

# Dura-Bilt 5i MV

**TMEiC**  
We drive industry

## 400 MTX Series Medium Voltage Drive 500 – 3000 HP (373 – 2238 kW)

The Dura-Bilt5i MV MTX series of medium voltage AC fed drives deliver simple operation in a robust and compact design, providing a cost-effective solution for a broad range of applications.

The MTX's innovative, rugged NEMA 3R/UL enclosure is well-suited for applications in the most demanding environmental conditions.

The Dura-Bilt MTX Drive delivers value through low cost of ownership and high reliability.



### Features

- Compact design
- NEMA 3R/UL enclosure
- Control System Toolbox configuration with tuneup wizards, trending, and simulator
- Graphic keypad with drive control
- Integral medium voltage fused disconnect
- Inverter power modules with medium voltage IGBTs
- 36-pulse AC to DC diode converter
- Multilevel output voltage waveform
- Sensorless vector control
- Copper wound transformer included as standard
- Transformer electrostatic shield and lightning arrestors included as standard

### Benefits

- Smaller equipment rooms and easier layout
- Rain-tight, desert-proof, 50° C ambient rating
- Common configuration tool across TMEiC's family of drives
- Lower-cost startups, ease of maintenance
- No operator training required
- Fewer devices for higher reliability
- Power-system friendly, IEEE 519 compliant
- Motor-friendly
- Matches drive to process needs
- Cooler operation in a smaller package
- Reliability and power disturbance tolerance

# Dura-Bilt5i MV 4000 MTX Series

## Ratings, Dimensions and Weights

Frame	HP* (kW)	FLA (Amps)	Height inches (mm)	Width inches (mm)	Depth inches (mm)	Est. Wt. lbs. (kg)
MTX15	500 (373)	62	107 (2718)	168 (4267)	63 (1600)	15,000 (6,804)
	1000 (746)	124				
	1500 (1119)	186				
MTX30	2000 (1492)	248	110.7 (2812)	222 (5639)	72 (1829)	24,500 (11,113)
	2500 (1865)	310				
	3000 (2238)	372				

## Control I/O

Control Area	Specifications
Analog Inputs	(2) $\pm 10$ V or 4-20 mA, configurable, differential
Analog Outputs	(4) $\pm 10$ V, 8-bit, configurable, 10mA max
Digital Inputs	(2) 24-110 V dc or 48-120 V ac; (6) 24 V dc, configurable
Digital Outputs	(6) 50 V dc open collector 50 mA; (5) are usually provided with interposing relays
Speed Feedback Encoder Input	High-resolution tach, 125 kHz, 5 or 15 V dc diff. input, A Quad B, with marker
LAN Interface Options	Profibus-DP, ISBus, DeviceNet™, TOSLINE®-S20, or Modbus RTU/Ethernet, ControlNet
Motor Temperature Sensor	High-resolution torque motor temperature feedback: 1 K $\Omega$ platinum resistor or 100 $\Omega$ platinum RTD (uses analog input with signal conditioner)

## Display and Diagnostics

	Specifications
PC Configuration	Control System Toolbox for configuration, local and remote monitoring, animated block diagrams, dynamic live and capture buffer-based trending, fault diagnostics, commissioning wizard, and regulator tune-up wizards. Ethernet 10 Mbps point to point or multi-drop, each drive has its own IP address
Keypad and Display	Backlit LCD, animated displays <ul style="list-style-type: none"> <li>Parameter editing</li> <li>Four configurable bar graphs</li> <li>Drive control</li> </ul>
Instrumentation Interface	Two analog outputs dedicated to motor current feedback, five analog outputs that can be mapped to variables for external data logging and analysis
Power Sensor Test	Tests each medium voltage sensor. At the conclusion of the test, status of any failed sensor is displayed.

## Additional Specifications

### Power System Input and Harmonic Data

- Voltage: 4.16 kV, 3-phase,  $\pm 10\%$  continuous
- Tolerates power dips up to 30% without tripping, complete control power loss ride through of 100 msec
- Frequency: 60 Hz or optional 50 Hz,  $\pm 5\%$
- Displacement power factor (PF): 0.95 lag
- True PF: greater than 0.95 lag from 10% to 100% load
- $\leq 3\%$  THD (current distortion)
- Better than the IEEE 519-1992 standard without filters
- Lightning arrestors included as standard
- Top or bottom cable entry

### Converter Type

- AC fed 36-pulse diode, non-regenerative

### Transformer

- Copper winding
- Electrostatic shield
- 80°C rise
- Insulation class: 220° C
- Cooling: convection

### Inverter

- NPC (Neutral-Point-Clamped) configuration
- 3300 V IGBTs for margin, minimum parts count
- Control optically isolated from MV circuits for safety

### Applicable Standards

- CUL, CE UL 347A, NEMA ICS 6, NEMA ICS7, 

### Safety Features

- Integral MV disconnect, door mechanically interlocked
- Door electrical interlocks included as standard

### Output

- 0-120 Hz, 3% or less motor current harmonic distortion
- Five-level output for motor-friendly waveform
- Optional integrally-mounted output filter
- Top or bottom cable entry

### Operating Environment and Needs

- Temperature: -20° C to +50° C no derating
- Altitude: Up to 3300 ft/1000 m a.m.s.l. no derating  
Up to 10,000 ft/3280 m a.m.s.l. with derating

### Cooling

- Self-ventilated convection cooled transformer
- Sealed inverter compartment with rear insulated heat sinks
- Sealed air-to-air heat exchanger cooling of controls

### Sound

- Less than 70 dBA, at 3.1 ft (1m) from enclosure

### Control

- Non-volatile memory for parameters and fault data
- Vector control with or without speed feedback
- Motor simulation mode allows functional testing of system (PLC, LAN interface, and drive I/O)
- Automatic (power loss) restart function for remote applications

### Vector Control Accuracy and Response

- Speed regulator: 20 rad/sec
- $\pm 0.01\%$  speed regulation with speed sensor,  $\pm 0.5\%$  without
- Torque response: 500 rad/sec
- Torque accuracy:  $\pm 3\%$  with temp sensor,  $\pm 10\%$  without

### Protective Functions

- Inverter overcurrent, overvoltage
- Loss of DC link
- Loss of phase & low/loss of system voltage
- Motor overload

\* Typical HP rating of a 4-pole motor; contact factory for applications on Constant Torque Loads

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