



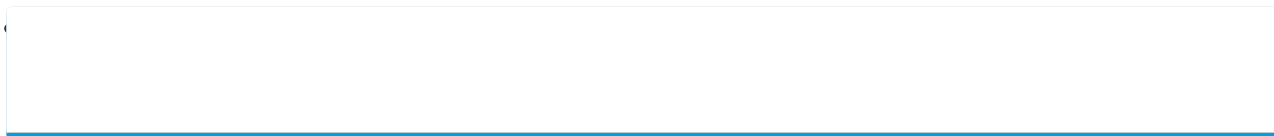
Toshiba G9 ASD Quick Start Manual

True torque control² adjustable speed drive

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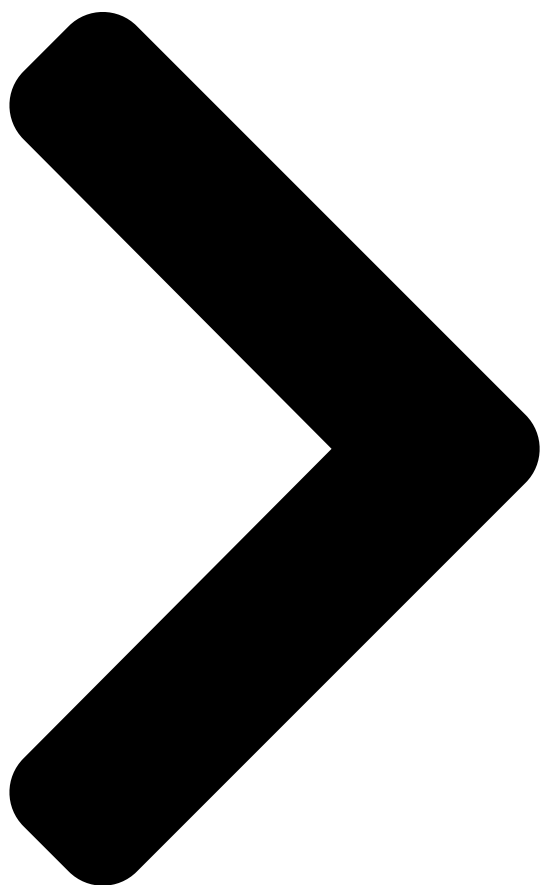
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Date: October, 2009

Phone: 800.894.0412 - Fax: 885.723.4773 - Web: www.ctiautomation.net - Email:
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[Page 4: Important Notice](#)

For a more in-depth description of the many features of the G9 ASD see the G9 ASD Installation and Operation Manual included on the CD that was received with the device.

[Page 5: About This Guide](#)

About This Guide This guide was written by the Toshiba Technical Publications Group. This group is tasked with providing technical documentation for the G9 Adjustable Speed Drive. Every effort has been made to provide accurate and concise information to you, our customer.

[Page 6](#) G9 Adjustable Speed Drive Please complete the Warranty Card supplied with the ASD and return it to Toshiba by prepaid mail. This will activate the 12 month warranty from the date of installation; but, shall not exceed 18 months from the shipping date.

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[Page 9: General Safety Information](#)

The word CAUTION without the safety alert symbol indicates a potentially hazardous situation exists that, if not avoided, may result in equipment and property damage. CAUTION G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 10: Special Symbols](#)

DO NOT remove or cover any of these labels. If the labels are damaged or if additional labels are required, contact your Toshiba Sales Representative. Labels attached to the equipment are there to provide useful information or to indicate an imminently hazardous situation that may result in serious injury, severe property and equipment damage, or loss of life if safe procedures or methods are not followed as outlined in this guide.

[Page 11: Equipment Inspection](#)

- The storage temperature range of the G9 ASD is -13° to 149° F (-25° to 65° C).
- DO NOT store the unit in places that are exposed to outside weather conditions (i.e., wind, rain, snow, etc.).

[Page 12: Installation Precautions](#)

Installation and Connections on pg. 10 for further information on ventilation requirements. • The ambient operating temperature range of the G9 ASD is 14° to 104° F (-10° to 40° C). • See the section titled Installation and Connections on pg. 10 for additional information on installing the drive.

