



Your PDF Guides

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

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omron

R7D-AP.1

SmartStep servo drive

**A new concept in servo systems
the smart alternative to stepper motors**

- Easy to setup, easy to operate. SmartStep is as easy to use as a stepper motor
- Front-panel switches make settings easy and eliminate the need for time-consuming parameter settings
- Auto-tuning on-line mode, dynamic brake setting, alarm display, high torque performance
- Easy to wire with prebuilt cables
- Oscilloscope available via CX-Drive software (CX-One)
- Windows based configuration and commissioning software

Ratings

- 230 VAC single-phase 30 W to 750 W (2.39 Nm)

System configuration

(Refer to chapter SmartStep servo motors)

SmartStep servo drive 153



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Manual abstract:

(with no condensation) No corrosive gases. @ (at 500 VDC) Between power line terminals and case: 1,500 VAC for 1 min at 50/60 Hz Between each control signal and case: 500 VAC for 1 min Built into panel (IP10). Approval obtained for UL, cUL, and EN (EMC directive and low-voltage directive) Performance specifications Item 200 VAC input type 30 W 50 W 100 W 200 W R7D-APA3H R7D-APA5H R7D-AP01H R7D-AP02H 0.42 0.6 0.89 2.0 1.3 1.9 2.8 6.0 Single-phase 200/230 VAC (170 to 253 V) 50/60 Hz Single-phase 200/230 VAC (170 to 253 V) 50/60 Hz (three-phase 200/230 VAC can be used with the 750 W model.) All-digital servo 2,000 pulses/revolution incremental encoder PWM method based on IGBT 11.7 kHz 0.8 0.8 0.

8 0.8 200 V 30 W 50 W 100 W 200 W 250 kHz A03030 A05030 A10030 A20030 AP10030 AP20030 400 W R7D-AP04H 2.6 8.0 750 W R7D-AP08H 4.4 13.9 Continuous output current (rms) Momentary maximum output current (rms) Control power supply Main-circuit power supply Control method Speed feedback Inverter method PWM frequency Weight Compatible motor voltage Compatible motor capacity Command pulse response Applicable servo motor (R7M-) 1.1 400 W A40030 AP40030 1.7 750 W A75030 AP75030 I/O specifications Terminal specifications Symbol L1 and L2 or L1, L2, and L3 Name Main-circuit power supply terminals DC reactor terminals Function these are the input terminals for the main-circuit power supply. +1 +2 - L1C L2C B1 and B2 or B1, B2, and B3 U V W Normally short-circuit between +1 and +2. If harmonic control measures are required, connect a DC reactor between +1 and +2. Main-circuit DC output Control circuit power supply terminals External regeneration resistance terminals Servo motor terminals Frame ground Do not connect anything to this terminal. These are the input terminals for the control power supply. Connect an external regeneration resistor to these terminals if the regenerative capacity of the internal capacitor is exceeded. (An external regeneration resistor cannot be connected to the 30 to 200 W models.) Red These are the terminals for outputs to the servo motor.

White Blue This is the ground terminal. 154 AC servo systems Control I/O (CNI) specifications Pin 1 2 3 4 5 6 Symbol +PULS/CW/A -PULS/CW/A +SIGN/CCW/B -SIGN/CCW/B +ECRST -ECRST BKIR INP OGND +24V RUN RESET GND RXD+ TXD+ TXD- RT Z ZCOM ALM ALMCOM FG Name Feed pulses, reverse pulses, or 90° phase difference pulses (A phase) Direction signal, forward pulses, or 90° phase difference pulses (B phase) Deviation counter reset Function Line-driver input: 7 mA at 3 V Open-collector input Input impedance: 200 Maximum response frequency: 250 kpps Position control is performed based on the pulses that have been input. Line-driver input: 7 mA at 3 V Open-collector input: 16 mA at 5 V Input impedance: 200 ON: resets deviation counter. Outputs holding brake timing signals. ON when the position error is within the positioning completed range. Ground common for output signals (pins 7 and 8). Power supply input (+24 VDC) for pins 14 and 18. ON: servo ON (starts power to servo motor) ON: servo alarm status is reset. Ground for RS-422A Interface for RS-422A data transfers 7 8 10 13 14 18 19 20 21 22 23 24 32 33 34 35 Shell Brake interlock output Positioning completed output Output ground common +24 VDC power input for control RUN command input Alarm reset input RS-422A ground RS-422A reception data RS-422A transmission data Termination resistance terminal Encoder phase-Z open-collector output Alarm output Cable shield ground Connect to RXD- (pin 21) in the unit at the end of the line. @@ Open-collector output: 20 mA max. at 30 VDC Output goes OFF when alarm is detected. Open-collector output: 50 mA max. @@@@ (with no condensation) -20 to 85 °C 90% max. (with no condensation) No corrosive gases. @@ Display monitor values.

Execute each function mode. Display alarms that have occurred. Read or save parameters from the servo drive. Write parameters to the servo drive. @@70 I: A.

