TOSHIBA

Leading Innovation

SEVERE DUTY

G9 ASD
LOW VOLTAGE DRIVE

A POWERFUL DRIVE SOLUTION

The G9 low voltage adjustable speed drive is the most advanced, severe duty drive ever offered by Toshiba. Designed with the end-user in mind, this drive combines a rugged, proven power platform with the latest in power devices and an advanced micro-processor to provide users with a smarter, stronger, more reliable drive with flexible application control.

Powerful Performance separates the G9 from the competition. This drive offers one of the toughest overload ratings in the industry. On ratings up to 100 HP at 460 V and 50 HP at 230 V, the G9 provides a continuous overload rating of 115% of its full-load amp and 150% for up to two minutes. Above these frames, the drive is rated for 110% of its full-load amp rating for continuous operation and 150% for up to one minute.

Superior Control allows the user ultimate flexibility. The G9 can operate using open or closed-loop vector control volts/hertz patterns. Toshiba's advanced vector-control algorithm offers speed regulation of 0.1% sensorless and 0.02% with motor encoder feedback. While operating in the feedback vector control mode, the G9 can generate 100% torque at zero-speed to hold the shaft stationary while the motor is stopped. The G9 drive also offers advanced torque control operation with high torque accuracy and the ability to switch on-the-fly between speed and torque modes.

ADVANCED FEATURES FOR MAXIMUM DRIVE PERFORMANCE

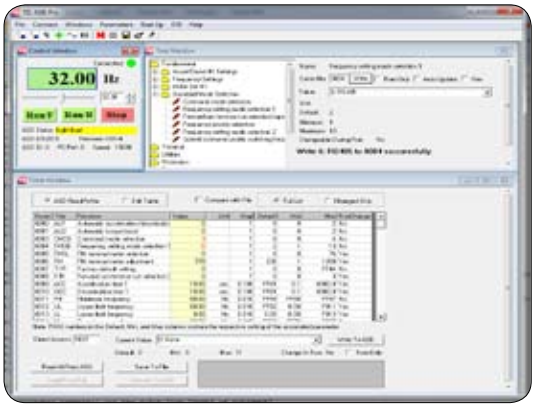
- ***Plain-English LED/LCD Interface Startup Wizard*** allow for quick, user-friendly programming and easy modification of the expanded parameter set. The keypad is able to store parameter sets which permit the user to set up multiple drives using these saved parameters. In addition, a built-in fault-logging chip records faults in the keypad memory. These records contain time and date stamps as well as detailed information about operation at the time of the fault

- ***My Function***, Toshiba's proprietary programming feature, allows the user to utilize logic-type programming without the expense of a micro PLC. The user is given access to read all analog and digital inputs and outputs, as well as the ability to monitor and perform data comparisons. When programmed in a user-defined logic sequence, the use of this data will allow a higher level of process control not normally seen in an adjustable speed drive. These functions, along with timers, counters, and comparators, allow the G9 to perform tasks above and beyond simply running a motor

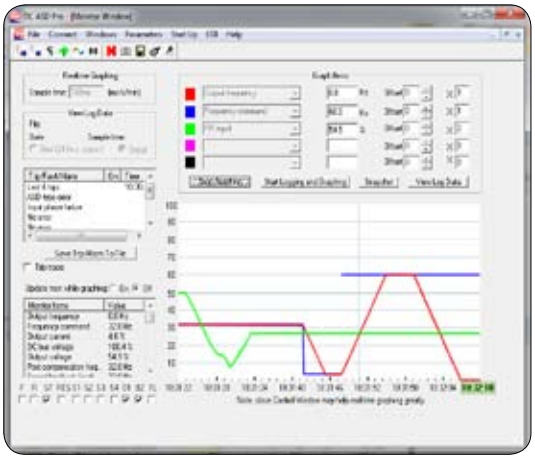
- ***Eight Digital Inputs & Three Digital Outputs*** are an integral part of the G9's versatility. Each of these inputs/outputs can be programmed to any 1 of more than 60 possible functions. When used in conjunction with My Function programming, the capabilities of these terminals are virtually limitless. Additionally, the G9 is setting a new industry standard by providing an isolated analog input (4 to 20 mA) on its standard terminal strip.

- ***A Built-In Proportional/Integral/Derivative (PID) Control Algorithm*** provides regulation of critical processes. High and low speed limits, deviation limits, online switching, and a built-in sleep function are included to enhance the flexibility and reliability of PID process control

- ***Toshiba's Proprietary Windows®-Based* ASD Pro *Software*** is available at no additional cost. This easy-to-use software is designed to provide a full range of programming and monitoring tools for the G9. ASD Pro offers trending and logging features that allow the user to save and transfer parameters and export data and graphs to an electronic file. Parameter groups and trending data can be easily converted into spreadsheets or graphs for field and validation reports.



