

**TOSHIBA**  
Leading Innovation >>>



**T300MV2<sup>®</sup> Drive**  
(300 to 11000 HP)  
**4160 V MEDIUM VOLTAGE DRIVE**



## SMALL FOOTPRINT – LARGE SAVINGS



Toshiba's T300MV2® 4160V next-generation medium voltage adjustable speed drive (ASD), employs the latest digital control platform. Toshiba's MV2 control system pairs one of the fastest industrial processors available with an expanded control interface, coupled with reliable signature multi-level pulse width modulation (PWM) with neutral point clamping technology (NPC). No other drive in the market features the latest five-level PWM with NPC technology. This advanced technology allows for a smaller footprint, a reduced component count, and ultimately, lower costs. In addition, it incorporates the latest safety technology, making it one of the safest designs on the market.

- Three Cables In, Three Cables Out
- Copper-Wound Input Isolation Transformer with 24-Pulse Harmonic Cancellation Which Complies with IEEE 519-2014
- Higher True Power Factor (0.96) than Running Motors Across-the-Line
- Smaller Footprint Through Compact Power Modules, Lower Component Count, Standard Copper-Wound Isolation Transformer, & Air-Cooling System
- Robust, High-Quality Medium Voltage IGBT Technology, & Control Components
- Advanced Electronics to Reduce Component Count
- Additive Five-Level PWM Output Voltage with No Neutral Shift

### ▶ ADVANCED FEATURES FOR MAXIMUM DRIVE PERFORMANCE

- ▶ **Three Cables In, Three Cables Out.** No control and auxiliary power for cooling fans are needed as they are derived internally, eliminating the need for a secondary power source, and reducing installation cost.
- ▶ **A Small Footprint** is attributed to an innovative design allowing the drive to be easily retrofit and paired with motors without upgrading the motor insulation.
- ▶ **A Comprehensive Design** improves the safety of system personnel with standard pad-lockable input disconnect switch interlocked with a Toshiba vacuum contactor along with safety viewing window for confirmation to verify input disconnect switch in open and grounded position and when closed. All components are accessible from the front, minimizing installation space requirements.
- ▶ **A Copper-Wound Input Isolation Transformer** provides 24-pulse phase-shift harmonic cancellation meeting or exceeding IEEE 519-2014. Toshiba's unique soft charge reactor on the primary side of the transformer maximizes the longevity of the transformer and minimizes the inrush current on weak grid systems.
- ▶ **Five-Level PWM Output.** The T300MV2 pairs the most advanced IGBT technology with the most robust multi-level topology using next generation MV2 controls incorporating one of the fastest industrial processors in the world. PWM output waveform closely simulates a true sine wave virtually eliminating motor failures caused by insulation stress and long lead-length issues. Toshiba's output waveform topology is suitable for use on existing non-inverter duty motors without a need to upgrade the motor insulation system.
- ▶ **A Versatile Control Interface** offers 10 digital inputs, 10 digital outputs, three analog inputs, and three analog outputs as standard, expandable up to eight analog outputs. Each of these input/outputs can be programmed to a variety of functions for ultimate flexibility.
- ▶ **A Plain-English LCD Electronic Operator Interface (EOI)** allows for quick, user-friendly programming. Faults are logged containing date and time stamps.
- ▶ **Toshiba's Tracesave Software** is designed to capture, extract, and compress full operating data at the time of fault. This trace-back data allows users to capture data with ease for detailed fault analysis which can be submitted for remote diagnostics and support.

