TMEiC
We drive industry

TMUPS

Next Generation UPS for Business Critical Loads

From 100KW scalable upto 10.5MW

State-of-the-art UPS for business critical applications delivers highest reliability & energy efficiency using CSTBT TECHNOLOGY combined with innovative multilevel power conversion.

WWW.TMEIC.COM

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

TMUPS: Reliable, Energy efficient and Flexible UPS solution designed to deliver continuous power in most demanding environments with compact footprint and unprecedented load capabilities which delivers utmost flexibility to provide the ideal solution to customers.

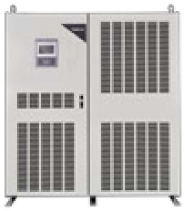
With expert knowledge of energy conversion and rich legacy of parent companies **Toshiba** and **Mitsubishi-Electric** in the field of power electronics, TMEIC's strength in Design, Engineering, Manufacturing, Supply, Installation, Commissioning and Servicing brings immense value for our customers globally.

UPS Development History

50+ years of manufacturing experience and pioneering in cutting-edge inverter and converter technology

Next-Gen UPS
2015

First to introduce the highest efficient UPS in the world with Double Conversion efficiency >98%



CSTBT UPS
2008

First to introduce the highest efficient UPS in the world with Double Conversion efficiency >96%

IGBT UPS
1991

First to introduce in the world

TRANSISTOR UPS
1982

CNV:SCR
INV:Transistor

SCR UPS
1964

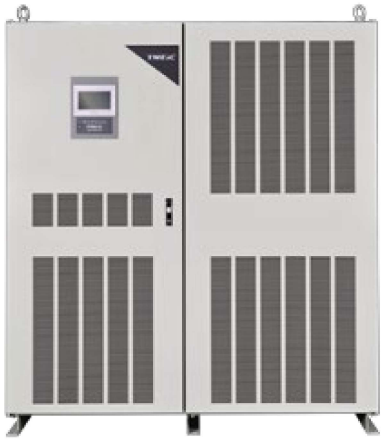
CNV:SCR
INV:SCR

**Next-Gen UPS are designed with Silicon Carbide (SiC) power modules for the benefit of large Data Centers with significant energy and civil cost savings. Please contact us for detailed specifications.*

Next-generation UPS Solutions
for Business-Critical Loads!

TMUPS Series Uninterruptible Power Supply (UPS) design with its patented conversion technology delivers the highest efficiency in the industry to go along with the quality and reliability that users are accustomed to when specifying TMUPS.

High Efficiency >98%*



Redundant Modular MW UPS

800kVA~1.75MW

TMUPS MW series designed to deliver megawatt of power in a single UPS frame built with redundant scalable operation. The latest generation patented CSTBT power modules with multilevel power conversion technology enhances components life, improves reliability and efficiency. Customer can benefit with reduced total cost of ownership and improved PUE.

Features

- Scalable upto 6 units in parallel to meet the redundancy requirements
- Compact footprint design delivers more power density per sq.ft. in the industry
- Multi-level power conversion in both rectifier and inverter increases UPS life, reliability and availability
- Most suitable for High density Data center and large industrial applications
- Automatic input phase reversal detection and protection (Uninterrupted rectifier operation guaranteed)
- Compatible for 100% regenerative loads with bidirectional power converters
- Flexible Smart drive mode operation delivers very high efficiency even at lower load levels

Single Module UPSs

100kVA~600kVA

World's first multi-level conversion Uninterruptible Power Supply, TMUPS is the wise response from TMEIC for the growing demand of high reliability and efficient power solution for mission-critical applications.

Innovative multilevel power conversion with latest generation patented CSTBT power modules enhances components life, improves reliability and efficiency. Customer can benefit with reduced total cost of ownership and improved PUE.

