

TOSHIBA

TOSHIBA INTERNATIONAL CORPORATION

ADJUSTABLE SPEED DRIVES

MTX2[®]-15 (HEAVY DUTY)



**MEDIUM
VOLTAGE**

EXTREME PERFORMANCE

LARGE SAVINGS

Toshiba's second-generation UL Type 3R/4/4X outdoor medium voltage adjustable speed drive, the MTX2-15, is an innovative outdoor ASD offering. The MTX2-15 is 30% smaller than the previous generation drive and offers improved MTTR due to inclusion of removable power modules. It is specifically designed for outdoor installations and operation in remote locations with extreme environmental conditions.



| | |
|----------------------------------|--|
| Lower Cost of Ownership | Outdoor design eliminates the cost of integrating drives into buildings. Eliminating the need for building air conditioning units provides savings in operational budgets. |
| Extreme Operating Conditions | Innovative totally-enclosed heating and cooling design with cabinet enclosure allows for drive operation in temperatures ranging from -45°C to 50°C. |
| Input Control Disconnect Section | Disconnect section helps to improve system safety with pad-lockable input disconnect switch interlocked with a vacuum contactor. A viewing window allows verification of switch in disconnect position, helping to ensure safe access. |
| Integrated Isolation Transformer | Phase shifting transformer reduces overall harmonics to meet or exceed IEEE 519-2014 standards. Integral transformer simplifies design and reduces overall footprint. |
| Removable Power Modules | Design allows for removal of power modules for maintenance or repairs. Each module contains a cooling system, IGBTs and DC bus capacitors, which helps to reduce spare parts inventory needs. |
| Multi-level Output Waveform | This eliminates the need for additional output filters or specialty VFD rated cables. Additive multi-level pulse width modulation output eliminates Neutral Point Shift. |
| Oil Filled Capacitors | Rated for a 20-year life expectancy, which helps to minimize overall costs of life cycle replacements. |
| Pre-charge Circuit | Reduces inrush current to the transformer and capacitors, which reduces stress on components and prevents a reduction in their life expectancy. |
| Versatile Control Interface | Interface offers ten digital input/outputs and three analog input/outputs (with the ability to expand up to eight outputs). Each input/output can be programmed for a variety of functions for ultimate flexibility. |
| Synchronous Motor Transfer | This allows for control of multiple motors with a single drive. Transients due to current and torque are eliminated during transitions between the drive and utility power. |

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
- TOSLINE-S20
- TCNet
- Ethernet Global Data (EGD)

ADDITIONAL MTX2-15 OPTIONS

Additional options are available for the MTX2-15, including the addition of expanded controls allowing for greater flexibility and/or providing better protection with respect to a user's application. These options include:

- Door-Mounted Equipment (Meters, Pilot Lights, Speed Potentiometer & Switches)
- Motor Protection Relay, RTD Monitor
- Synchronous Motor Control (AC Brushless/DC Brush Type)
- Power Module Lifting System for Easy Servicing of Power Modules
- UL Type 4 & 4X Enclosures
- Motor Space Heater (External Power)
- Sync-Xfer/Capture (Synchronized Transfer & Capture of Multiple Motors with One Drive)

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)



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 | | | |
|-------------------------------------|--|----------------|------|------|--|
| Voltage Rating | 4160 VAC | | | | |
| Dimensions (H x W x D) | 106.5 x 109.29 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 120 V Control & Integral to Main Transformer for 460 V 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 Currents (0/4 to 20 mA) or Voltage (0 to 10 VDC) Input Signals | | | | |
| Analog Output | Three Selectable Currents (0/4 to 20 mA) or Voltage (0 to 10 VDC) (Optional up to Maximum Eight Analog Outputs) | | | | |
| Communications 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; UL Type 3R/4/4X; Free-Standing; Front-Access Only (UL Type 3R Standard Enclosure, UL Type 4/4X Options Available) | | | | |
| Power Cables | Side Entry for Input/Motor Cables | | | | |
| Cooling | Forced-Air Cooled and Air-to-Air Heat Exchanger | | | | |
| Standards & Compliance | NEC, NEMA, UL, ULC & ANSI | | | | |
| ENVIRONMENTAL CONDITIONS | | | | | |
| Ambient Temperature | -45°C to 50°C (Storage at -45°C, Aux. 480 V power to be applied) | | | | |
| Altitude | 3281 ft (1000 m) above sea level (consult factory for Altitudes > 1000 M) | | | | |
| 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

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