

TOSHIBA

Leading Innovation >>>



MTX[®] NEMA 3R

MEDIUM VOLTAGE DRIVE



SMALL FOOTPRINT – LARGE SAVINGS

The Toshiba MTX® NEMA 3R outdoor medium voltage adjustable speed drive is one of the most innovative adjustable speed drive offerings to date. Featuring an advanced enclosure design and power section topology, the MTX is the world's first and only 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.

- Three Cables In, Three Cables Out
- Distribution-Quality Lightning Arrestors as Standard
- 36-Pulse Harmonic Cancellation Complies with IEEE-519 1992
- Higher True Power Factor (0.96) than Running Motors Across-the-Line
- Provides Easy Monitoring & Maintenance through Advanced User Interface Design
- UL-Rated Rainproof (NEMA 3R) Enclosure
- Lowers Cost of Ownership from Rated Full-Load Operation at -25°C to 50°C
- Allows for Standard Motors to be Used in Conjunction with Drive Without Special Motor Insulation



> ADVANCED FEATURES FOR MAXIMUM DRIVE PERFORMANCE

- ▶ **A Three Cables In, Three Cables Out Feature** 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 improving the safety of system personnel.
- ▶ **An Outdoor Enclosure Design** 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.
- ▶ **A Sophisticated Electronics Package** 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, easy-to-use, and makes devices like the hand-off-auto switch obsolete. The Electronic Operator Interface (EOI) offers local/remote control, drive function monitoring, and a programming menu.
- ▶ **Medium Voltage IGBT Technology** has continually proven to be the most reliable and best performing means of speed control in our adjustable speed drives. Toshiba has successfully developed, utilized, and mastered this technology. The MTX pairs the most advanced transistor technology with the most robust multi-level topology and controls it with one of the fastest industrial processors in the world.
- ▶ **A Versatile Control Interface** offers eight digital inputs, six digital outputs, two analog inputs, and eight analog outputs as standard. Each of these input/outputs can be programmed to a variety of different 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 Proprietary Windows®-Based WiTool Software** is 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 *WiTool* offers trace-back data for detailed fault analysis.

> COMMUNICATION OPTIONS

The MTX 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:

- Tosline-S20
- Modbus TCP/IP
- DeviceNet
- Modbus RTU
- Profibus

> ADDITIONAL OPTIONS

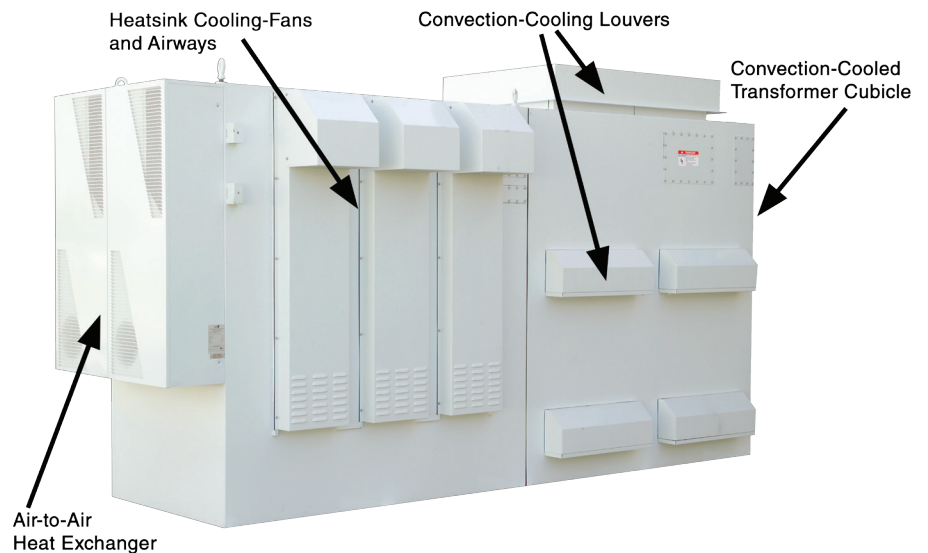
The MTX can be supplied with additional options to expand control, allow greater flexibility, and provide better protection for a user's application. These options include:

- Communication Cards
- 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



APPLICABLE INDUSTRIES

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

APPLICABLE APPLICATIONS

- Blowers
- Compressors
- Conveyors
- Crushers
- Extruders
- Fans
- Mills
- Mixers
- Pumps
- Test Stands



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: $\pm 10\%$; Frequency: $\pm 5\%$
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: $\pm 0.5\%$ 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 Currents (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
Communication Ports	Profibus, Modbus RTU, Modbus, TCP/IP, TOSLINE-S20, & DeviceNet

SAFETY FEATURES

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

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 & Compliances	NEC, NEMA, UL, ULC, ANSI, & American Recovery & Reinvestment Act Compliant

AMBIENT CONDITIONS

Ambient Temperature	-25 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

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

TOSHIBA INDUSTRIAL PRODUCTS:

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



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