00 2: A.02 3: A.10 4: A.71 -ALARM- A. @@@@ These parameters are read when the power is turned 2. When using a regeneration resi R7M-AP10030-@ R7M-A20030-@ R7M-AP20030-@ R7M-A40030-@ R7M-AP40030-@ R7M-A75030-@ R7M-AP75030-@ C Servo motor cables (for CN2) Standard cable (power + encoder) Symbol Drive Specifications SmartStep For servo motors B without brake R7M-A(P)@@@30-S1-D 3m 5m 10 m 15 m 20 m For servo motors 3m with brake 5m R7M-A(P)@@@30-BS1-D 10 m 15 m 20 m Power cable model Encoder cable model R7A-CEA003S-DE R7A-CEA005S-DE R7A-CEA010S-DE R7A-CEA015S-DE R7A-CEA020S-DE R7A-CEA003B-DE R7A-CEA005B-DE R7A-CEA010B-DE R7A-CEA015B-DE R7A-CEA020B-DE Appearance R7A-CEA0___-DE Only for brake models Flexible cables (power + encoder) Symbol Drive Specifications SmartStep For servo motors B without brake R7M-A(P)@@@30-S1-D 3m 5m 10 m 15 m 20 m For servo motors 3m with brake 5m R7M-A(P)@@@30-BS1-D 10 m 15 m 20 m Power cable model R88A-CAWA003S-DE R88A-CAWA005S-DE R88A-CAWA010S-DE R88A-CAWA015S-DE R88A-CAWA020S-DE R88A-CAWA003B-DE R88A-CAWA005B-DE R88A-CAWA010B-DE R88A-CAWA015B-DE R88A-CAWA020B-DE Encoder cable model R7A-CRA003-FDE R7A-CRA005-FDE R7A-CRA010-FDE R7A-CRA015-FDE R7A-CRA020-FDE R7A-CRA003-FDE R7A-CRA005-FDE R7A-CRA010-FDE R7A-CRA015-FDE R7A-CRA020-FDE Appearance R7A-CRA0___-FDE R88A-CAWA0___-DE Only for brake models SmartStep servo drive 161 Control cables (for CNI) Symbol D Name Servo relay unit E F Cable to servo drive Compatible units Use with position control units (doesn't support communications functions.) Units: CS1W-NC113/133, CJ1W-NC113/133, C200HW-NC113, and C200H-NC112 Use with position control units (doesn't support communications functions.) Units: CS1W-NC213/233/413/433, CJ1W-NC213/233/413/433, C200HW-NC213/413, C500-NC113/211, and C200H-NC211 Use with position control units (doesn't support communications functions.) Units: CQM1H-PLB21, and CQM1-CPU43-V1 Use with position control units (supports communications functions.) Units: CS1W-NC213/233/413/433, CJ1W-NC213/233/413/433 Use with CJ1M-CPU22/23 (doesn't support communications functions.)

) Doesn't support communications functions. (For the XW2B-@@J6-@B) Supports communications functions. (For the XW2B-@@J6-4B) CQM1H-PLB21 and CQM1-CPU43-V1 C200H-NC112 C200H-NC211 and C500-NC113/211 CS1W-NC113 and C200HW-NC113 CS1W-NC213/413 and C200HW-NC213/413 CS1W-NC133 CS1W-NC233/433 CJ1W-NC113 CJ1W-NC213/413 CJ1W-NC133 CS1W-NC233/433 CJ1M-CPU22/23 For general-purpose controllers For general-purpose controllers Model XW2B-20J6-1B (1 axis) Available lengths --- XW2B-40J6-2B (2 axes) XW2B-20J6-3B (1 axis) XW2B-40J6-4A (2 axes) XW2B-20J6-8A (1 axis) XW2B-40J6-9A (2 axes) XW2Z-@@@J-B5 XW2Z-@@@J-B7 XW2Z-@@@J-A3 XW2Z-@@@J-A4 XW2Z-@@@J-A5 XW2Z-@@@J-A8 XW2Z-@@@J-A9 XW2Z-@@@J-A12 XW2Z-@@@J-A13 XW2Z-@@@J-A16 XW2Z-@@@J-A17 XW2Z-@@@J-A20 XW2Z-@@@J-A21 XW2Z-@@@J-A26 R88A-CPU@@@S R88A-CTU@@@N XW2B-40F5-P Cable to position control unit 1 m or 2 m (the cable length goes in the empty boxes.



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) 0.5 m or 1 m (the cable length goes in the empty boxes.) G H Control cable Connector terminal block cable Connector terminal block 1 m or 2 m (the cable length goes in the empty boxes.) --- Cable for CN3 Symbol Cable for CN4 Model R7A-CCA002P2 Symbol I Filters Symbol Name Computer monitor cable J Name Analog monitor cable Model R88A-CMW001S K Applicable servo drive R7D-APA3H, R7D-APA5H, R7D-AP01H, R7D-AP02H R7D-AP04H R7D-AP08H Filter model R88A-FIW104-E R88A-FIW107-E R88A-FIW115-E Rated current 4A 7A 15A Rated voltage 250 VAC single phase Connectors Specifications Control I/O connector (for CN1) SmartStep connectors kit. SmartStep encoder connector (for CN2) Hypertac power connector female Hypertac encoder connector female Hypertac power connector male (used in the motor) Hypertac encoder connector male (used in the motor) Model R88A-CNU01C R7A-CNA00K-DE Models included in kit R7A-CNA01R SPOC-06K-FSDN169 SPOC-17H-FRON169 SRUC-06J-MSCN236 SRUC-17G-MRWN087 External regeneration resistor Specification 220 W, 47 Model R88A-RR22047S Parameter unit & computer software Specifications Parameter copy unit (with cable) Configuration and monitoring software tool for servo drives and inverters. @@@@To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527. Cat. No. .



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