

TOSHIBA

TOSHIBA INTERNATIONAL CORPORATION

ADJUSTABLE SPEED DRIVES

MTX[®] NEMA 3R

**MEDIUM
VOLTAGE**



SMALL FOOTPRINT LARGE SAVINGS

The MTX® NEMA 3R outdoor medium voltage adjustable speed drive (MTX) is one of Toshiba's most innovative adjustable speed drive offerings to date. Featuring an advanced enclosure design and power section topology, the MTX is the world's first drive specifically designed for outdoor mounting in remote applications or applications where a building does not exist. From the jungle to the desert, the MTX can be mounted virtually anywhere, eliminating the need to find suitable indoor floor space.



<p>Three Cables In, Three Cables Out Feature</p>	<p>Incorporates a standard pad-lockable input disconnect switch and interlocked doors. The control and auxiliary power are derived internally, eliminating the need for a secondary power source and helping to improve the safety of system personnel.</p>
<p>Outdoor Enclosure Design</p>	<p>Separates the MTX from the competition. The enclosure is a hybrid of a forced-air-cooled drive cabinet and a convection-cooled 36-pulse isolation transformer, which helps keep the drive cool and clean.</p>
<p>Sophisticated Electronics Package</p>	<p>Offers the utmost in functionality and features the latest five-level Pulse Width Modulation (PWM) with Neutral-Point Clamping (NPC) technology. Toshiba's proprietary user interface is intuitive and easy-to-use, and makes devices like a hands-off auto switch unnecessary. The Electronic Operator Interface (EOI) offers local/remote control, drive function monitoring, and a programming menu.</p>
<p>Medium Voltage IGBT Technology</p>	<p>Continually proven to be the most reliable and best performing means of speed control in Toshiba's adjustable speed drives. Toshiba has successfully developed, utilized and mastered this technology. The MTX pairs advanced transistor technology with robust multi-level topology and controls it with one of the fastest industrial processors in the world.</p>
<p>Versatile Control Interface</p>	<p>Offers eight digital inputs, six digital outputs, two analog inputs, and eight analog outputs as standard. Each of these inputs/outputs can be programmed for a variety of different functions for ultimate flexibility.</p>
<p>Plain-English LCD Electronic Operator Interface (EOI)</p>	<p>Allows for quick, user-friendly programming. Faults are logged with date and time stamps.</p>
<p>Toshiba's Proprietary Windows®-Based MVD Tool Software</p>	<p>Designed to offer a full range of programming and monitoring tools. Operating data can be captured with the snapshot feature, and up to 12 drive signals can be trended. In addition, the MVD Tool offers traceback data for detailed fault analysis.</p>

COMMUNICATION OPTIONS

The MTX NEMA 3R offers a wide array of easily installed option boards. These boards allow the user to communicate with a wide variety of systems. Options include:

- TOSLINE-S20
- Modbus® RTU
- Modbus® TCP/IP
- PROFIBUS®
- DeviceNET®

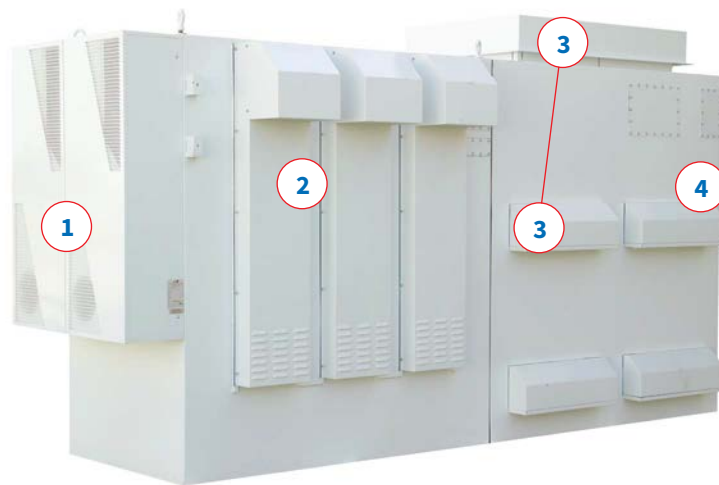
ADDITIONAL MTX OPTIONS

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

- Door-Mounted Equipment: Meters, Pilot Lights, Speed Potentiometer & Switches
- Solid State Starter Bypass
- Reduced Voltage Autotransformer Bypass
- Sync-Xfer/Capture

