



**TMEIC**  
We drive industry



# TMEIC MAXspeed<sup>®</sup>

## Crane Control

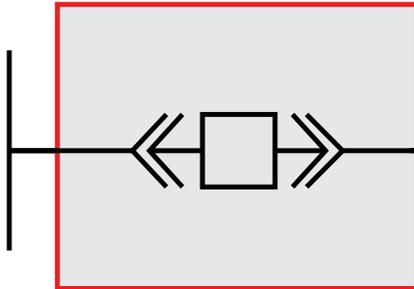


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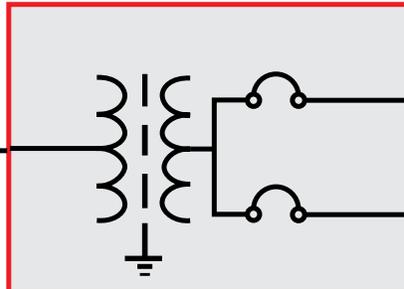


JAPAN | NORTH AMERICA | SOUTH AMERICA | EUROPE | SOUTHEAST ASIA | INDIA | CHINA | MIDDLE EAST | AUSTRALIA

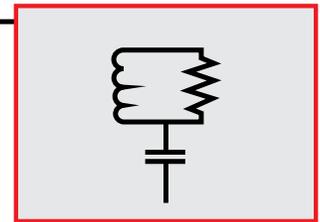
## MV SWITCHGEARS



## TRANSFORMERS



## HARMONIC FILTERS



### Switchgear for Crane Systems Applications

Engineered by TMEIC to meet applicable local and international standards.

Design includes proper interlocks and special mechanical requirements for acceleration forces and oscillations inherent to crane applications.

A Protection Coordination Analysis is preformed to properly protect downstream transformers.



### Main and Auxiliary Loads Transformers

Crane applications are hard on equipment. Transformers used by TMEIC are designed to meet and exceed RMS load requirements, peak power demands, and have the thermal capacity to handle harmonic currents often seen in crane electrical systems



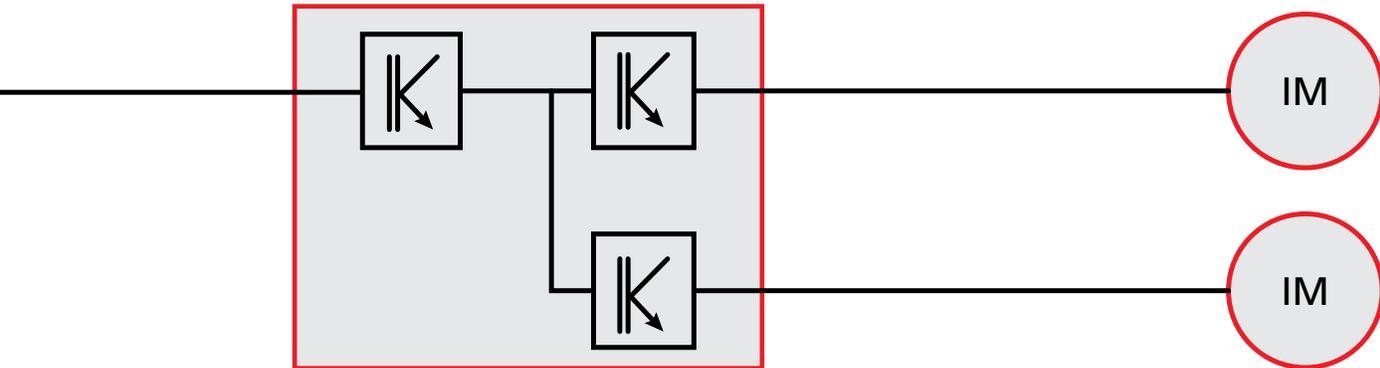
### Harmonic Filters

For each project, TMEIC evaluates the harmonic currents and voltage distortions that will be introduced by both new and existing equipment on site, designing filters to meet local regulations and mitigate harmonic issues

MAXSpeed™ systems: TMEIC Material Handling solutions for high reliability operation, covering the complete power system, from the incoming switchgear, through transformers, Harmonic Filters, Variable Speed Drives, Motors and Controllers.

