

ADJUSTABLE SPEED DRIVES MTX2[®]-15 (HEAVY DUTY)



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[®]
- TOSLINE-S20 TCNet
- EtherNet[®]/IP[®] • Modbus[®] RTU
- Ethernet[®] Global Data
- Modbus[®] TCP
- (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 Chemical

• Mining & Minerals





MEDIUM VOLTAGE

ADJUSTABLE SPEED MOTOR DRIVE



LOW PROFILE (LP) CONFIGURATION

• Low Profile Configuration Available for Downhole Mining Applications

Oil & Gas Water & Wastewater **APPLICATIONS** Centrifuges Compressors Conveyors Cranes Crushers • Fans Hoists Mixers Pumps Pump Jacks

TOSHIBA



MODEL RANGE		500 TO 1500 HP				
Voltage Rating	4160 VAC					
Dimensions (H x W x D)	107"H x 110"W x 78"D (Low Profile configuration: 63"H x 223"W x 78"D)					
Weight						
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 SPECIFICATIO	NS 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 Input Signals; Currents (0/4 to 20 mA) or Voltage (0 to 10 VDC)					
Analog Output	Three Selectable Outputs; 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, Mode, Esc, Run & Stop					
Monitoring	Frequency Command Screen; Multiple Parameters Displayed: Motor Current, Motor Speed, Motor Voltage, DC Voltage, Input Voltage, Output Voltage, Run Time, Output Power, Motor kWH, 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 CONDI	TIONS					
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					

 $^{\star}\mbox{Typical HP}$ rating of a 4-pole Motor; contact factory for applications on constant torque loads

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