ASD Pro Main Control Screen



ASD Pro Real-Time Monitoring Screen

COMMUNICATION OPTIONS

The G9 drive offers a wide array of easily installed option boards. These boards allow the user to communicate with a wide variety of systems. Options include:

- DeviceNet
- Profibus DP
- Ethernet/IPModbus
- TCP/IP
- ProfinetIO

OTHER SPECIAL FEATURES

The G9 includes several top-of-the-line features as standard. The list includes:

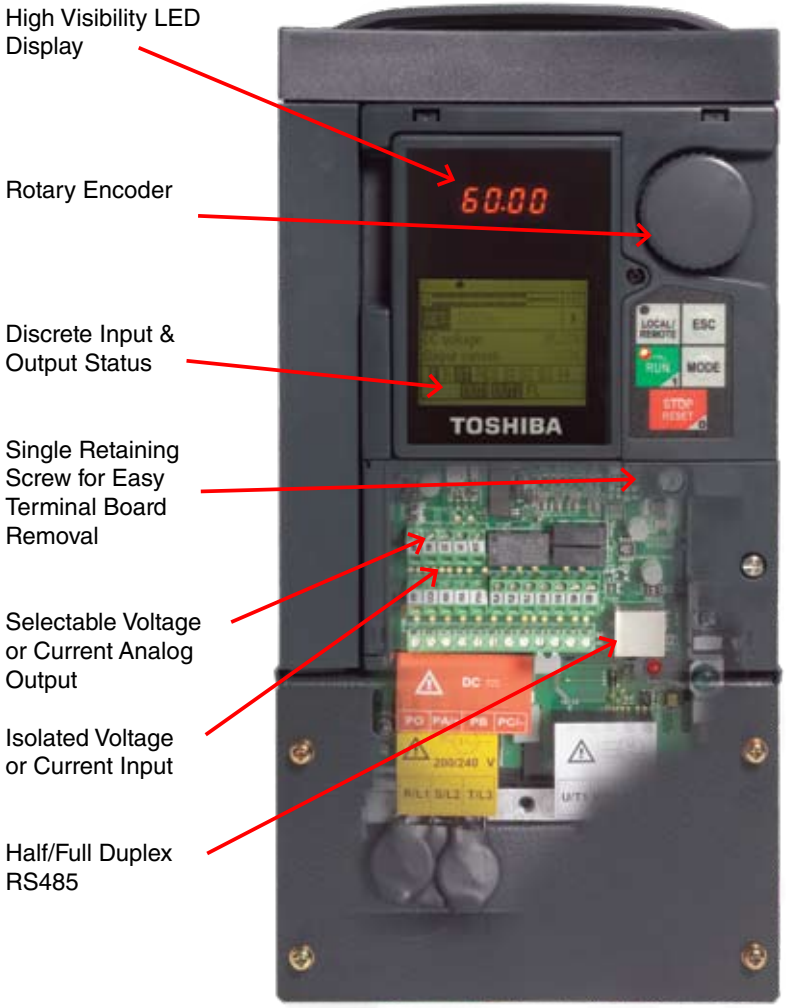
- Dynamic Braking Transistor
- UL Type-1/NEMA 1 Enclosure
- 100 KAIC or 200 KAIC Rating
- UL Listed & Labeled
- NEC 2005 Motor Overload Retention (No External Motor Overloads Required)

ADDITIONAL OPTIONS

Toshiba's G9 can be customized with additional options to best suit a user's specific needs. These options include:

- Extended Terminal Cards
- Encoder Feedback Cards
- 120 VAC Discrete Inputs
- AC Line & Load Reactors
- DV/DT Long-Lead Filters
- Harmonic Filters
- Remote-Mountable VFD Keypads

A LOOK INSIDE THE G9



- Stackable Option Cards Available
- Parameter Storage Available in Removable EOI
- Built-In Real-Time Clock
- Backlit Character Display for Monitoring & Programming
- Eight Programmable Discrete Inputs
- 24 VDC Input for External Control Power
- NEMA 1 Conduit Box
- One Form-C & Two Form-A Programmable Relays
- One Isolated Voltage or Current Input