## TM10e2 DRIVES

## TMEIC MOTORS



### Crane Duty Power Electronics

The TMdrive-10e2 Low Voltage Drive from TMEIC is evolved from 50+ years of experience powering cranes. With Mean Time Between Failure over 41,000 hours, simple configuration, and modular design that allows for ease of maintenance this is an outstanding performer on today's high-performance cranes.

A wide range of inverters can cover any motor size, with the capability to be configured for redundant operation or hot back-up.



### Material Handling Motors

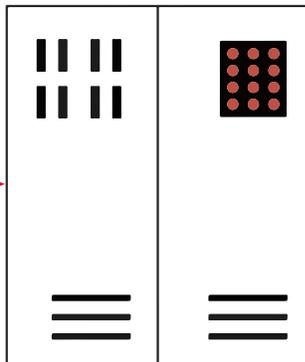
Combining the industrial production experience of parent companies Toshiba and Mitsubishi Electric, TMEIC rotating machinery products are developed based on more than 200 years of expertise, leading to the manufacture of highly reliable motors that receive excellent customer evaluations for their superior quality, durability, low maintenance and long service life.

TMEIC delivers Hoist, Trolley, Gantry and Boom motors with superior insulation quality to ensure a long life under operation with PWM voltage waveform.



Remote I/O all over the crane feeds valuable information from systems of all kinds back to the Master Controller.

## MASTER CONTROLLER



## MAXSpeed Controllers

Provide the crane control functions including logic, sequencing, and motor speed signals. The controller rack contains the power supply, CPU, and spare slots for communication and I/O cards.

Controller programming software provides graphical programming languages including familiar ladder logic, block programming, and SFCs. Real-time data and power flow are highlighted in green.

### Communication Options

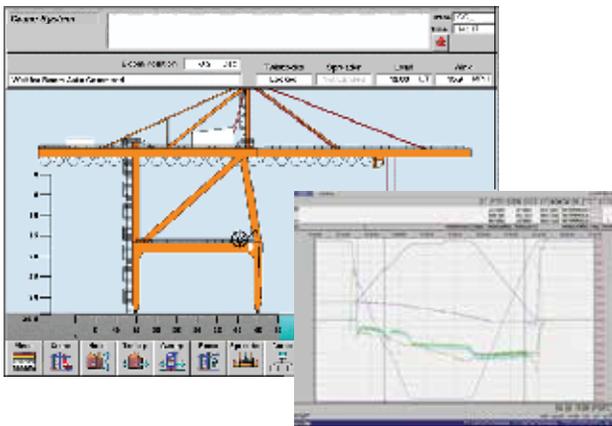
Local Area Networks and I/O device networks:

- Ethernet, 10/100 MB/s
- Profibus
- DeviceNet
- ProfiNet
- OPC UA

## LOCAL CRANE MONITORING SYSTEM



## REMOTE CRANE MONITORING OR OPERATION SYSTEM



### Crane Monitoring System

Provides an overview of the entire crane with important real-time data and status information such as:

- Boom position in degrees
- Status of the twist locks
- Spreader status
- Crane load
- Wind speed

Buttons at the bottom of the screen allow the call up of displays of all crane components and control functions including:

- Hoist
- Trolley
- Gantry
- Boom (see display below)
- Spreader

Trend Recorder displays real-time and historical data. Traces are selected by dragging/dropping variables from the block diagram view.



### Remote operator stations

Located in the yard office have screens with live video showing the crane pick up area and the top of the containers. Operator master switches on the desktop allow manual intervention if a problem occurs. Stations can be located on the crane or in the yard, if desired.

Remote Operator Console layout includes:

- Flat screens
- Quad Video windows
- Color touch panels
- Master switches

# TMdrive<sup>®</sup>-10e2 Low Voltage System Drive



## TMdrive<sup>®</sup>-10e2

The family of low voltage AC system drives has an integral DC bus structure with a wide variety of inverters (DC to AC) and converters (AC to DC) to match virtually any application in the paper industry.