Features

- Scalable upto 8 units in parallel to meet the redundancy requirements
- Compact footprint design delivers more power density per sq.ft. in the industry
- Multi-level power conversion in both rectifier and inverter increases UPS life, reliability and availability
- Compatible for 100% regenerative loads with bidirectional power converters
- Automatic input phase reversal detection and protection (Uninterrupted rectifier operation guaranteed)
- Flexible Smart drive mode operation delivers very high efficiency even at lower load levels

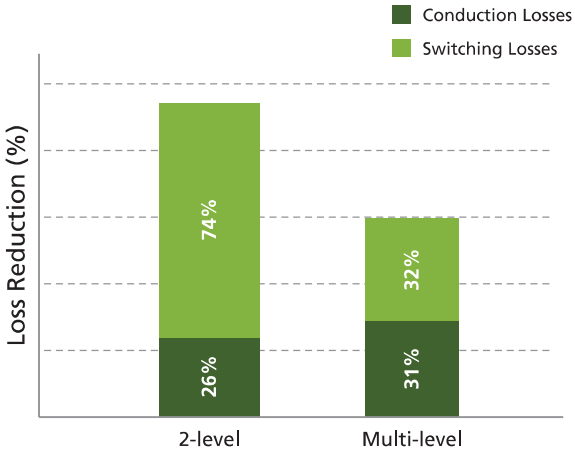
* Smart Drive Mode

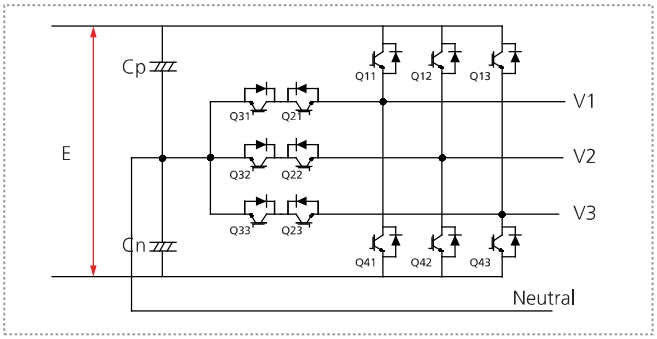
Innovative Multilevel Power Conversion Technology

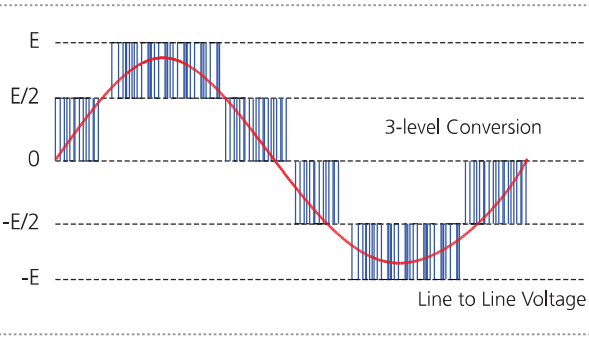
State-of-the-art multilevel technology in both rectifier and inverter creates multiple voltage levels to reduce voltage and thermal stress on components. With this design components life, reliability and availability is increased significantly with proven track record of more than a decade.

Benefits

- Lower voltage stress on power semi-conductors devices
- Significant reduction of noise and electromagnetic interference
- Higher efficiency (lower losses)
- Higher system reliability and compactness





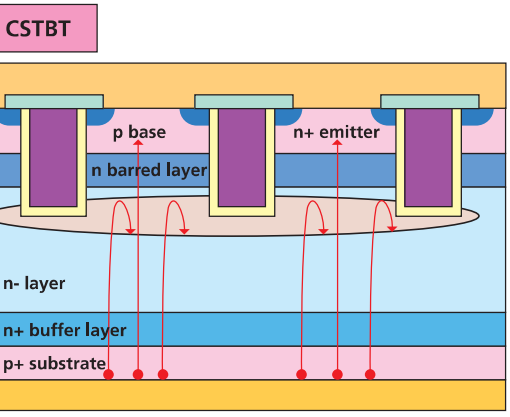


Voltage variation Δv at the terminals
E @Two-level, E/2 @Three-level
Reduction of conversion loss, reduced EMI interference, reduction of harmonics and reactor size.

Robust & Proprietary Power Module

CSTBT is fabricated using a special vertical structure to improve carrier concentration and lowering saturation losses.

- Robust in design
- High endurance in dynamic load conditions
- High thermal stability delivering continuous power in most demanding environments
- Reduced losses



Advanced Control System for Optimum Performance

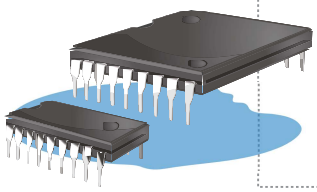
Power semiconductors are used universally in power conversion however the key difference is how the control circuit delivers high performance. TMUPS uses MITSUBISHI CSTBT with its unique and advanced control circuit to deliver unparalleled performance.