## > COMMUNICATION OPTIONS

The T300MV2 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
- EtherNet/IP
- Modbus RTU
- Modbus TCP
- Profibus
- TOSLINE-S20
- TCNet
- Ethernet Global Data (EGD)

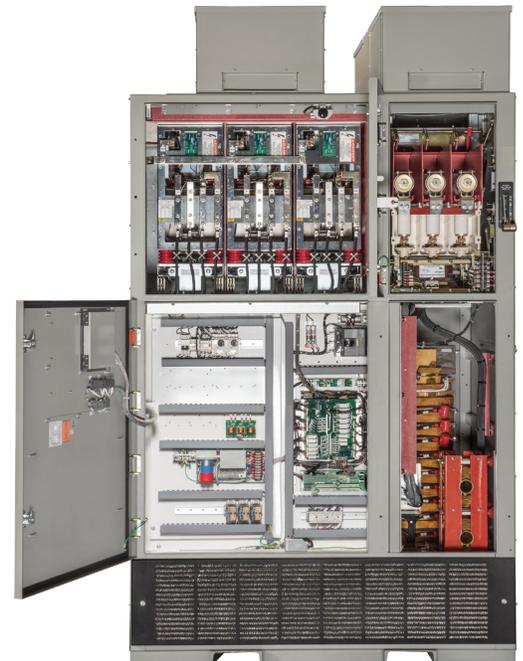
## > ADDITIONAL OPTIONS

The T300MV2 can be supplied with additional options to expand control, allow greater flexibility, or provide better protection for a user's application. These options include:

- Redundant Fans
- Door-Mounted Equipment: Meters, Pilot Lights, Speed Potentiometer, and Switches
- Direct Online Bypass
- dV/dt or Sinewave Output Filters
- Solid State Starter Bypass
- Reduced Voltage Autotransformer Bypass
- Sync-Xfer/Capture (Multiple Motors Synchronize Transfer & Capture)
- High Voltage Input Up to 15 kV (Requires Increase in Footprint)
- Common AC Bus (Drives Rated Up to 2000 HP)
- Synchronous Motor Control (AC Brushless/DC Brush Type)
- Power Metering
- Power I/O Cabinets (Input and Output Power Termination)
- Drive & Motor Space Heater (External Power)

## > OTHER SPECIAL FEATURES

- Voltage Source Inverter (VSI) with Simple & Reliable V/f Control and PID Control
- Induction Motor Sensorless Vector Control, Synchronous Motor Sensorless Vector Control, Closed Loop Vector Control (Using Pulse Generator Encoder or Resolver)
- Air-Cooled Solutions from 300 to 11,000 HP



### APPLICABLE INDUSTRIES

- Aggregate
- Chemical
- Mining & Minerals
- Oil & Gas
- Pulp & Paper
- Power Plant
- Refinery
- Water/Wastewater

### APPLICABLE APPLICATIONS

- Conveyors
- Extruders
- Blowers
- Mixers
- Test Stands
- Crushers
- Compressors
- Mills
- Fans
- Pumps
- Sync-Transfer
- Starting Duty



<b>MODEL RANGE</b>	300 - 600 HP	700 - 1000 HP	1250 - 2000 HP	2250 - 3000 HP	3000 - 4000 HP	4000 - 6000 HP	7000 - 8000 HP	8000 - 11000 HP**																					
Voltage Rating	4160 VAC																												
Dimensions (H x W x D)	103.7 x 48 x 48 in.	103.7 x 60 x 48 in.	103.7 x 90 x 48 in.	103.7 x 164 x 49.5 in.	103.7 x 174 x 49.5 in.	103.7 x 222 x 49.5 in.	103.7 x 307.5 x 60 in.	103.7 x 402.5 x 60 in.																					
Weight	6,000 lbs.	7,600 lbs.	11,200 lbs.	18,800 lbs.	23,300 lbs.	33,000 lbs.	47,000 lbs.	68,500 lbs.																					
Current Rating (A):	37	50	62	74	87	99	112	124*	155	186	217	248*	279	310	372*	372	434	496*	496	558	620	682	744*	868	992*	992	1110	1240	1364
Nominal HP*** (4160 V)	300	400	500	600	700	800	900	1000*	1250	1500	1750	2000*	2250	2500	3000	3000	3500	4000	4000	4500	5000	5500	6000	7000	8000	8000	9000	10000	11000

