

ADJUSTABLE SPEED DRIVES



H9 Series

H9



Innovative Technology

TOSHIBA

Leading Innovation >>>

The H9 adjustable speed drive is the most advanced heavy duty drive ever offered by Toshiba. It is a blend of a robust power platform and a state-of-the-art control scheme. With its dual 32-bit processor controls, the H9 provides the ability to operate the toughest of applications while still maintaining a high level of control.



Powerful Solution

The H9 is rated at 120% of its full load amps for up to 60 seconds. The motor-flux braking technology allows the H9 to provide as much as 25% of its rated power for use in stopping a high inertia load without the use of a dynamic braking resistor. For applications requiring heavier braking capabilities, most frame sizes include a dynamic braking transistor as standard.

Advanced Control

The H9 can operate using open or closed-loop controls. Toshiba's advanced vector-control algorithm offers speed regulation of 0.1% sensorless and 0.01% with motor feedback. The H9 has the ability to switch on-the-fly between speed and torque modes. While operating in the feedback vector-control mode, the H9 can generate a zero-speed torque to hold the shaft stationary while the motor is stopped.

Special Features

- Free Downloadable Programming Software
- NEMA 1
- DC Link Reactors on Most HP Ratings
- UL and cUL Listed
- NEC 2005 Motor Overload Retention (No External Motor Overloads Required)

**CHECK OUT OUR
G9 ASD SERIES FOR
SEVERE DUTY AND
EXTREME CONDITION
APPLICATIONS**

Isolated Input

The H9 is setting a new industry standard by providing an optically isolated current (0 to 20 mA) or voltage inputs (0 to 10 VDC).

Advanced Functionality

New Interface

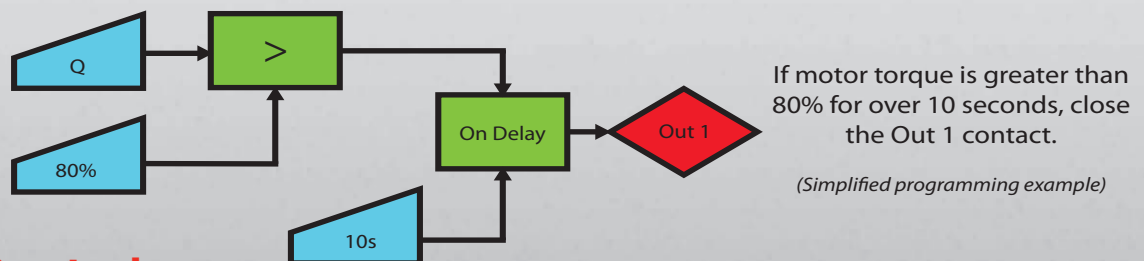
The H9's removable LED/LCD display allows the user to transfer parameter settings from one drive to another. The startup wizard and built-in rotary encoder allow for intuitive programming and quick access to parameters and monitoring information. Easy access to the drive's monitoring information makes troubleshooting and application startup a snap. With a built-in real-time clock and fault-recording ability, the user can access monitoring data as well as up to 20 previous time-stamped fault codes.

Programmable I/O

Toshiba's H9 provides users with the most flexible and adaptable interface in the industry. Eight configurable discrete inputs and three configurable dry-contact outputs can be set for normally-open or normally-closed operation, and can be programmed to a number of user-defined functions. The H9 also includes an isolated programmable voltage or current input as well as two other analog programmable and adjustable inputs. Two programmable analog outputs complete the package to allow for the highest level of process customization.

My Function

Toshiba's My Function 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 discrete I/O, 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 H9 to perform tasks above and beyond simply running a motor.



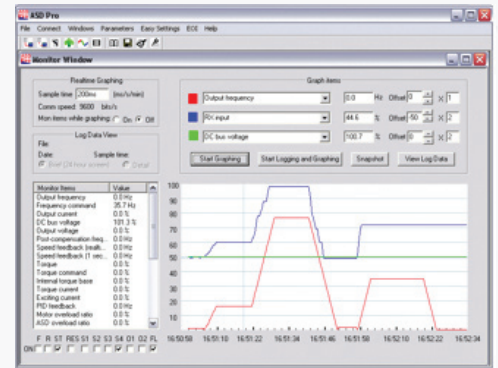
Process Control

The built-in proportional/integral/derivative (PID) control loop provides regulation of processes without the need for external devices. Deviation limits, online switching, and delay-filtering functions are included in the drive to enhance the flexibility and the reliability of the PID process control. The H9 also provides torque control and drooping-control functions to allow precise matching of motor torque for load-sharing applications.