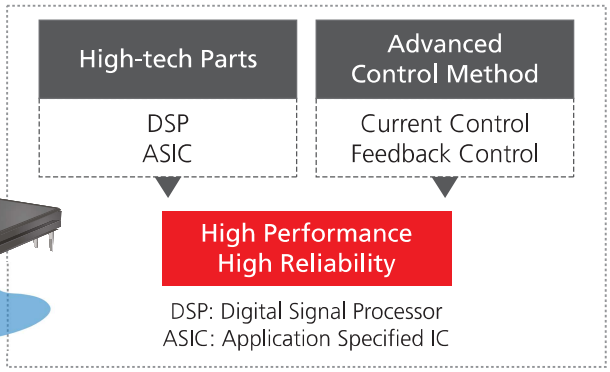
Features

- 3-phase independent control (100% unbalanced loads)
- Feed forward control design delivers excellent dynamic response to step load changes in parallel operation
- Compatible with regenerative loads (reverse power flow)
- High speed controller supports highly reliable multi-module system upto 8 UPSs
- Instantaneous Wave Form Control for both input current and output voltage

Performance

- Reduced output voltage fluctuation
- Reduced output voltage distortion
- Unbalanced load capability
- Eliminate input current harmonics
- Self diagnostic function

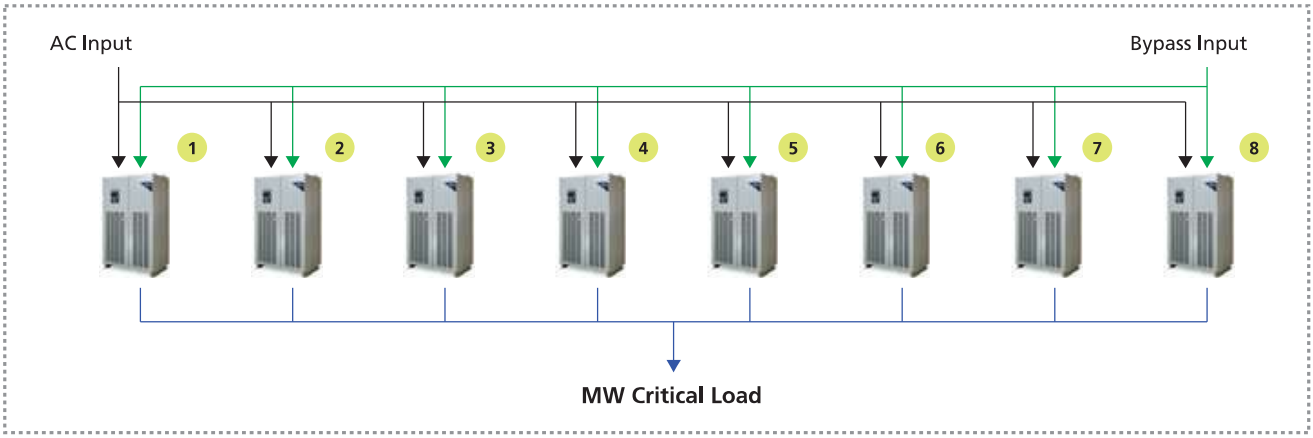




UPS System Flexibility

The TMUPS Multi-Module System (MMS) configuration incorporates individual parallel control and static bypass circuitry in each independent UPS frame.

Thus, TMUPS MMS Configuration offers complete system redundancy, reliability, flexibility with cost saving scalability and reduced footprint.