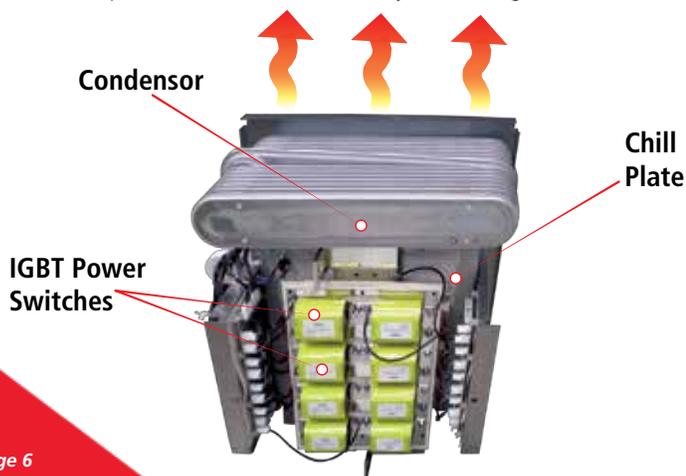
- 400, 460, 575, or 690 volt operation
- Motor power up to 1,949 kW
- Regenerative converter option

## Heat Pipe Cooling Technology

The use of heat pipe technology provides a dramatic advance in power bridge cooling, including a significant reduction in the footprint of the power bridge, and fewer fans lower the audible noise.

### The Thermal Cycle

- 1 Condensate to Vapor**  
IGBT's are mounted to the multi-channeled chill plate which cools them. Heat generated by the IGBTs vaporizes the refrigerant, moving it upwards through the chill plate to the finned condensing unit.
- 2 Vapor To Condensate**  
Cooling air is pulled up through the IGBTs and the condensing unit, and cools the refrigerant, which condenses back to liquid.
- 3 Return of Condensate**  
The condensed refrigerant returns to the bottom of the chill plate to start the thermal cycle over again.



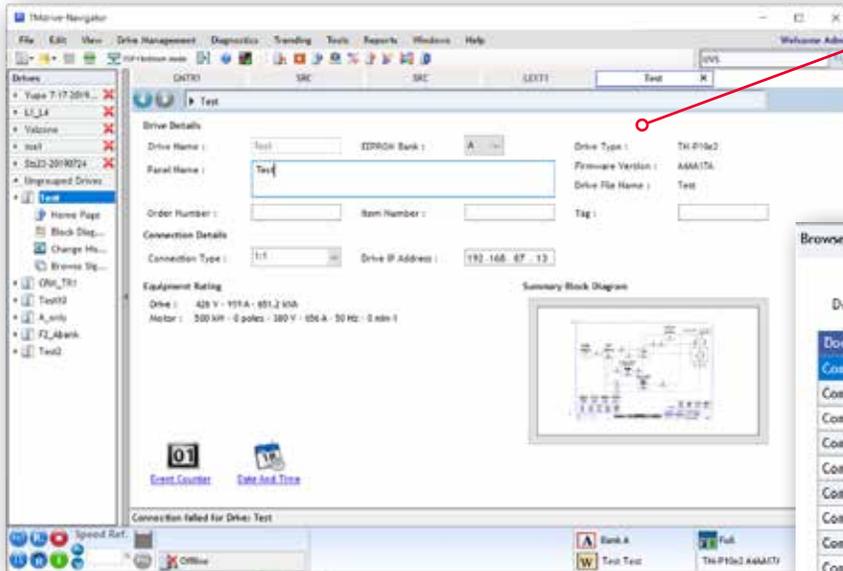
## Draw-Out Style Inverters

For applications up to 193 kW (249 hp), draw-out style inverters are available in a very compact package.

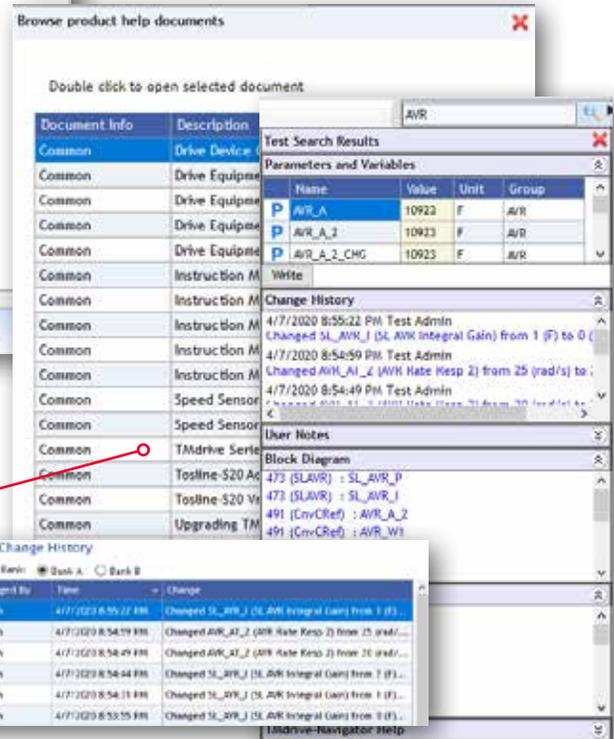
Draw-out inverters are mounted on heavy-duty slides with staggered dc bus connectors on the back that connect with the bus when slid into the cabinet.