POTENTIAL APPLICATIONS

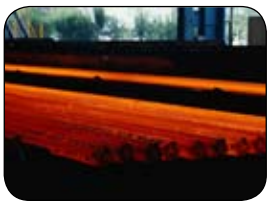
- Punch Presses
- Grinders
- Shakers
- Looms
- Cupping Presses
- Rolling Mills
- Winders/ Unwinders
- Screw Conveyors
- Mixers
- Slurry Pumps
- Chippers
- CNC Milling Machines
- Crushers

APPLICABLE INDUSTRIES

- Manufacturing
- Mining
- Service/Repair
- Oilfield
- Quarry
- Metal
- Timber







DIMENSIONS

	HP	FLA	Model	Drawing	Height	Width	Depth
230 V	0.75	3.5	VT130G9U2010	Figure 1	11.2	5.2	6.1
	1	4.2	VT130G9U2015				
	2	6.9	VT130G9U2025				
	3	10	VT130G9U2035		12.4	6.1	6.6
	5	15.2	VT130G9U2055				
	7.5	23.8	VT130G9U2080		15	6.9	6.6
	10	28.6	VT130G9U2110		15.1	8.3	7.6
	15	46.8	VT130G9U2160		19.3	9.1	7.6
	20	57.2	VT130G9U2220				
	25	76	VT130G9U2270	Figure 2	25.9	11.1	13.2
	30	90	VT130G9U2330		33.1	14.3	15
	40	104	VT130G9U2400				
	50	152	VT130G9U2500				
	60	176	VT130G9U2600				
	75	221	VT130G9U2750	Figure 3	51.7	14.6	17.6
	100	285	VT130G9U210K		53.1	14.8	17.6

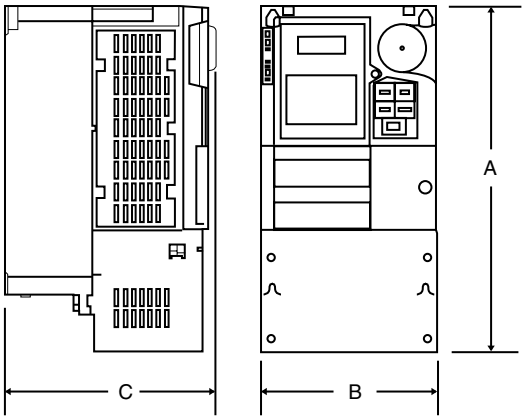


Figure 1

	HP	FLA	Model	Drawing	Height	Width	Depth
460 V	1	2.7	VT130G9U4015	Figure 1	11.2	5.2	6.1
	2	3.6	VT130G9U4025				
	3	5	VT130G9U4035				
	5	9.1	VT130G9U4055		12.4	6.1	6.6
	7.5	12.4	VT130G9U4080		15	6.9	6.6
	10	15.3	VT130G9U4110				
	15	24	VT130G9U4160		15.1	8.3	7.6
	20	28.6	VT130G9U4220		19.3	9.1	7.6
	25	35.7	VT130G9U4270				
	30	42	VT130G9U4330	Figure 2	25.9	11.1	13.2
	40	57.2	VT130G9U4400		30.8	11.1	14.3
	50	68.5	VT130G9U4500				
	60	81.5	VT130G9U4600		36.1	14.3	15.3
	75	96	VT130G9U4750				
	100	124	VT130G9U410K				
	125	179	VT130G9U412K	Figure 3	51.7	14.6	17.6
	150	215	VT130G9U415K		53.2	15.7	17.6
	200	259	VT130G9U420K		63.1	15	17.6
	250	314	VT130G9U425K		68.5	18.9	17.6
	300	387	VT130G9U430K		70	25.6	17.6
	350	427	VT130G9U435K				