Benefits

- MMS Capacity: Expandable and to protect upto 10.5MW
- Cross current sensor less control
- Instantaneous equal load sharing with current minor loop control
- Individual UPS modules can be added or isolated for expansion or maintenance

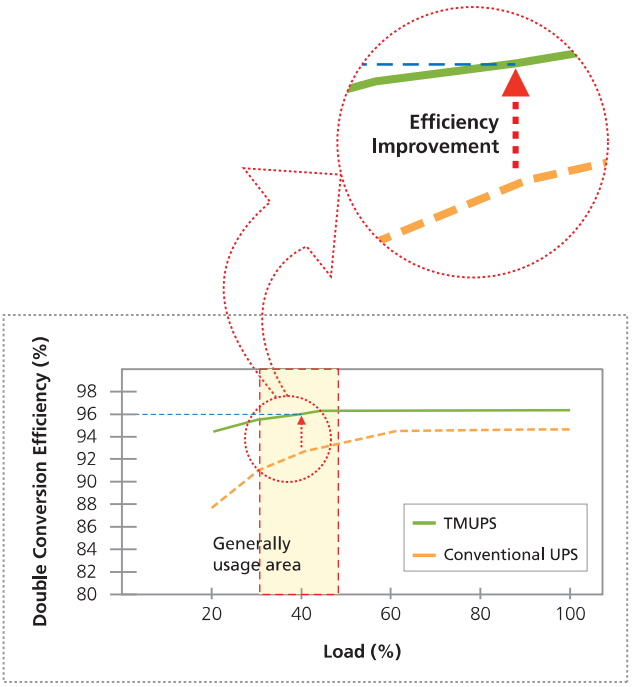
Highest Efficiency

TMEIC UPS is the most efficient true online double-conversion UPS at all load levels. Unique combination of multilevel conversion technology with CSTBT structure differentiates TMUPS in terms of higher efficiency translates into energy savings.

This benefits the user with reduced cost of ownership and improved Power Usage Effectiveness (PUE).

Benefits

- Capex & Opex savings in cooling cost
- Energy savings and reduced TCO
- Space savings



TMUPS Smart Drive Mode of Operation

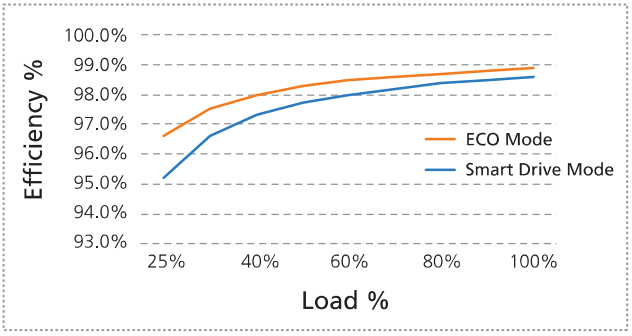
TMUPS provides flexibility to choose Smart drive mode to increase the power conversion efficiency and reduce the operational energy costs. In Smart drive mode of operation, the load is supplied by static bypass and the inverter is working in parallel with bypass for power factor compensation and harmonic correction.

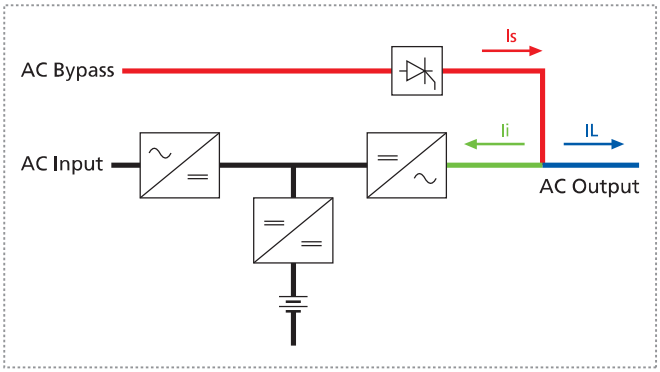
Benefits

- High Efficiency
- Significant reduction in OPEX
- No compromise on battery health
- Active PF correction – Reduced demand from grid
- Harmonic compensation

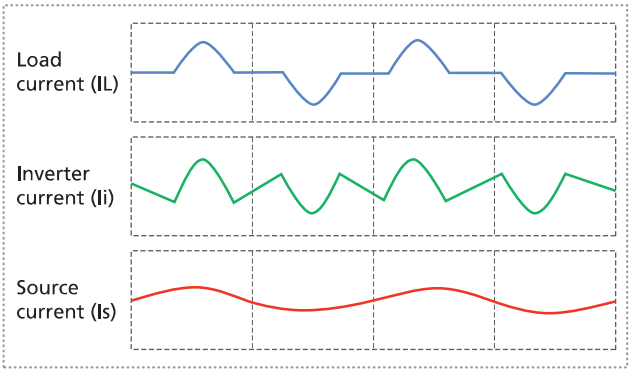
More importantly, TMUPS Smart drive mode uses rectifier only to charge the batteries and inverter for power conditioning.

