10000 A90 9.5 0.027 0.007 B90 14.0 0.035 0.009 980 D90 23.5 0.
059 0.015 1470 Single-phase 400V 30W 70W 72W 8000 A112 35.0 0.098 0.025 1960 B112 47.
7 0.12 0.03 70.0 0.23 0.
06 1.5 2.2 3.7 -03T 5.5 -07T 7.5 -12T 11 -18T SP-80 5.5 7.5 7.5 11 1500 6000 A160 95.5 0.

23 0.06 2940 3-phase 400V (Note 5) B160 118 0.32 0.08 C160 140 0.38 0.10 A180 249 1.23 0.31 3920 SJ-4-V 15 -18T 18.5 -14T 22 -15T 26 -08T 37 -04T SP-200 30 37 1150 45 -02T 55 -03T SP-20 2.2 3.
7 3.7 5.5 SP-40 SP-100 11 15 15 18.5 SP-160 18.5 22 22 26 SP-320 37 45 1500 3450 B180 236 2.
19 0.55 A225 374 3.39 0.85 5880 45 55 1150 Base rotation speed Maximum rotation speed [r/min] Frame No. Continuous rated torque [N·m] GD2 Inertia Tolerable radial load [kg·m2] [kg·m2] [N] Input voltage Cooling fan Maximum power consumption Ambient temperature Environment Ambient humidity Atmosphere Altitude Weight Insulation [kg] 25 Operation: 0 to 40°C (with no freezing), Storage: -20°C to 65°C (with no freezing) Operation: 90%RH or less (with no dew condensation), Storage: 90%RH or less (with no dew condensation) Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust Operation: 1000 meters or less above sea level, Storage: 1000 meters or less above sea level, Transportation: 13000 meters or less above sea level 30 49 60 70 110 Class F 135 155 280 390 450 (Note 1) The rated output is guaranteed at the rated input voltage (380 to 440VAC 50Hz / 380 to 480VAC 60Hz) to the power supply unit.
If the input voltage fluctuates and drops below 400VAC, the rated output may not be attained. (Note 2) The 50%ED rating applies for a 10-minute cycle time consisting of ON for five minutes and OFF for five minutes. (Note 3) The tolerable radial load is the value calculated at the center of output shaft. (Note 4) The protection level is IP44. (Note 5) Confirm in each motor specifications. 2-8 2. Specifications Wide range constant output series Spindle motor type 11-18T Compatible spindle drive unit type MDS-DHOutput capacity Continuous rating [kW] 30-minute rating 50%ED rating [kW] [r/min] 3.7 5.5 SP-80 5.5 7.

5 11-21T SJ-4-V 15-20T SP-100 7.5 9 750 6000 B112 47.1 0.12 0.03 1960 3-phase 400V 70W 72W Operation: 0 to 40°C (with no freezing), Storage: -20°C to 65°C (with no freezing) Operation: 90%RH or less (with no dew condensation), Storage: 90%RH or less (with no dew condensation) Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust Operation: 1000 meters or less above sea level, Storage: 1000 meters or less above sea level, Transportation: 13000 meters or less above sea level [kg] 70 110 Class F 135 70.0 0.23 0.06 A160 95.5 0.23 0.
06 2940 115 0.32 0.08 B160 140 0.32 0.08 9 11 18.
5-17T SP-160 11 15 22-16T Base rotation speed Maximum rotation speed [r/min] Frame No. Continuous rated torque [N·m] GD2 Inertia Tolerable radial load [kg·m2] [kg·m2] [N] Input voltage Cooling fan Maximum power consumption Ambient temperature Environment Ambient humidity Atmosphere Altitude Weight Insulation (Note 1) The rated output is guaranteed at the rated input voltage (380 to 440VAC 50Hz / 380 to 480VAC 60Hz) to the power supply unit. If the input voltage fluctuates and drops below 400VAC, the rated output may not be attained. (Note 2) The 50%ED rating applies for a 10-minute cycle time consisting of ON for five minutes and OFF for five minutes. (Note 3) The tolerable radial load is the value calculated at the center of output shaft. (Note 4) The protection level is IP44. 2-9 2. Specifications High-speed series Spindle motor type 3.7-05ZT Compatible spindle drive unit type MDS-DHOutput capacity Continuous rating [kW] 30-minute rating 50%ED rating [kW] [r/min] SP-20 2.2 3.7 (15min. rating) 3000 15000 A90 7.0 0.027 0.007 490 Single-phase 400V 30W 70W 35.