[Page 13: Conductor Routing And Grounding](#)

7 on pg. 15 for an electrical depiction of the leakage-reduction functionality of Grounding Capacitor and the methods used to set the capacitance value. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 14: Power Connections](#)

A supplemental emergency stopping system should be used with the ASD. Emergency stopping should not be a task of the ASD alone. • Follow all warnings and precautions and do not exceed equipment ratings. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 15: System Integration Precautions](#)

Please contact your Toshiba Sales Representative for application-specific information or for training support. • The Toshiba ASD is part of a larger system and the safe operation of the ASD will depend upon observing certain precautions and performing proper system integration. •...

[Page 16: System Setup Requirements](#)

Closing the output disconnect while the 3-phase output of the ASD is active may result in equipment damage or injury to personnel. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 17: Operational And Maintenance Precautions](#)

Turn the power on only after attaching (or closing) the front cover and DO NOT remove or open the front cover of the ASD when the power is on. • DO NOT attempt to disassemble, modify, or repair the ASD. Call your Toshiba Sales Representative for repair information. •...

[Page 18: Installation And Connections](#)

Terminal Board and connecting the terminals to the proper indicators or actuators (relays, contactors, LEDs, etc.). Note: See the G9 ASD Installation and Operation Manual for a listing of the optional ASD interface boards that may be used to expand the I/O functionality of the ASD. Installation Notes...

[Page 19: Mounting The Asd](#)

DO NOT operate the ASD with the enclosure door open. The ambient operating temperature rating of the G9 ASD is 14° to 104° F (-10° to 40° C). When installing adjacent ASDs horizontally Toshiba recommends at least 5 cm of space between adjacent units.

[Page 20: Connecting The Asd](#)

The location of the Charge LED for the smaller typeform ASD is provided in Figure 2. The Charge LED is located on the front door of the enclosure of the larger ASDs. Figure 2. Typical G9 ASD Input/output Terminals and the Grounding Capacitor Switch. Charge LED Grounding Capacitor Switch —...

[Page 21](#) In the event that the motor rotates in the wrong direction when powered up, reverse any two of the three ASD output power leads (U, V, or W) connected to the motor. Figure 3. G9 ASD/Motor Typical Connection Diagram. G9 ASD Quick Start Guide...

[Page 22: System Grounding](#)

Switch. ASD overheating may occur if the Carrier Frequency is set above 4 kHz when activating or deactivating the Grounding Capacitor Switch. pg. 5 for more information on the Grounding Capacitor Switch pg. 12 for the location. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 23](#) The value may be set to Large or Small (default setting) by placing the screw in the A position or by placing the screw in the B position, respectively. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 24: Lead Length Specifications](#)

□□□ kHz 300 feet Note: Contact the Toshiba Customer Support Center for application assistance when using lead lengths in excess of those listed. Exceeding the peak voltage rating or the allowable thermal rise time of the motor insulation will reduce the life expectancy of the motor.

[Page 25: I/O And Control](#)

To use the input lines of the Terminal Board to provide Run commands the Command Mode setting must be set to Terminal Block. Figure 20 on pg. 22 shows the basic connection diagram for the G9 ASD system. Table 2. Terminal Board Default Assignment Terminal Names and Functions. Function (Default Setting If Programmable) Term.

[Page 26](#) 27). This input terminal may be programmed to any of the functions that are listed in the G9 ASD Installation and Operation Manual. RES — The default setting for this terminal is Reset. The RES terminal is activated by connecting CC Reset to this terminal (Sink mode).

[Page 27](#) (open or closed) that any of the functions listed in the G9 ASD Installation and Operation Manual has occurred or is active. This function may be used to signal external equipment (e.g., activate the brake) (see F130). The OUT1 terminal is rated at 2 A/120 VAC and 2 A/30 VDC.

[Page 28](#) FLC — FLC is the common leg of a single-pole double-throw form C relay. The FL relay is the Fault Relay by default, but may be programmed to any of the selections listed in the G9 ASD Installation and Operation Manual. For further information on this terminal see F132 and...

[Page 29](#) Figure 14. P24 Output. Figure 15. PP Output. Figure 16. OUT1/OUT2 Output. Figure 17. FP Output. Figure 18. AM/FM Output. Figure 19. Fault Relay (Shown Not Faulted). G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 30](#) Typical Connection Diagram Figure 20. The G9 ASD Typical Connection Diagram. Note: When connecting multiple wires to any of ASD terminals, do not connect a solid wire and a stranded wire to the same terminal. Note: The AM, FM, and the +SU analog terminals are referenced to CC.