This ensures battery is not discharged or cycled frequently when the grid power conditions are not reliable, to improve battery life and safety.





Smart Drive Mode of Operation



Smart Drive Active Power Compensation

TMUPS MW Series

Redundant modular UPS for large data center needs!

TMUPS MW series is especially designed to meet the growing demand of megawatt UPSs in high power density Data Centers. With its compact footprint and parallel redundant modular flexibility with highest reliability & efficiency, TMUPS MW series makes a difference and provides low cost of ownership.

TMUPS design with larger capacity modules in one frame reduces the cost of cable infrastructure and complexity of distribution.

UPS Module

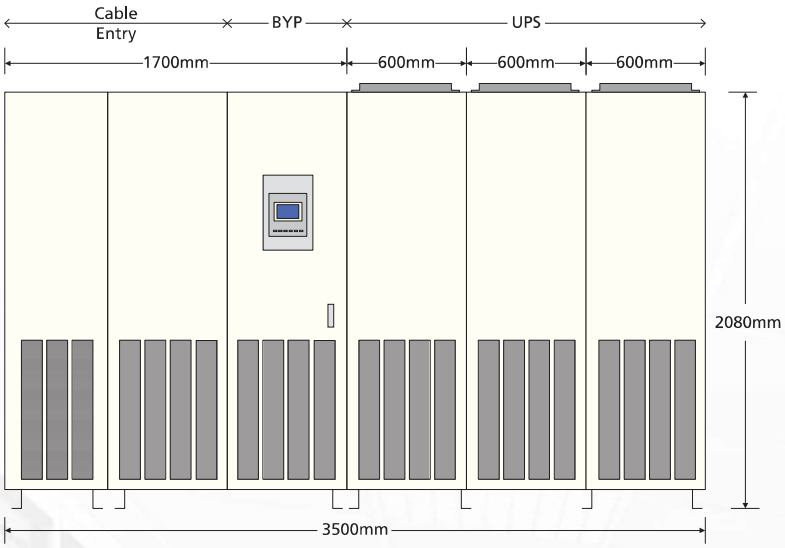
- Power converter unit
- Independent main control circuit
- Parallel upto six UPSs

Common Bypass Module

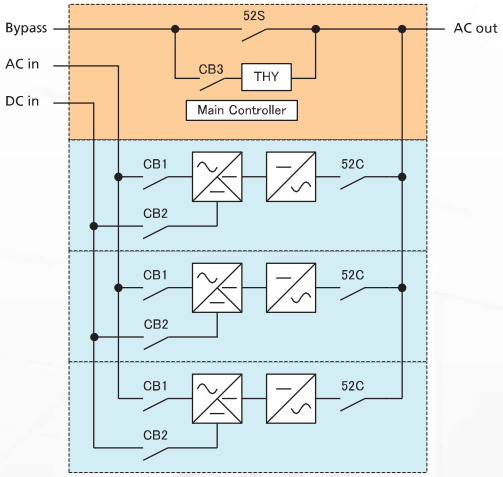
- Static transfer switch
- Main control unit
- LCD touch panel
- Cable entry (Top / Bottom)

Electrical

- 415 VAC 3Ph 3W
- Input THDI <3%
- Input PF >0.99
- Feed forward and advanced current minor loop control
- Built-in modular SPD



Capacity 1.5 MW Footprint



Adaptability and Scalability

With TMUPS MW series Parallel Redundant modular systems architecture, UPS modules can be added or removed as per the load requirements.

This engineered-in flexibility makes the TMUPS MW series system design an economical alternative in an unpredictable world.

Open Architecture Communication

TMUPS MW series UPS provides the flexibility to communicate on wide range of communication protocols, for easy and effective maintenance.

Superior Performance

By controlling the proprietary CSTBT in our UPS's inverter and converter section, we can achieve unparalleled step load performance.

Our advanced control algorithm promotes highspeed fault detection and control.