Versatile Communications

ASD Pro Software

The H9 is designed with the needs of the end user in mind. Not only does Toshiba provide ASD Pro, Windows® programming software at no additional cost, the optional USB-to-RS485 cable facilitates the ease of connectivity during setup. The ASD Pro software is Toshiba's new, easy-to-use programming tool designed to provide a full range of programming and monitoring tools for the H9. It offers trending and logging features that allow the user to save and export data as a .csv file. With this feature, parameter settings or trending log files that can be converted into spreadsheets or graphs for field or validation reports. Go to www.toshiba.com/ind to download the software for free.



The screenshot shows the 'Parameter Window' in the ASD Pro software. It displays a table of drive parameters with columns for Name, Unit, Min, Max, and Default Value. The table lists various parameters such as Motor name, Motor speed, Motor torque, and Motor frequency. The 'Motor speed' parameter is highlighted, showing a value of 0.0 Hz.

Name	Unit	Min	Max	Default Value
Motor name				
Motor speed	Hz	0.0	100.0	0.0
Motor torque	Nm	0.0	100.0	0.0
Motor frequency	Hz	0.0	100.0	0.0
Motor current	A	0.0	100.0	0.0
Motor voltage	V	0.0	100.0	0.0
Motor temperature	°C	0.0	100.0	0.0
Motor overload ratio	%	0.0	100.0	0.0
ASD overload ratio	%	0.0	100.0	0.0

Communication Options

The H9 drive has an array of stackable option boards available. These boards allow the user to communicate with a wide variety of systems. Options include **DeviceNet**, **Profibus DP**, **Ethernet/IP**, **Modbus TCP/IP**, **Profinet IO**, **BACnet/IP**, extended terminal cards, encoder feedback cards, 120 VAC discrete input isolators, and a remote-mountable display. The user can interface the drive to a Windows®-enabled PC using Toshiba's new ASD Pro software and optional USB-to-RS485 communication cable, which allows access to all parameters and monitored items.



