TMEiC
We drive industry

TMdrive®-70e2

Medium Voltage Drive
6 – 36 MVA
To 3.65 kV

The TMdrive-70e2 is a new version of the popular TMdrive-70, designed for high-power, precision-controlled processes. Flexible arrangement of converter, inverter and cooling units allows for maximum power density, resulting in a small foot print and lower installation costs.

The new drive provides the same excellent benefits as the original:

- High reliability
- Simple configuration and maintenance
- High energy efficiency & low cost of ownership

Frames	# of Banks	Power (kVA)
6 MVA	1 2	6,000 12,000
9 MVA	1 2 3 4	9,000 18,000 27,000 36,000

Features	Benefits
Injection Enhanced Gate Transistor (IEGT)-based converter and inverter	Provide power to the process at near unity power factor with minimum harmonic distortion
Low Voltage Gate Drive Given that the IEGT is a MOS structure, it can be gated (turned on/off) with ±15 V. Gate Structure: Trench	High Efficiency and Small Size A very compact phase leg assembly is achieved with: • A reduction in snubber circuitry • Integral forward diodes • Integral clamp diodes
High-Speed Switching The IEGT is switched at a rate of 500 Hz in this application.	Motor and Power System Friendly The high-speed switching coupled with the three-level power bridge design delivers a smooth sine wave to the motor and power system.
Water Cooling Technology for the power bridge	Reduces the footprint of the equipment Saves space in your factory
Modular design for power bridge	Minimizes the time required for maintenance activities
Flexible topologies	Configurable into 1, 2, 3 or 4 banks to meet your needs

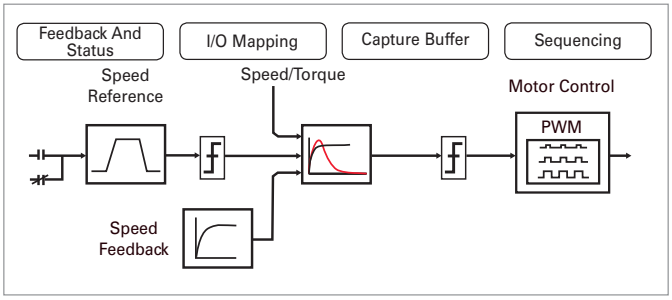
TMEIC
We drive industry

TMdrive-70e2

Ratings, Dimensions and Weights

Frame	Motor Current (Amps)	Height inches (mm)	Width inches (mm)	Depth inches (mm)	Est. Wt. lbs. (kg)
6000	950	96 (2430)	149 (3,800)	30 (750)	8,580 (3,900)
9000	1430	96 (2430)	111 (2,800)	59 (1,500)	8,976 (4,080)

Control Functions



Motor Control

With Speed Sensor (Resolver or Encoder)

Speed regulator accuracy: +/- 0.01%

Maximum speed response: 60 rad/sec (without coupling)

Torque linearity: +/- 10% Synchronous motors

Torque linearity: +/- 3% with temperature sensor
+/- 10% without temperature sensor
} Induction Motor

Maximum Torque current response: 600 rad/sec

Torque range: 0-400% of rated motor torque

Maximum flux control range: 20%-100%

Without Speed Sensor (Induction Motor Only)

Speed regulator accuracy: +/- 0.1% with temperature sensor
+/- 0.2% without temperature sensor

(Using 1% slip motor at rated flux)

Maximum speed regulator response: 20 rad/sec

Minimum continuous speed: 3%

Torque linearity: +/-10%

Maximum Torque current response: 600 rad/sec

Torque range: 0-150% of rated motor torque

Maximum flux control range: 75%-100%

Power Input/Output

Input Voltage	3800 V for Fixed Pulse Pattern type 3300 V for Carrier Comparison type
Input Voltage Variation	± 5% for fixed pulse pattern +5%-10% for conventional PWM, continuous operation below nominal requires derate
Input Frequency	50/60 Hz
Input Chopping	Approx. 500 Hz
Input Harmonics Compliant	TMdrive-70e2 – IEEE 519
Control Power	Control and Blowers 180-220 Vac, 50 Hz 3-Phase 198-242 Vac, 60 Hz 3-Phase
	Pumps and Precharge 380-460 Vac, 50/60 Hz 3-Phase
PLL Supply	110/110 V 50 or 60 Hz 3 Phase, 5 VA
Displacement Power Factor	0.98 TMdrive-P70e2
Output Frequency	0-75 Hz
Output Chopping Frequency	512 Hz
Maximum Output Voltage	3,650 V ac
Efficiency	>99% (with Fixed Pulse Pattern Control)

Mechanical (Inverters & Converters)

Enclosure	IP20 standard; IP43 option
Cable Entrance	Bottom, top is optional
Wire Colors	Per CSA/UL and CI
Short Circuit Ratings	100 kA for ac and dc buswork 25 kA for control power
Acoustic Noise	66-68 dB @ 150% OL 1 m from cabinet in all directions 1.5 m in height above floor

Environmental (Inverters & Converters)

Operating Air Temp.	0°- 40° C (32 to 104° F) at rated load 0°- 50°C (32 to 122° F) with derating
Storage Temperature	-20° to 55°C (-13 to 131° F)
Humidity	5 to 95% relative humidity Non-condensing
Altitude	0 to 1000 m above sea level
Vibration	10-50 Hz, <0.5 G
Operating Water Temperature	5° C - 32° C at inlet Exceed 32° C with derate Outlet temperature at inlet +7.2%