Technical Specifications

DESCRIPTION	TMUPS W250 Series							
Rating (kVA) at 40° C	100	120	160	200	300	400	500	600
Design Topology	Online double conversion (VFI-SS-III), Transformerless Design Optional Eco Mode (OR) Smart Drive Function							
Power Expansion	Upto 8 units, 4.8 MVA							
Surge Protection	Built-in modular type II surge protection							
Emergency Power off (EPO)	Available in front panel							
Cable Entry	Bottom as standard, Top as optional				Top & Bottom as standard			
Protection Class	IEC-IP-20							
Colour	Grey RAL 7032							
Input Characteristics								
Converter Technology	CSTBT based multi-level Technology, High Efficiency & Long life							
Nominal Voltage	3Phase 380/400/415 V + PE							
Voltage Tolerance	+15%, -20%							
Frequency	50 Hz ± 10%							
Power Factor	0.99							
Current Distortion (THDi) @ rated load[1]	3%							
System Power Walk in	30 secs programmable and up to 3600 secs programmable converter start delay							
Output Characteristics								
Inverter Technology	CSTBT based multi-level Technology, High Efficiency & Long Life							
Nominal Voltage	3Phase-4 Wire 400/415 V (selectable)							
Frequency	50 Hz							
Frequncy Sync Range	±1% to ± 5% (Selectable in 1% increment)							
Frequncy Slew rate	1 Hz/s to 5 Hz/sec (Selectable in 1 Hz/sec increment)							
Phase Displacement	±1 Deg @ 100% balanced load, ±3 Deg @ 100% unbalanced load							
Power Factor	0.9 @ 40°C, Unity PF available as per application requirement							
Voltage Regulation Static Load	< 1%							
Dynamic Response (100% Step Load)	< 2%, recovery within 20ms							
Voltage Distortion (THDv) @ rated load	< 2% Linear load, < 3% Non-linear load							
Over Load	110% for 60 Minutes, 125% for 10 Minutes, 150% for 1 Minute							
Bypass Characteristics								
Nominal Voltage	3 Phase -4 Wire 400 V ± 10%							
Nominal Frequency	50Hz							
Short Circuit withstand capacity	500% for 20ms							
Battery								
Nominal Voltage	480 VDC (Flexible)							
Max DC voltage protection	600 VDC							
Min DC voltage for Inverter operation	upto 400 VDC							
Battery Type	VRLA, Flooded, Ni-Cad, LIB							
Efficiency								
Double Conversion Mode	> 96% from 40% load level							
Smart Drive Mode	Upto 98.5%							
Communication								
Intelligent monitoring (option)	Modbus/TCP, Modbus/RS485, RS 232, SNMP							
UPS Display	Graphical Touchscreen with LCD Display							
Alarm and Status Information	Through LCD Display, user programmable input and output dry contacts							
Environmental Conditions								
Operating Temperature	0 to 40° C							
Relative Humidity	5 to 95% non-condensing							
Operating altitude measurement	1000m above msl							
Noise level at 1 m	<72 dBA							
Physical								
Dimension (W x D x H)[2]	700 x 832 x 2080		700 x 832 x 2080		1400 x 832 x 2080		1800 x 832 x 2080	
Weight (kg)	550	550	610	610	990	1100	1590	1650

Specifications are subject to change without prior notice as part of continuous development.
1-With source THDv < 1% 2-Dimension tolerance ±10 mm