0 0.098 0.025 980 12000 A112 35.0 0.098 0.025 B112 47.7 0.12 0.03 1470 3-phase 400V 72W 7.5-13ZT SP-80 5.
5 7.5 5.5 7.5 11-22ZT SP-100 7.5 11 1500 8000 A160 70.
0 0.23 0.06 1960 B160 118 0.32 0.08 11 15 SJ-4-V 11-23ZT 22-18ZT SP-160 18.
5 22 30-15ZT Base rotation speed Maximum rotation speed [r/min] Frame No. Continuous rated torque [N·m] GD2 Inertia Tolerable radial load [kg·m2] [kg·m2] [N] Input voltage Cooling fan Maximum power consumption Ambient temperature Environment Ambient humidity Atmosphere Altitude Weight Insulation [kg] Operation: 0 to 40°C (with no freezing), Storage: -20°C to 65°C (with no freezing) Operation: 90%RH or less (with no dew condensation), Storage: 90%RH or less (with no dew condensation) Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust Operation: 1000 meters or less above sea level, Storage: 1000 meters or less above sea level, Transportation: 13000 meters or less above sea level 25 60 Class F 70 125 155 (Note 1) The rated output is guaranteed at the rated input voltage (380 to 440VAC 50Hz / 380 to 480VAC 60Hz) to the power supply unit. If the input voltage fluctuates and drops below 400VAC, the rated output may not be attained. (Note 2) The 50%ED rating applies for a 10-minute cycle time consisting of ON for five minutes and OFF for five minutes. (Note 3) The tolerable radial load is the value calculated at the center of output shaft.

(Note 4) The protection level is IP44. 2 - 10 2. Specifications Hollow shaft series Spindle motor type 7.5-13ZT Compatible spindle drive unit type MDS-DHOutput capacity Continuous rating [kW] 30-minute rating 50%ED rating [kW] [r/min] SP-80 5.5 7.

5 1500 12000 A112 [N·m] [kg·m2] [kg·m2] [N] 35.0 0.099 0.025 0 (Note 3) A160 70.0 0.23 0.058 0 (Note 3) 3-phase 400V 70W 72W 11 15 1500 8000 B160 118 0.32 0.08 0 (Note 3) SJ-4-VS 22-18ZT SP-160 18.5 22 30-15ZT Base rotation speed Maximum rotation speed [r/min] Frame No. Continuous rated torque GD2 Inertia Tolerable radial load Input voltage Cooling fan Maximum power consumption Ambient temperature Ambient humidity Environment Atmosphere Altitude Weight Insulation [kg] Operation: 0 to 40°C (with no freezing), Storage: -20°C to 65°C (with no freezing) Operation: 90%RH or less (with no dew condensation), Storage: 90%RH or less (with no dew condensation) Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust Operation: 1000 meters or less above sea level, Storage: 1000 meters or less above sea level, Transportation: 13000 meters or less above sea level 65 115 Class F 140 (Note 1) The rated output is guaranteed at the rated input voltage (200 to 230VAC) to the power supply unit. (Note 2) The 50%ED rating applies for a 10-minute cycle time consisting of ON for five minutes and OFF for five minutes. (Note 3) Do not apply a radial load. 2 - 11 2. Specifications 2-2-2 Output characteristics [Base rotation speed 1500r/min series SJ-4-V2. 2-03T] [Base rotation speed 1500r/min series SJ-4-V3.7-03T] 2.2 15-minute rating 3.7 15-minute rating Output [kW] 1.5 1. 3 0.9 Continuous rating Output [kW] 2.2 Continuous rating 1.3 0 0 1500 6000 10000 0 0 1500 6000 10000 Rotation speed [r/min] [Base rotation speed 1500r/min series SJ-4-V5.5-07T] Rotation speed [r/min] [Base rotation speed 1500r/min series SJ-4-V7.5-12T] 5.5 15-minute rating 7.5 15-minute rating Output [kW] 4.1 3.7 2.

