

TOSHIBA
Leading Innovation >>>



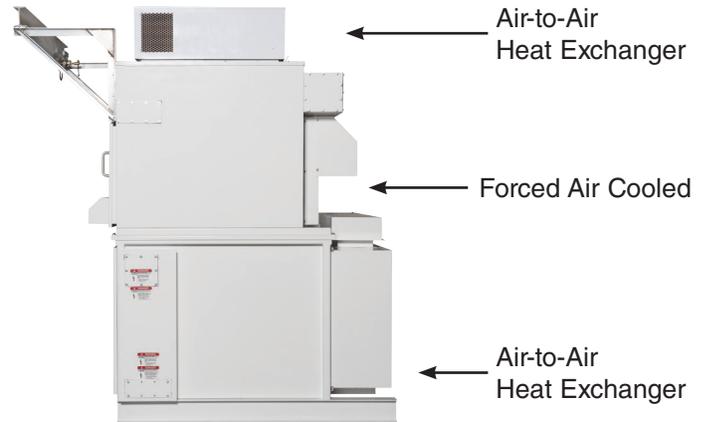
MTX2[®]-15 (500 to 1500 HP)
OUTDOOR MEDIUM VOLTAGE DRIVE



SMALL FOOTPRINT – LARGE SAVINGS

The second generation Toshiba MTX2®-15 NEMA 3R outdoor medium voltage adjustable speed drive (ASD) is one of the most innovative outdoor ASD offerings to date. The MTX2-15 is 30% smaller than the previous generation and offers improved MTTR, as a result of an advanced enclosure design, power section topology, and removable power. It is specifically designed for mounting in remote locations ranging from the jungle to the desert or applications where a building does not exist.

- Low Cost of Ownership
- Removable Power Modules
- Totally Enclosed Cooling System
- Low Harmonics, Meets or Exceeds IEEE 519-2014
- Higher True Power Factor than Running Motors Across-the-Line (>0.95)
- Advanced User Interface Design
- Motor Friendly Output Waveform, Suitable for Use on Standard Motors without the Need for Special Motor Insulation or Cable
- Externally Powered Heaters
- Operating Temperature -45°C to +50°C



> ADVANCED FEATURES FOR MAXIMUM DRIVE PERFORMANCE

- ▶ **Lower Cost of Ownership:** Outdoor design eliminates the cost of integrating drives into buildings and total life time cost of operation of air-conditioning units.
- ▶ **Removable Power Modules:** Integral design allows for quick removal for maintenance and improving MTTR. Each module contains rectifier diodes, IGBTs and DC bus capacitors reducing spare parts inventory.
- ▶ **Operating Temperature -45°C to 50°C:** MTX2-15 incorporates an innovative enclosure cooling system with a combination of air-to-air heat exchangers along with forced air cooling of the power modules. A totally enclosed cooling system where no exchange of internal air and external air occurs, keeps the drive internal components clean and eliminates costs and challenges associated with filter maintenance.
- ▶ **A Small Footprint** is attributed to an innovative design topology making the MTX2-15 30% smaller than first generation MTX Outdoor Medium Voltage Drive.
- ▶ **A Copper Wound Input Isolation Transformer** provides 36-pulse phase-shift harmonic cancellation meeting or exceeding IEEE 519-2014. As a result, the MTX2-15 resembles a linear load on the incoming AC line. 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 IGBT NPC PWM Output:** The MTX2-15 pairs the most advanced IGBT technology with the most robust multi-level topology and controls it with 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 Plain-English LCD Electronic Operator Interface (EOI)** allows for quick, user-friendly programming. Faults are logged containing date and time stamps. Programmable inputs and outputs for your application needs.
- ▶ **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 MTX2-15 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)