Technical Specifications

DESCRIPTION	W200	TMUPS W350 Series		
Rating (kVA / kW) at 40° C	800/720	1050/1050	1400/1400	1750/1750
Design Topology	Online double conversion (VFI-SS-III), Transformerless Design Optional Eco Mode (OR) Smart Drive Function			
Power Expansion	Upto 8 units, 6.4 MVA	Upto 6 Units, 10.5MW		
Surge Protection	Built-in modular type II surge protection			
Emergency Power off (EPO)	Available in front panel			
Cable Entry	Top & Bottom as standard			
Protection Class	IP-20			
Colour	Grey RAL 7032			
Input Characteristics				
Converter Technology	CSTBT based multi-level Technology, High Efficiency & Long life			
Nominal Voltage	3Phase 380/400/415 V + PE			
Voltage Tolerance	+15%, -20%			
Frequency	50 Hz ± 10%			
Power Factor	0.99			
Current Distortion (THDi) @ rated load[1]	3%			
System Power Walk in	30 secs programmable and up to 3600 secs programmable converter start delay			
Output Characteristics				
Inverter Technology	CSTBT based multi-level Technology, High Efficiency & Long Life			
Nominal Voltage	3Phase-4 Wire 400/415 V (selectable)			
Frequency	50 Hz			
Frequncy Sync Range	±1% to ± 5% (Selectable in 1% increment)			
Frequncy Slew rate	1 Hz/s to 5 Hz/sec (Selectable in 1 Hz/sec increment)			
Phase Displacement	±1 Deg @ 100% balanced load, ±3 Deg @ 100% unbalanced load			
Power Factor	0.9 @ 40° C	Unity PF at 40° C		
Voltage Regulation Static Load	< 1%			
Dynamic Response (100% Step Load)	< 2%, recovery within 20ms			
Voltage Distortion (THDv) @ rated load	<2% Linear load, <3% Non-linear load			
Over Load	110% for 60 Minutes, 125% for 10 Minutes, 150% for 1 Minute			
Bypass Characteristics				
Nominal Voltage	3 Phase -4 Wire 400 V ± 10%			
Nominal Frequency	50Hz			
Short Circuit withstand capacity	500% for 20ms			
Backfeed Protection	Available			
Battery				
Nominal Voltage	480 VDC (Flexible)			
Max DC voltage protection	600 VDC			
Min DC voltage for Inverter operation	upto 400 VDC			
Battery Type	VRLA, Flooded, Ni-Cad, LIB			
Decentralized battery bank option	Available			
Efficiency				
Double Conversion Mode	> 96% from 40% load level			
Smart Drive Mode	Upto 98.5%			
Communication				
Intelligent monitoring (option)	Modbus/TCP, Modbus/RS485, RS 232, SNMP			
UPS Display	Graphical Touchscreen with LCD Display			
Alarm and Status Information	Through LCD Display, user programmable input and output dry contacts			
Environmental Conditions				
Operating Temperature	0 to 40° C			
Relative Humidity	5 to 95% non-condensing			
Operating altitude measurement	1980m abovel msl no derating at 40° C			
Noise level at 1 m	<73 dBA			
Physical				
Dimension (W x D x H)[2]	3000 x 900 x 2080	3500 x 900 x 2080	4300 x 900 x 2080	4900 x 900 x 2080
Weight (kg)	3000	3400	4850	5700

Specifications are subject to change without prior notice as part of continuous development.
1-With source THDv < 1% 2-Dimension tolerance ±10 mm

Applications

Our patented technologies provide a true online UPS
that offer High Reliability & Highest Efficiency,
No matter what is the load!

UPS Life Cycle Support

Supervision & Commissioning Services

The maintenance needs of TMEIC UPS are minimal but crucial. TMEIC provides appropriate service support meeting the budget while maximizing the performance and life of your TMEIC UPSs with its factory trained engineering team.

The field engineers are trained at our factory through on:

- Product design know-how
- Time saving commissioning
- Site acceptance test
- Trouble shooting and root cause analysis

This approach helps us to avoid changes & modifications at project sites which in turn enables quick start-up of critical loads and keeping the load uptime.

TMUPS Service Care

The tailored, site-specific service agreements for simple guidance on preventive maintenance with agreed response time, 24 x 7 x 365 coverage and replacement parts at discounted pricing.

TMUPS Service Plus

The periodic inspection & maintenance by TMEIC service team that includes calibration, and adjustment of UPS's control and monitoring systems to ensure continued performance and highest availability of UPS System.

Response time of 24 x 7 x 365 coverage, guaranteed load uptime with replacement spares parts including labour.

Training

TMEIC offers a variety of training opportunities including specialized customer hands on operation & maintenance training at our factory or at site.

TMEIC Remote Diagnostics Services

TMEIC's system diagnostics 'TRACE' tool can bring UPS status in detail at the engineer's remote view enabling a quick path to problem resolution. System faults are automatically identified for quick root cause analysis and preventive actions. TMEIC service engineers at our various offices / service stations, can analyze the data and provide steps for resolution.

TMEIC service engineers with factories, offices and spare parts depots across the globe.