H9 ASD Standard Features

High Visibility LED Display

Rotary Encoder

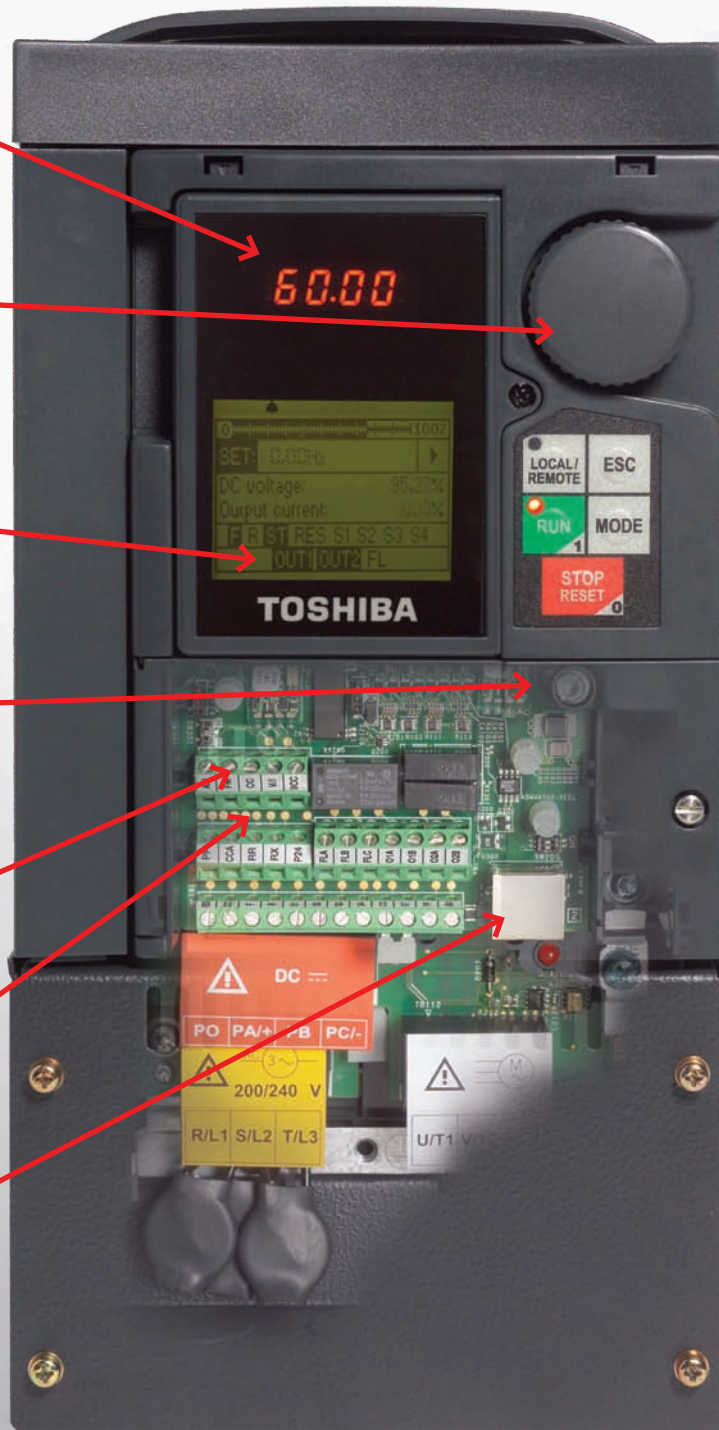
Discrete Input & Output Status

Single Retaining Screw for Easy Terminal Board Removal

Selectable Voltage or Current Analog Output

Isolated Voltage or Current Input

Half/Full Duplex RS485



- 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

H9 ASD Dimensions

Voltage	Horsepower	Model Number VT130H9U	Figure	Height (in.)	Width (in.)	Depth (in.)		
230	3	2035	Figure 1	12.4	6.1	6.6		
230	5	2055		15.0	6.9	6.6		
230	7.5	2080		19.3	9.1	7.6		
230	10	2110		Figure 2	25.9	11.1	13.2	
230	15	2160			33.1	14.3	15.0	
230	20	2220			Figure 3	51.7	14.6	17.6
230	25	2270				53.1	15.7	17.6
230	30	2330	Figure 1			12.4	6.1	6.6
230	40	2400		15.0	6.9	7.6		
230	50	2500		15.1	8.3	7.6		
230	60	2600		19.3	9.1	7.6		
230	75	2750		Figure 2	25.9	11.1	13.2	
230	100	210K			30.8	11.1	14.3	
230	125	212K			36.1	14.3	15.3	
460	5	4055	Figure 3		51.7	14.6	17.6	
460	7.5	4080			53.1	15.7		
460	10	4110		63.1	15.0			
460	15	4160	Figure 1	68.5	18.9	17.6		
460	20	4220		70.0	25.6			
460	25	4270		Figure 2	12.4		6.1	6.6
460	30	4330			15.0		6.9	7.6
460	40	4400			15.1		8.3	7.6
460	50	4500			19.3		9.1	7.6
460	60	4600			25.9		11.1	13.2
460	75	4750	30.8	11.1	14.3			
460	100	410K	36.1	14.3	15.3			
460	125	412K	Figure 3	51.7	14.6	17.6		
460	150	415K		53.1	15.7			
460	200	420K		63.1	15.0			
460	250	425K		68.5	18.9			
460	300	430K		70.0	25.6			
460	350	435K		Figure 1	12.4		6.1	6.6
460	400	440K			15.0		6.9	6.6