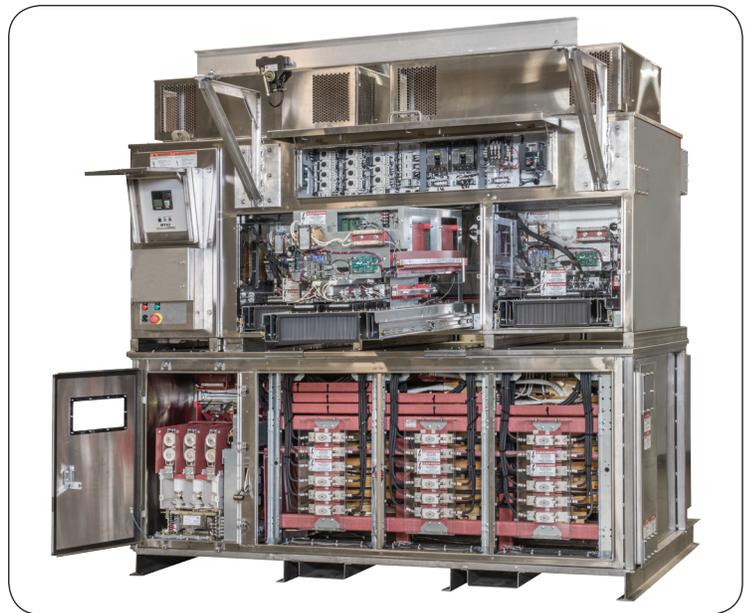
> ADDITIONAL OPTIONS

The MTX2-15 can be supplied with additional options including expanded controls allowing greater flexibility or providing better protection for a user's application. These options include:

- Door-Mounted Equipment: Pilot Lights, Speed Potentiometer and Switches
- Motor Protection Relay, RTD Monitor
- dV/dt or Sinewave Output Filters
- Synchronous Motor Control (AC Brushless/DC Brush Type)
- Power Module Lifting System for Easy Servicing of the Power Modules
- 316L Stainless Steel Enclosure
- Motor Space Heater (External Power)
- Sync-Xfer/Capture (Multiple Motors Synchronize Transfer & Capture)

> 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)



APPLICABLE INDUSTRIES

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

APPLICABLE APPLICATIONS

- Conveyors
- Extruders
- Blowers
- Mixers
- Crushers
- Compressors
- Mills
- Fans
- Pumps
- Starting Duty



MODEL RANGE	500 to 1500 HP			
Voltage Rating	4160 VAC			
Dimensions (H x W x D)	106.5 in. x 109.29 in. x 72 in.			
Weight	16,000 lbs.			
Current Rating (A):	62	124	155	186
Nominal HP** (4160 V)	500	1000*	1250	1500

POWER REQUIREMENTS

Input Tolerance	Voltage: ±10%; Frequency: ±5%
Main Circuit	Three-Phase 4160 V; Integrated 36-Pulse Copper-Wound Isolation Transformer; Five-Level NPC Medium Voltage IGBT Output
Control Circuit	External 480 V for Heaters. PT for 120V Control & Integral to Main Transformer for 460V Fans

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
Output Frequency	0 to 120 Hz
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

CONTROL INTERFACE

Digital Input	Ten Discrete Inputs with Programmable Functions
Digital Output	Ten Available Digital Programmable Outputs
Analog Input	Three Selectable Inputs, Current (0/4 to 20 mA) or Voltage (0 to 10 VDC)
Analog Output	Three Selectable Outputs, Current (0/4 to 20 mA) or Voltage (0 to 10 VDC) (Optional up to Maximum Eight)
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	White; NEMA 3R; Free-Standing; Front-Access Only (Stainless Steel Consult Factory)
Power Cables	Side Entry for Input/Motor Cables
Cooling	Forced-Air Cooled and Air to Air Heat Exchanger
Standards & Compliances	NEC, NEMA, UL, ULC, ANSI, & American Recovery & Reinvestment Act Compliant

ENVIRONMENTAL CONDITIONS

Ambient Temperature	-45°C to 50°C (Storage at -45°C, Aux. 480V Power to be Applied)
Altitude	3,281 ft. Above Sea Level (Consult Factory for Altitudes > 1000M)
Installation	Outdoor

*110% Overload for One Minute Every 20 Minutes

**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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