3000+ Employees Worldwide

24 x 7 x 365 Support Toll Free no. 1800 1234 292

Remote Diagnostics

Spare Parts Depots Worldwide

300+ Service Engineers Worldwide

TMEIC Post-Sales Customer Support Network

TMEIC Innovative Product Solutions

PV Inverters

We manufacture and supply advanced, energy-efficient, sustainable and reliable multi-level PV inverters. TMEIC's SolarWare Inverters deliver high energy efficiency (99%), lower switching losses by 56%, lower equipment footprint and weight thus leading to unparalleled yield on customer investment.

- Premium efficiency = 99%
- Large capacity & wide MPPT model (2.5MW/2.5MVA)
- World leader for compact size (1.4MVA/m^2)
- No de-rating up to 50°C
- Built-in Night-time Var Injection (24hrs operation is also possible)
- Negative grounding kit with optinal insulation monitoring
- Less number of components & high reliability

TMdrive MV Variable Frequency Drives (VFDs)

TMdrive-MVe2 & TMdrive-MVG2 are Medium Voltage, Variable Frequency AC Drive System with multi-level near Sine Wave Output are suitable for applications using standard Induction and Synchronous Motors.

- Power rating 200KVA-19500KVA
- Voltage class 3.3KV-11KV
- High efficiency: 97%
- Premium Power Factor: >0.99
- Harmonics less than 2%
- Reactive Power Compensation
- Regenerative feature: Higher energy saving
- Motor-friendly wave form
- High MTBF means less failures & high uptime
- Modular construction resulting to low MTTR

Squirrel Cage Induction Motors

From Design to Quality Control - All made the TMEIC Way

Motors designed & manufactured in our factory in India, strictly in accordance with TMEIC Japan processes & practices, comply to Indian & international standards and bring unmatched value to our customers.

- IEC Frame size: 315-900
- Power rating: 160-23000kW
- Voltage class: 380V-13.8kV
- Enclosure: TEFC / TEAAC / TEWAC / WPII
- Certifications: Baseefa, CSA, CCOE
- Combined testing of Motors & Drives
- High power to weight ratio - Smaller footprint
- Ease of operation & maintenance
- Rugged construction to suit demanding application
- Suitable for severe corrosive & hazardous environment
- Maximum uptime for high return of investment
- Designed for Inverter Duty Applications – TMEIC Make Motor & Drive for better performance

Built on the proud history of **Toshiba** and **Mitsubishi Electric**, TMEIC continues their legacy of providing high performance and high power solutions to customers around the world.

TOSHIBA
(TOSHIBA CORPORATION)
established in **1896**
Tokyo Electric Co. Ltd.

+

MITSUBISHI
(MITSUBISHI ELECTRIC)
established in **1921**
Mitsubishi Electric Corporation

ROTATING MACHINES, POWER ELECTRONICS & INDUSTRIAL SYSTEMS DEPARTMENTS

TMEIC
(TOSHIBA MITSUBISHI ELECTRIC INDUSTRIAL SYSTEMS CORPORATION)
established in **2003**

TMEIC is a world-class leader in industrial systems integration, contributing to production technology and management of the environment with cutting-edge technology.

As an industrial system integrator, we are focused on the future of 'industry', 'society' and 'environment' in order to respond to the on-site needs of production and to facilitate the harmonization of social development & beautiful global environment.

Our core technologies lie in the power electronics which transforms and controls the required electric power, and the engineering that extends from planning to operations of the plant as a whole. Our cutting-edge technology in these core areas contributes to production and environment management.

'We are TMEIC. We Drive Industry.'

Global Presence

Manufacturing Facility

▲ Rotating Machine Factory & Power Electronics Factory (Tumakuru, Near Bengaluru)

50+ years of manufacturing experience

in pioneering cutting-edge inverter and converter technology allows us to deliver our customers the best performing, energy-efficient and the most reliable products.

Our world-class manufacturing plant has the state-of-the-art production, testing facility, quality, SCM capabilities and products that meet IEC standards.

We have well trained employees having expertise in development of PV inverters, UPS systems and MV motors & drives.

It is our endeavour to bring full capabilities of our Japanese operations to India as we take on the new challenge of building a better tomorrow for India.

▲ Assembly Line

▲ Test Bench