[Page 31: Startup And Test](#)

- There are no shorts and all grounds are secured.
- All personnel are at a safe distance from the motor and the motor-driven equipment. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 32: Electronic Operator Interface](#)

EOI of the 9-Series ASD remotely. System operation and EOI operation while using the remotely-mounted EOI are the same as with the ASD-mounted configuration. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 33: Eoi Features](#)

Frequency Override. The availability of the Local mode of operation may be reinstated by changing this setting or performing a Reset (see F007). See the section titled Command Mode and Frequency Mode Control in the G9 ASD Installation and Operation Manual for more information on the Local/Remote Key operations.

[Page 34](#) LED Screen along with the same characters as they are displayed on the LCD Screen. LCD Font Information All alpha-numeric are used. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 35](#) Program Menu Screen). Item Number 1 of 14 Program Menu items Screen Name (Only 5 Items Shown) Primary Menu Items G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 36](#) If improperly seated, the periphery of the LED/LCD Screen module will not be flush with the front panel surface and the unit will not function properly. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 37: System Configuration And Menu Options](#)

The Alarm or Fault information will be displayed in the event of an active Alarm or Fault. Alarm text will be displayed on the Frequency Command screen and on the LED Screen when active. Fault information will be displayed via the Fault screen. See the G9 ASD Installation and Operation Manual for more information on Alarms and Trips.

[Page 38](#) Accel/Decel Group — One of 4 Accel/Decel profiles may be selected and run. Each of the Accel/ Decel profiles is comprised of three user settings: Acceleration, Deceleration, and Pattern. Expanded descriptions of these parameters may be found in the G9 ASD Installation and Operation Manual.

[Page 39: Monitor Mode](#)

DBR OL (Overload) Trip — Displays the DBR Overload Trip value as a percentage of the Dynamic Braking Resistor capacity. DBR Load — Displays the DBR Load as a percentage of the Dynamic Braking Resistor capacity. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 40](#) (P/N ETB003Z) only. Trip Code — Displays None if there are no errors, or displays one of the associated Fault Codes listed in the G9 ASD Installation and Operation Manual if there is an active Fault (e.g., E = Emergency Off).

[Page 41](#) Past Trip 4 — Past trip information or None. Note: An improper G9 ASD setup may cause some trips — reset the ASD to the Factory Default settings before pursuing a systemic malfunction (Program Utilities Type Reset Reset to Factory Settings).

[Page 42](#) Standard Mode Selection Frequency Priority F200 Frequency Mode 2 F207 Frequency Mode Priority Switching Frequency F208 Analog Output ERMINAL FM Output Terminal Function F005 Terminals G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 43](#) F141 Input Terminal Delays Input Terminal 3 (ST) Response Time F142 Input Terminal 4 (RES) Response Time F143 Input Terminal 5-12 Response Time F144 G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 44](#) Commercial Power/ASD Switching Output F354 Commercial Power/ASD Switching Frequency F355 Line Power Switching ASD Side Switching Delay Time F356 Commercial Power-Side Switching Delay Time F357 G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 45](#) Change Step Selection 2 F708 Write Parameter Lockout F700 Command Mode/Frequency Mode Lockout F736 Prohibition Lockout All Keys F737 Local/Remote Key Command Override Local/Remote Key Frequency Override G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 46](#) Heavy Load Alarm Maintenance Timer Alarm Over-Torque Alarm Soft Stall Alarm Type Reset Reset F007 Real-Time Clock Set Real-time Clock Setup Trip History (read-only) Trip Number G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 47](#) Motor Load ASD Load DBR Load Input Power Output Power Changed From Default Changed Parameters Contrast Contrast Adjustment G9 EOI (Ver:DB) Version (read-only) ASD Type G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 48](#) Low-current Detection Current F611 Low-Current Settings Low-current Detection Time F612 Low-current Detection Hysteresis Width F609 Motor Overload Protection Configuration F017 Overload Overload Reduction Start Frequency F606 G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

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- Email: info@ctiautomation.net...

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[Page 56](#) PID Control Switching F359 PID Feedback Signal F360 Feedback Settings PID Feedback Delay Filter F361 PID Feedback Proportional Gain F362 PID Feedback Integral Gain F363 G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

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Volts per Hertz Setting, Motor Current Rating, Motor RPM. 10. The Command Source. 11. The Frequency Reference Source. 12. The Display Unit. Wizard: Finish. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 67](#) ASD. The ASD may also be setup by directly accessing each of the startup settings via the Program menu or the associated Direct Access Numbers (see the G9 ASD Installation and Operation Manual for more information). Upon initial system power up, the Startup Wizard starts automatically. It may also be run from the Program menu after startup, if required.