Motor cables are terminated at a common terminal block in the bottom of the cabinet.

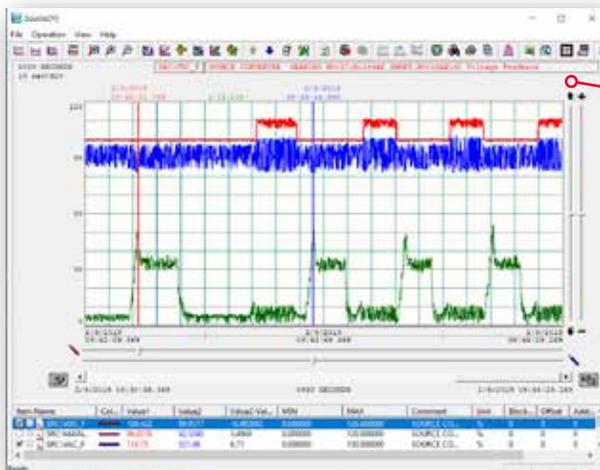
## TMdrive-Navigator Supports the Entire TMdrive® Family



The TMdrive-Navigator tool helps you maintain TMEIC drives yourself. Engineers and technicians are empowered to understand how the drive works and what the drive is doing. Any user can easily access current drive expertise and know how.



Desk-top like search technology links topical signal lists, block diagrams, help files, product documentation, change history, and user notes. Windows techniques facilitate navigation within a drive and across the system. The status of all drives is always in view.



High-speed data is automatically captured and saved in the event of a drive fault. Users may also capture high speed data based on their own trigger conditions or perform high resolution real-time trending.

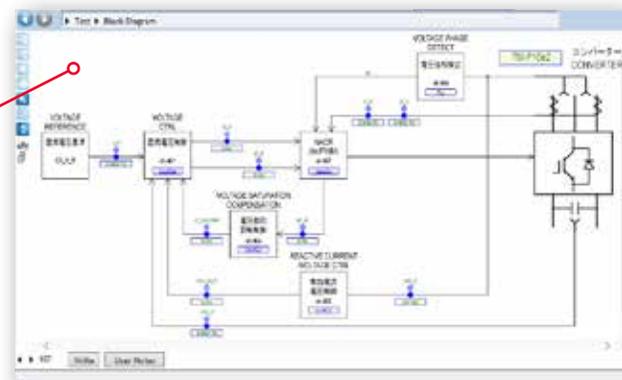
Fault data can be automatically "pushed" to key users. The client-server architecture allows access to high performance data from remote locations with the same resolution as if you were in the plant.

Wizards support tuning of drive functions.

Live block diagrams provide a real-time graphical view of drive functions. Functions can be configured directly from the graphical view. Product documentation is integrated right into the tool. Users may even capture their own notes to benefit future troubleshooting.

Compatible with:

- Windows 7, Windows 10
- Windows Server 2016, 2019



*Delivering customer success  
every project, every time.*

## **About TMEIC**

### **A Global Network**

TMEIC is built on the combined and proud heritage of Toshiba and Mitsubishi-Electric in the industrial automation, control and drive systems business. TMEIC's global business employs more than 2,200 employees, with sales exceeding U.S. \$2.4 billion, and specializes in Metals, Oil & Gas, Material Handling, Utilities, Cement, Mining, Paper and other industrial markets.

TMEIC Corporation, headquartered in Roanoke, Virginia, designs, develops and engineers advanced automation and variable frequency drive systems, and is home to our Global Center of Excellence for Crane Systems

TMEIC delivers high quality advanced systems and products to factories worldwide, while serving as a global solutions partner to contribute to the growth of our customers.



**TMEIC Corporation Americas | Roanoke, Virginia | Houston, Texas | [WWW.TMEIC.COM](http://WWW.TMEIC.COM)**

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