8 Continuous rating Output [kW] 5.5 4.1 Continuous rating 0 0 1500 6000 8000 0 0 1500 6000 8000 Rotation speed [r/min] [Base rotation speed 1500r/min series SJ-4-V11-18T] Rotation speed [r/min] [Base rotation speed 1500r/min series SJ-4-V15-18T] 11 15 Output [kW] 8.3 7.5 5.6 Continuous rating Output [kW] 15-minute rating 15-minute rating 11 8.3 Continuous rating 0 0 1500 4500 6000 0 0 1500 4500 6000 Rotation speed [r/min] [Base rotation speed 1500r/min series SJ-4-V18.5-14T] Rotation speed [r/min] [Base rotation speed 1500r/min series SJ-4-V22-15T] 18.5 15-minute rating 22 15-minute rating Output [kW] 11.3 Continuous rating Output [kW] 15 13. 9 18.5 16.5 13.9 Continuous rating 0 0 1500 4500 6000 0 0 1500 4500 6000 Rotation speed [r/min] Rotation speed [r/min] 2 - 12 2. Specifications [Base rotation speed 1500r/min series SJ-4-V26-08T] Base rotation speed 1150r/min series SJ-4-V37-04T 26 37 30-minute rating 30-minute rating Output [kW] Continuous rating Output [kW] 22 30 Continuous rating 0 0 1500 6000 0 0 1150 3450 Rotation speed [r/min] Base rotation speed 1500r/min series SJ-4-V45-02T Rotation speed [r/min] Base rotation speed 1150r/min series SJ-4-V55-03T 45 30-minute rating 55 30-minute rating Continuous rating Output [kW] Output [kW] 37 45 Continuous rating 0 0 1500 3450 0 0 1150 3450 Rotation speed [r/min] [Wide range constant output series SJ-4-V11-18T] Rotation speed [r/min] [Wide range constant output series SJ-4-V11-21T] 5. 5 30-minute rating 7.5 30-minute rating Output [kW] Output [kW] 3.7 Continuous rating 5.5 Continuous rating 0 0 750 6000 0 0 750 6000 Rotation speed [r/min] [Wide range constant output series SJ-4-V15-20T] Rotation speed [r/min] [Wide range constant output series SJ-4-V18.5-17T] 9 30-minute rating 11 30-minute rating Output [kW] Continuous rating Output [kW] 7. 5 9 Continuous rating 0 0 750 6000 0 0 750 6000 Rotation speed [r/min] Rotation speed [r/min] 2 - 13 2. Specifications [Wide range constant output series SJ-4-V22-16T] 15 30-minute rating Output [kW] 11 Continuous rating 0 0 750 6000 Rotation speed [r/min] [High speed series SJ-4-V3.7-05ZT] [High speed series SJ-4-V7.5-13ZT] 3.7 15-minute rating 7.5 15-minute rating Output [kW] Output [kW] 3 2.2 1.8 Continuous rating 6.3 5.5 4.

6 Continuous rating 0 0 3000 12000 15000 0 0 1500 10000 12000 Rotation speed [r/min] [High speed series SJ-4-V11-22ZT] Rotation speed [r/min] [High speed series SJ-4-V11-23ZT] 7.5 30-minute rating 11 30-minute rating Output [kW] 5.5 Output [kW] Continuous rating 7.5 Continuous rating 0 0 1500 12000 0 0 1500 8000 Rotation speed [r/min] [High speed series SJ-4-V22-18ZT] Rotation speed [r/min] [High speed series SJ-4-V30-15ZT] 15 22 Output [kW] 11 Continuous rating Output [kW] 30-minute rating 30-minute rating 18.5 Continuous rating 0 0 1500 8000 0 0 1500 8000 Rotation speed [r/min] Rotation speed [r/min] 2 - 14 2. Specifications [Hollow shaft series SJ-4-VS7.5-13ZT] [Hollow shaft series SJ-4-VS22-18ZT] 7.5 30-minute rating 15 30-minute rating Output [kW] 5.5 Output [kW] 11 Continuous rating Continuous rating 0 0 1500 12000 0 0 1500 8000 Rotation speed [r/min] [Hollow shaft series SJ-4-VS30-15ZT] Rotation speed [r/min] 22 30-minute rating Output [kW] 18.5 Continuous rating 0 0 1500 8000 Rotation speed [r/min] 2 - 15 2. Specifications 2-3 Drive unit 2-3-1 Installation environment conditions Common installation environment conditions for servo, spindle and power supply unit are shown below. Ambient temperature Ambient humidity Environment Atmosphere Altitude Vibration/impact Operation: 0 to 55°C (with no freezing), Storage / Transportation: -15°C to 70°C (with no freezing) Operation: 90%RH or less (with no dew condensation) Storage / Transportation: 90%RH or less (with no dew condensation) Indoors (no direct sunlight) With no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles Operation/Storage: 1000 meters or less above sea level, Transportation: 13000 meters or less above sea level 4.9m/s2 (0.5G) / 49m/s2 (5G) 2-3-2 Servo drive unit (1) 1-axis servo drive unit 1-axis servo drive unit MDS-DH-V1 Series Servo drive MDS-DH-V1unit type Nominal maximum current [A] (peak) Rated voltage [V] Output Rated current [A] Rated voltage [V] Input Rated current [A] Voltage [V] Frequency [Hz] Current [A] Control Rush current [A] power Rush conductivity [ms] time Earth leakage current [mA] Control method Braking Dynamic brakes External analog output Structure Cooling method Weight [kg] Heat radiated at rated [W] output Noise 10 10 2.