## POWER REQUIREMENTS

Input Tolerance	Voltage: ±10%; Frequency: ±5%
Main Circuit	Three-Phase 4160 V; Integrated 24-Pulse Copper-Wound Isolation Transformer; Five-Level NPC Medium Voltage IGBT Output
Control Circuit	Integral to Main Transformer; Includes 460 V & PT for 120 V Control

## CONTROL SPECIFICATIONS

Control Method	Five-Level Pulse-Width Modulation (PWM) Output Control with Neutral-Point Clamping (NPC)
V/Hz Control	V/Hz, Sensorless Vector Control, Variable Torque, Closed-Loop Vector Control, & Constant Torque
Output Frequency	0 to 120 Hz
PWM Carrier Frequency	Fixed at 2 kHz
Frequency Setting	4 to 20 mA, 0 to 10 VDC Serial Communication Input, & Rotary Encoder Integrated into EOI
Speed Regulation	Open Loop: Up to 0.5%; Closed Loop: Up to 0.1%
Main Protective Functions	Current Limit, Overcurrent, Overload, Undervoltage, Overvoltage, Ground Fault, CPU Error, & Soft Stall
Overload Current Rating	100% Continuous; 115% for One Minute Every 20 Minutes (1000 HP, 2000 HP, 3000 HP, 4000 HP, 6000 HP, & 8000 HP 110% for One Minute)

## CONTROL INTERFACE

Digital Input	Ten Discrete Inputs with Programmable Functions
Digital Output	Ten Available Digital Programmable Outputs
Analog Input	Three Selectable Currents (0/4 to 20 mA) or Voltage (0 to 10 VDC) Input Signals
Analog Output	Three Selectable Outputs Current (0/4 to 20 mA) or Voltage (0 to 10 VDC) (Optional up to Eight Maximum)
Communication Ports	Profibus, Modbus RTU & TCP, TOSLINE-S20, TCNet, Ethernet Global Data (EGD), DeviceNet & EtherNet/IP

## SAFETY FEATURES

Standard Pad-Lockable Input Fuse Disconnect Switch with Vacuum Contactor, Interlocked Doors, & Viewing Window

## ELECTRONIC OPERATOR INTERFACE (EOI)

Display	4-Digit, 7-Segment LED Display and 4x20 Character Graphical Plain English Back-Lit LCD Display for Programming, Monitoring & Diagnostics
LED Indicators	Run (Red)/Stop (Green) & Local (Green)
Keys	Local/Remote, Enter, Mon/Prg, Esc, Run, & Stop/Reset
Monitoring	Frequency Command Screen; Multiple Parameters Displayed: Motor Current, Motor Speed, Motor Voltage, DC Voltage, Input Voltage, Output Voltage, Run Time, Output Power, Motor kW, Motor kWh, Motor kVAh, Motor kVAR, & On-Time Control Power

## CONSTRUCTION

Enclosure	ANSI-61 Gray; NEMA 1 Ventilated, & IP20 Per IEC-60529; Gasket & Filter; Free-Standing; Front-Access Only
Power Cables	Top/Bottom Access for Input/Motor Cables
Cooling	Forced-Air Cooled (Redundant Fan Option)
Standards & Compliances	NEC, NEMA, UL, ULC, ANSI, & American Recovery & Reinvestment Act Compliant

## ENVIRONMENTAL CONDITIONS

Ambient Temperature	0 to 40°C (50°C Option Available)
Altitude	3,281 ft. Above Sea Level (Up to 14,764 ft. Option Available With Derate)
Humidity	95% Maximum (Non-Condensing)
Installation	Indoor; No Direct Sunlight; Protect from Corrosive Gases

\*110% Overload for One Minute Every 20 Minutes  
 \*\*Models not UL Listed Presently  
 \*\*\*Typical HP Rating of a 4-Pole Motor; Contact Factory for Applications on Constant Torque Loads

### TOSHIBA MOTORS & DRIVES DIVISION

- Adjustable Speed Drives
- Motors
- Motor Controls



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