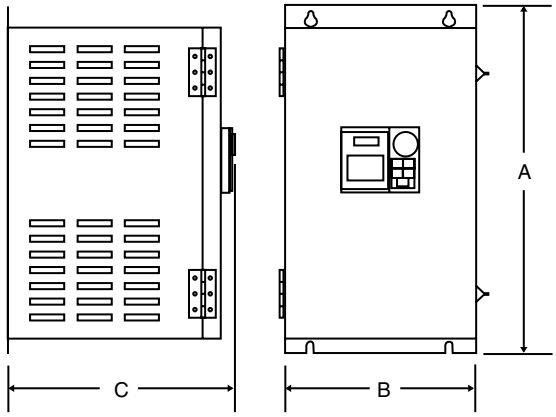


Figure 2

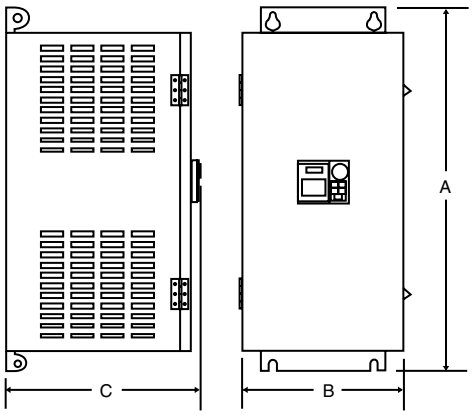


Figure 3

G9 ASD

MODEL RANGE	1 to 100 HP	1 to 350 HP
Voltage Rating	200 to 240 V	380 to 480 V
Input Voltage Tolerance	±10%	
Voltage Regulation	Main Circuit Voltage Feedback Control (Automatic Regulation, Fixed, & Control Off Selections)	
PWM Carrier Frequency	Adjustable 0.5 to 15 kHz (ASD Specific, Consult Factory)	
Control System	Sinusodial PWM	
V/f Pattern	Open-Loop Vector, Closed-Loop Vector, Constant Torque, Variable Torque, Automatic Torque Boost, Manual Torque Boost, & 5-Point V/f Custom Curve Setting	
Overload Current Rating	115% Continuous, 150% for Two Minutes (≤ 100 HP/480 V); 110% Continuous, & 150% for One Minute (> 100 HP/480 V)	
Frequency Setting	Rotary Encoder Integrated into EOI, 0 to 10 V, 10 V, 4 to 20 mA, Binary Input, & Motorized Potentiometer Input	
Frequency Precision	Analog Input 0.2% of Maximum Output Frequency; Digital Input 0.01% of Maximum Output Frequency	
Output Frequency Range	0 to 299 Hz	
Speed Regulation	Closed Loop (Up to 0.01%, 1000:1 Speed Range); Open Loop (Up to 0.1%, 60:1 Speed Range)	
Discrete Input Terminals	Eight Discrete Input Terminals Programmable to 67 Functions; Number of Terminals may be Increased Using Optional Hardware	
Analog Inputs	Three: One 0 to 20 mA or 0 to 10 VDC Isoloated Input, One 0 to 10 VDC Input, & One ±10 VDC Input	
Discrete Output Contacts	Three Programmable to 84 Different Functions: Two Form-A Contacts & One Form-C Contact	
Analog Outputs	Two: One Programmable 4 to 20 mA or 0 to 10 V & One 4 to 20 mA Output	
Control Board Communication Ports	Two-Wire/Four-Wire RS485	
Power Terminals	Input (L1, L2, L3); Output (T1, T2, T3); DCL (PO,PA); DBR (PA,PB); DC BUS (PA, PC)	
Set-Point Control (PID)	Proportional Gain, Integral Gain, Feedback Settings Upper/Lower Deviation Limits, Feedback Source Delay Filter, & Feedback Settings Differential Gain	
Retry	User-Set Number of Retries for Automatic System Restart After Trip	
Restart	Able to Smoothly Catch Freewheeling Motor (Bidirectional)	
Ambient	Operating Temperature: -10° to 40°C, 14° to 104°F; Humidity: 95% Non-Condensing	
Enclosure Type	NEMA 1 Enclosure Type	
Standards/Compliances	UL-Approved & American Recovery & Reinvestment Act Compliant (ARRA)	
ELECTRONIC OPERATOR INTERFACE (EOI)		
LCD (Liquid Crystal Display)	Plain-English Back-Lit Display	
LED (Light Emitting Diode)	Seven-Segment Display	
LED Indicators	Run (Red), Stop (Green), Local/Remote (Green), & DC Bus Charge Indicator (Red)	
Keys	Local/Remote, ESC, Run, Mode, & Stop/Reset	
Rotary Encoder	Encoder with Integrated Enter Key to View/Change Parameter Settings	
Monitoring	Main Display Shows Two Monitored Items; Selectable from: Output Current, DC Voltage, Output Voltage, Run Time, Comp. Frequency, PID Feedback, Motor Overload, Motor Load, ASD Load, Input Power, Output Power, RR Input, VI/II input, RX Input, RX2 Input, & AM/FM Output	
Display Units	Completely Configurable Along with Scaling Factor Multiplier; Display Selectable Between Amps or Percentage of FLA; Voltage Display Selectable Between Volts or Percentage of FLA	

TOSHIBA INDUSTRIAL PRODUCTS:

- Adjustable Speed Drives
- Motors
- Motor Controls
- Instrumentation & PLCs
- Uninterruptible Power Systems

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