3 0.
9 20 20 3.9 40 40 7.3 80 80 340AC 15.0 20.1 29.
8 41.7 513 to 648DC 1.6 2.9 6.0 8.0 11.9 16.7 380 to 440AC (50Hz)/380 to 480AC (60Hz) Power fluctuation rate within ±10% 50/60 Frequency fluctuation within ±3% Max. 0.1 Max.

18 Max. 12 76.8 39.0 80W 80 160 160 160W 160 200 200 Max. 18 1 (Max. 2) Sine wave PWM control method Regenerative braking and dynamic brakes Built-in External (MDS-D-DBU) 0 to +5V, 2ch (data for various adjustments) Protection type (Protection method: IP20 [over all] / IP00 [Terminal block TE1]) Forced wind cooling 3.8 4.5 5.8 7.5 16.
5 46 68 114 215 269 390 542 735 Less than 55dB (2) 2-axis servo drive unit 2-axis servo drive unit MDS-DH-V2 Series Servo drive MDS-DH-V2unit type Nominal maximum current [A] (peak) Rated voltage [V] Output Rated current [A] Rated voltage [V] Input Rated current [A] Voltage [V] Frequency [Hz] Current [A] Control Rush current [A] power Rush conductivity [ms] time Earth leakage current [mA] Control method Braking Dynamic brakes External analog output Structure Cooling method Weight [kg] Heat radiated at rated [W] output Noise 1010 10+10 2.3/ 2.3 1.8 2010 20+10 2020 20+20 4020 40+20 4040 40+40 8040 80+40 8080 80+80 15.0/ 15.
0 12.0 340AC 3.9/ 2.3 3.9/ 3.
9 7.3/ 3.9 7.3/ 7.3 15.0/ 7.3 513 to 648DC 2.5 3.2 4.7 5.

8 8.9 380 to 440AC (50Hz)/380 to 480AC (60Hz) Power fluctuation rate within ±10% 50/60 Frequency fluctuation within ±3% Max. 0.1 Max. 18 Max. 12 1 (Max. 4 For two axes) Sine wave PWM control method Current control method Regenerative braking and dynamic brakes Built-in 0 to +5V, 2ch (data for various adjustments) Protection type (Protection method: IP20 [over all] / IP00 [Terminal block TE1]) Forced wind cooling 3.8 5.2 82 104 126 172 Less than 55dB 218 319 420 2 - 16 2. Specifications 2-3-3 Spindle drive unit Spindle drive unit MDS-DH-SP Series Spindle drive MDS-DH-SPunit type Nominal maximum current [A] (peak) Rated voltage [V] Output Rated current [A] Rated voltage [V] Input Rated current [A] Voltage [V] Frequency [Hz] Current [A] Control Rush current [A] power Rush [ms] conductivity time Earth leakage current [mA] Control method Braking External analog output Structure Cooling method Weight [kg] Heat radiated at continuous [W] rated output Noise 20 20 9 10 40 40 13 80 80 19 100 100 340AC 30 65 70 103 513 to 648DC 15 21 38 72 82 119 380 to 440AC (50Hz)/380 to 480AC (60Hz) Power fluctuation rate within ±10% 50/60 Frequency fluctuation within ±3% Max.
0.1 Max. 18 Max. 12 Max. 18 132 150 160 160 200 200 320 320 480 480 3.
8 120 6 (Max. 15) Sine wave PWM control method Regenerative braking 0 to +5V, 2ch (data for various adjustments) Protection type (Protection method: IP20 [over all] / IP00 [Terminal block TE1]) Forced wind cooling 4.5 5.8 7.5 16.
5 200 291 442 749 872 1202 22.5 1720 Less than 55dB (Note) Rated output capacity and rated speed of the motor used in combination with the drive unit are as indicated when using the power supply voltage and frequency listed. The torque drops when the voltage is less than specified. 2-3-4 Power supply unit Power supply unit MDS-DH-CV Series Power supply MDS-DH-CVunit type Rated output [kW] Power facility capacity [kVA] Rated voltage [V] Input Frequency [Hz] Rated current [A] Rated voltage [V] Output Rated current [A] Voltage [V] Frequency [Hz] Current [A] Control Rush current [A] power Rush conductivity [ms] time Main circuit method Structure Cooling method Weight [kg] Heat radiated at rated [W] output Noise 37 3.7 5.3 75 110 185 300 370 450 550 750 75.0 107.0 5.2 7.1 7.