OTHER SPECIAL FEATURES

- 115% Overload for 60 Seconds as Standard
- 1000-Foot Motor Lead Lengths Without Additional Magnetics or Filters
- Multiple-Motor Operation Capability
- Graphical User Interface for Monitoring, Programming & Local Control



1. Air-to-Air Heat Exchanger
2. Heatsink Cooling Fans and Airways
3. Convection-Cooling Louvers
4. Convection-Cooled Transformer Cubicle

INDUSTRIES SERVED

- Oil & Gas
- Mining & Minerals
- Chemical
- Water & Wastewater

APPLICATIONS

- Pumps
- Fans
- Compressors
- Centrifuges
- Conveyors
- Mixers
- Pump Jacks
- Crushers
- Cranes
- Hoists



MODEL RANGE	500 TO 1500 HP			2000 to 3000 HP		
Voltage Rating	4160 VAC					
Dimensions (H x W x D)	107 x 168 x 63 in.			110.75 x 237.5 x 70 in.		
Weight	15,000 lbs.			24,500 lbs.		
Current Rating (A)	62	124	186	248	310	372
Nominal HP** (4160 V)	500	1000	1500	2000	2500	3000

POWER REQUIREMENTS

Input Tolerance	Voltage: ±10%; Frequency: ±5%					
Main Circuit	Three-Phase 4160 V; Integrated 36-Pulse Copper-Wound Isolation Transformer; IGBT Output					
Control Circuit	Integral to Main Transformer; Includes 120 V & 460 V					
Output Frequency	0 to 90 Hz					

CONTROL SPECIFICATIONS INPUT

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 (Optional)					
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					
Frequency Precision	Analog Input: ±0.5% of Maximum Output Frequency; Digital Input: 0.01% of Maximum Output Frequency					
Speed Regulation	Open Loop: Up to 0.5%, 60:1 Speed Range; Closed Loop: Up to 0.1%, 1000:1 Speed Range					
Main Protective Functions	Current Limit, Overcurrent, Overload, Undervoltage, Overvoltage, Ground Fault, CPU Error					
Overload Current Rating	100% Continuous; 115% for One Minute Every 20 Minutes					

CONTROL INTERFACE

Digital Input	Eight Discrete Input Terminals with Programmable Functions					
Digital Output	Six Available Digital Programmable Outputs (One Used Internal to Drive)					
Analog Input	Two Selectable Current (0/4 to 20 mA) or Voltage (0 to 10 VDC) Input Signals					
Analog Output	Eight Selectable Currents (0/4 to 20 mA) or Voltage (0 to 10 VDC) Output Signals with Programmable Function					
Communications Ports	Profibus®, Modbus® RTU, Modbus®, TCP/IP, TOSLINE-S20 & DeviceNet®					

SAFETY FEATURES

	Standard Pad-Lockable Input Fuse Disconnect Switch with Vacuum Contactor & Interlocked Doors					
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ELECTRONIC OPERATOR INTERFACE (EOI)

Display	6-Line x 20-Character Graphical Full-English LCD Back-Lit Display for Programming, Monitoring & Diagnostics					
LED Indicators	Run (Red)/Stop (Green), Hand (Green) & DC Bus Charge Indicator (Red)					
Keys	Local/Remote, Esc, Run & Stop/Reset					
Monitoring	Frequency Command Screen; Multiple Parameters Displayed: Output Current, DC Voltage, Output Voltage, Run Time, Motor Load, Output Power, Motor kWh, Motor kVAh & On-Time Control Power					

CONSTRUCTION

Enclosure	White; NEMA 3R; Free-Standing; Front-Access Only					
Power Cables	Back/Side/Bottom Access for Input/Motor Cables					
Cooling	Forced-Air Cooled for Inverter; Convection-Cooled for Transformer					
Standards & Compliance	NEC, NEMA, UL, ULC, ANSI					

ENVIRONMENTAL CONDITIONS

Ambient Temperature	-25°C to 50°C					
Altitude	3281 ft (1000 m) Above Sea Level (Up to 14,764 ft (4500 m) Option Available)					
Humidity	95% Maximum (Non-Condensing)					
Installation	Outdoor					

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 Toshiba International Corporation
 Motors & Drives
 13131 West Little York Road
 Houston, Texas 77041 USA
 Tel +713-466-0277
 US 1-800-231-1412
 Rev.02ESSENCE2719



*Typical HP Rating of a 4-Pole Motor.
 Contact Factory for Applications with Constant Torque Loads.

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