[Page 68](#) Frequency Reference Source This selection allows the user to establish the source of the Frequency command. Settings: Use VI/II (V/I) Use RR Use RX EOI Keypad G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 69: Operation \(Local\)](#)

The speed of the motor may be changed while the motor is running by using the Rotary Encoder to change the Frequency Command value. Press the Stop-Reset key to stop the motor. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 70: Default Setting Changes](#)

The default settings may also be changed by entering the Parameter Number of the setting to be changed at the Direct Access menu (Program Direct Access Applicable Parameter Number). A listing of the Direct Access Numbers and a description of the associated parameter may be found in the G9 ASD Installation and Operation Manual.

[Page 71: Save User Settings](#)

EOI settings are not stored using the Save User Settings or the Restore User Settings feature (i.e., contrast setting, voltage/current units, display gradient characteristics, etc.). G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 72: Enclosure Dimension And Conduit Plate Information](#)

1995, the Standard for Heating and Cooling Equipment, and complies with the applicable requirements for installation in a compartment handling conditioned air. Note: All Toshiba ASD enclosures carry an IP20 rating. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

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[Page 74](#) Table 4. 460-Volt G9 ASD Systems. Mounting Hole Dimensions Conduit Plate Enclosure (in/mm) (Figure 30, Model Number Frame Figure Width Height Depth Figure 31, VT130G9U Number (in/mm) (in/mm) (in/mm) Figure 4015 4025 5.2/132 11.2/285 6.1/155 8.7/220 4.5/114 0.217/5.5 Figure 30-A 4035 0.098/2.5...

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Conduit Plate Dimensions Figure 30. See Table 3 Table 4 for the associated device. Dimensions are in in/cm. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 79](#) Figure 31. See Table 3 Table 4 for the associated device. Dimensions are in in/cm. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 80](#) Figure 32. See Table 3 Table 4 for the associated device. Dimensions are in in/cm. G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 81: Current/Voltage Specifications](#)

104.0/119.6 A 156.0 A 2500 152.5/175.4 A 228.8 A 2600 176.0/193.6 A 264.0 A 2750 221.0/243.1 A 331.5 A 210K 285.0/313.5 A 427.5 A G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

[Page 82](#) 215/236.5 A 322.5 A 420K 259/284.9 A 388.5 A 425K 314/345.4 A 471.0 A 430K 387/425.7 A 580.5 A 435K 427/469.7 A 640.5 A G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

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The specifications Do Not include the 10% Service Factor. Note: Use only 75° C copper wire/cable for motor and power connections. For further installation information see the section titled Installation and Connections on pg. Table 7. 230-Volt G9 ASD Cable/Terminal/Torque Specifications. Terminal Wire/Cable Size Lug Size Range Board...

[Page 84](#) Table 8. 460-Volt G9 ASD Cable/Terminal/Torque Specifications. Terminal Wire/Cable Size Lug Size Range Board Torque Model AWG or kcmil MCP Rating Number (Amps) VT130G9U Wire-Size/Lug-Capacity for TB1 - 4 Input/Output Power 3Ø-Input 3Ø-Output Input/Output Power Terminals In-Lbs./Nm Recommended Maximum 3Ø-Input 3Ø-Output...

[Page 85: Short Circuit Protection Recommendations](#)

4330 HLL36100 4400 HLL36125 4500 HLL36150 4600 JLL36200 4750 JLL36225 410K JLL36250 412K LIL36300 415K LIL36300 420K LIL36400 425K LIL36400 430K LIL36450 435K LIL36500 G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net

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[Page 86: Dynamic Braking Resistor Wire/Cable Specifications](#)

Light-duty and heavy-duty resistors vary from a few ohms to several hundred ohms. The appropriate resistance size will be typeform- and application-specific. Contact your Toshiba Sales Representative or the Toshiba Customer Support Center for more information on your specific DBR requirements.

[Page 87](#) MC is opened in the event of a DBR over-current detection. With no power supplied to the ASD the failure will not be displayed on the EOI; see the Trip History for failure information once G9 ASD Quick Start Guide Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.ctiautomation.net - Email: info@ctiautomation.net...

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