5 11.0 18.5 30.0 37.0 45.0 55.0 11.0 16.0 27.0 43.
0 53.0 64.0 78.0 380 to 440AC (50Hz)/380 to 480AC (60Hz) Power fluctuation rate within ±10% 50/60 Frequency fluctuation within ±3% 13 18 35 61 70 85 106 513 to 648DC 15 21 38 72 82 99 119 380 to 440AC (50Hz)/380 to 480AC (60Hz) Power fluctuation rate within ±10% 50/60 Frequency fluctuation within ±3% Max. 0.
1 Max. 18 Max. 12 Converter with power regeneration circuit Protection type (Protection method: IP20 [over all] / IP00 [Terminal block TE1]) Forced wind cooling 6.0 10.0 130 150 25.
5 842 54 79 124 193 317 Less than 55dB 402 496 596 2 - 17 2. Specifications 2-3-5 AC reactor An AC reactor must be installed for each power supply unit. (1) Specifications AC reactor AC reactor type Compatible power supply unit type Rated capacity (30-minute rating) Rated voltage Rated current Frequency DH-ALMDS-DH-CV[kW] [V] [A] [Hz] Ambient temperature Ambient humidity Environment Atmosphere Altitude Vibration/impact Weight [kg] 3.8 4.2 14 21 37 7.5K 37,75 7.5 11K 110 11 18.5K 185 18.5 30K 300 30 37K 370 37 45K 450 45 55K 550 55 75K 750 75 380 to 480AC ±10% 65 75 85 106 142 50/60 Frequency fluctuation within ±3% Operation: -10 to 60°C (with no freezing), Storage/Transportation: -10°C to 60°C (with no freezing) Operation: 80%RH or less (with no dew condensation), Storage/Transportation: 80%RH or less (with no dew condensation) Indoors (no direct sunlight) With no corrosive gas, inflammable gas, oil mist or dust Operation/Storage: 1000 meters or less above sea level, Transportation: 10000 meters or less above sea level 9.8m/s2 (1G) / 98m/s2 (10G) 6.

0 9.5 11.5 13.5 15.5 2 - 18 2. Specifications 2-3-6 D/A output specifications for servo drive unit The MDS-D/DH-V1/V2 servo drive unit has a function to D/A output the various control data. The servo adjustment data required for setting the servo parameters to match the machine can be D/A output. Measure using a hi-coder, oscilloscope, etc. (1) D/A output specifications Item No. of channels Output cycle Output precision Output voltage range Output magnification setting Output pin (CN9 connector) 2ch 0.
8ms (min. value) 12bit 0V to 2.5V (zero) to +5V CN9 connector -32768% to +32767% (1% scale) MO1 = Pin 9 MO2 = Pin 19 GND = Pins 1, 11 The D/A output for the 2-axis unit (MDS-D/DH-V2) is also 2ch. When using the 2-axis unit, set -1 for the output data (SV061, 62) of the axis that is not to be measured. Pin 1 2 3 4 5 6 7 8 9 10 Name LG Pin 11 12 13 14 15 16 17 18 19 20 Name LG Explanation Others MO1 MO2 MDS-D/DH-V2 When the output data is 0, the offset voltage is 2.
5V. If there is an offset voltage, adjust the zero level position in the measuring instrument side. Speed FB Memory Scroll +5 [V] +2.5 [V] 0 [V] +5 [V] Current FB +2.5 [V] 0 [V] Example of D/A output waveform 2 - 19 2.
Specifications (2) Output data settings <Standard output> No. SV061 SV062 No. -1 0 1 2 3 8 Abbrev. DA1NO DA2NO Parameter name D/A output channel 1 data No. D/A output channel 2 data No. Output data D/A output not selected Commanded rotation speed Motor rotation speed Torque command Torque feedback Machine vibration frequency Explanation Input the No. of the data to be output to each D/A output channel. Standard output unit Linear axis Rotary axis Output cycle For 2-axis drive unit (MDS-D/DH-V2). Set the parameters to another axis in the drive unit that is not D/A output.