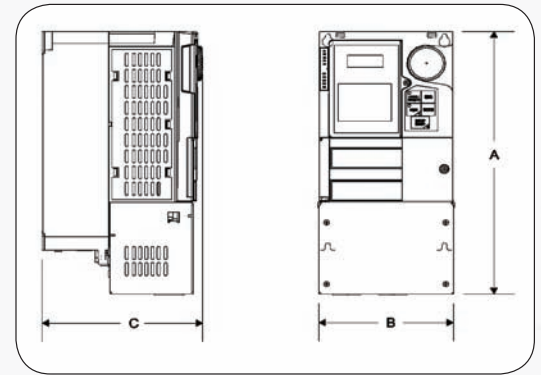


Figure 1

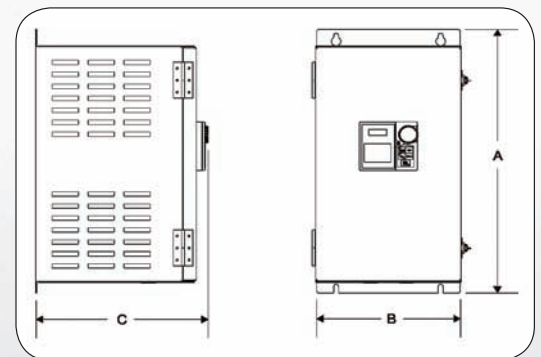


Figure 2

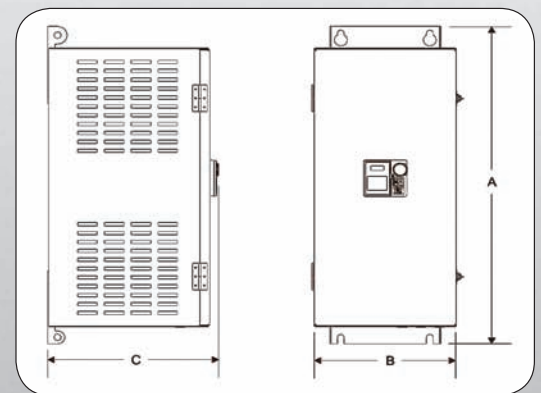


Figure 3

A = Height, B = Width, C = Depth

H9 ASD Specifications

H9 Specifications		
Model Range	1 to 150 HP	1 to 400 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	Sine Wave PWM System; Flux-Field Current Vector Control	
V/f Pattern	Open-Loop Vector, Closed-Loop Vector, Constant Torque, Variable Torque, Auto-Torque Boost, Manual Torque Boost, 5-Point V/f Custom Curve Setting	
Overload Current Rating	100% Continuous; 120% for 1 Minute	
Frequency Setting	Rotary Encoder Integrated into EOI, 0 to 10 VDC, ± 10 VDC, 0 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)	
Set Point Control (PID)	Proportional Gain, Integral Gain, Feedback Settings, Upper/Lower Deviation Limits, Feedback Source Delay Filter, Feedback Settings Differential Gain	
Retry	Can be Set to Clear Faults Upon Trip Automatically	
Restart	ASD will Catch Coasting Motor Smoothly (Bi-Directional)	
Ambient	Operating Temperature: -10° to 40°C (14° to 104°F) Humidity: 95% Non-Condensing	
Installation	NEMA 1 Enclosure Type	
Input/Output		
Discrete Input Terminals	Eight Discrete Input Terminals Programmable to 67 Functions; Number of Terminals Inceasable Using Optional Hardware	
Analog Inputs	Three: One 0 to 20 mA or 0 to 10 VDC Isolated 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 and One 4 to 20 mA Output	
Communication Port	Half/Full Duplex RS485 - Modbus RTU or Toshiba TSB Built-In Communications	
Power Terminals	Input (L1, L2, L3); Output (T1, T2, T3); DCL (PO,PA); DBR (PA,PB); DC BUS (PA, PC)	
Electronic Operation Interface (EOI)		
LCD/EOI (Liquid Crystal Display/ Electronic Operator Interface)	Electronic Operator Interface, Full English Back-Lit Display	
LED EOI	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 for Frequency & Parameter Adjustments	
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 Output, & FM Output	
Selectable Display Units	Completely Configurable Along with Scaling Factor Multiple; Current Display Selectable Between Amps (A) or Percentage of FLA (%); Voltage Display Selectable Between Volts or %	

TOSHIBA INTERNATIONAL CORPORATION



North American Headquarters & Manufacturing Facility (Houston, TX)



TOSHIBA – Quality by Design

Toshiba's culture and history are strongly rooted in quality. Our designs are technologically innovative, and our products are manufactured from start to end using only the highest quality domestic and foreign parts.

Product Warranty

Toshiba offers a comprehensive warranty program on its full line of industrial products. Consult your salesperson or the factory for specific information.

Need to Know More?

Be sure to visit our website located at www.toshiba.com/ind for the latest information on Toshiba products and services.

Customer Support Services

Toshiba offers 24-hour service nationwide. For assistance of any type call: 1-800-231-1412.

ADJUSTABLE SPEED DRIVES MOTORS CONTROLS UPS INSTRUMENTATION PLC

TOSHIBA

TOSHIBA INTERNATIONAL CORPORATION

INDUSTRIAL DIVISION

13131 West Little York Road, Houston, Texas 77041

Tel 713/466-0277 Fax 713/466-8773

US 800/231-1412 Canada 800/872-2192 Mexico 01/800/527-1204

www.toshiba.com/ind

Copyright 4/2009

Available Through:

