

Powering Your Business

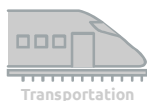
TCR *Industrial* Series Rectifiers AC~DC Industrial Solutions

DSP controlled, high mechanical & electrical robustness, ultimate performance, highest availability & versatility.

The **TCR *Industrial*** presents optimized, robust critical AC~DC power conversion for industry, railways & telecom industries.



Key Applications



Product Snapshot

- ◆ Hi-tech state of art of power electronics design with multiple DSP control, single phase or three phase configurations.
- ◆ Enhanced reliability & robustness via true fault-tolerant design, eliminates all single point of failures.
- ◆ Capable of operating under harshest industrial environments, robust mechanical and electrical design.
- ◆ True industrial systems and load compability, transformer based true adaptability to high inrush currents, electronic protection for short circuit, overload, over temperature...etc
- ◆ Switch mode design for lower ratings delivers higher efficiency to save electricity without sacrificing reliability.
- ◆ Supports a vast range of applications in industry, railways and telecom.
- ◆ Advanced controller, user interface with a variety of controls, optional Scada / PLC, ethernet and e-mail support, programmable dry contacts, MODBUS, monitoring & management via web browser.
- ◆ Easy diagnostics and troubleshooting, modular PCB & electronics architecture which provides unrivalled serviceability.

Features & Benefits

- ◆ Continuous duty, robust, stronger power conversion.
- ◆ Ultimate DC power for target application.
- ◆ Adjustable AC input & DC output values, electrical characteristics.
- ◆ Advanced serviceability, fast recovery from fault(s).

Options

- ◆ Custom design IP rated enclosures
- ◆ Advanced connectivity choices.
- ◆ A variety of DC power extension packages.
- ◆ Air conditioned outdoor designs
Rack 19" enclosure

Robust, Continuous Duty DC AC Power

TSINE' s **TCR *Industrial*** Series rectifiers deliver robust and reliable pure DC power to any business critical application and any types of DC loads. Proven transformer based legacy low frequency design, high electrical & mechanical robustness & high reliability ensures ultimate performance for power demanding applications in industry, telecommunications, marine & military fields in harshest environments.

Its soft start feature, continuous duty operation capacity, various input & output electrical characteristics makes the design versatile & flexible tailored for any power needs.

Multiple microprocessor control, advanced LCD user interface, enhanced connectivity over RS232 & MODBUS over RS485(optional), Scada & PLC compatible monitoring & management software UI features makes it a premium device in its class.

Its power density, standard production from 240W up to 66 kW output, smooth operation and compact & modular assembly is what highlights it among its competitors in worldwide markets.

TCR *Industrial* Series rectifiers delivers low MTTR and high MTBF thanks to its proven design, ensuring low operational downtimes and reduced service costs.

TCR *Industrial* Series is designed to meet the needs of changing and demanding environments and businesses worldwide.

Applications

- ◆ Telecommunications
- ◆ Railways
- ◆ Industry
- ◆ Military





TCR *Industrial* Series

Transformer Based Thyristor Controlled Rectifiers

VERSATILITY, FLEXILITY & POWER DENSITY

TSINE Rectifier Series are designed in compact, lightweight enclosures. It offers maximized power density at minimum footprint. TCR also offers easy deployment and commissioning. TCR can be manufactured for stationary, wall-mount or IP classified outdoor applications. Saves in transportation costs.

MAXIMIZED AVAILABILITY

The TCR is designed and manufactured for continuous operation. Power outages does not affect the TCR. Over engineering & fault-tolerant approach in power electronics design is the main philosophy during the design and manufacturing process. It is capable of supplying 100% rated output power continuously at 40°C within the prespecified tolerances. It is optimized for harshest industrial environments.

SMART USER INTERFACE

It offers user-friendly design, ease of use. Standard smart connectivity features and options which meets the needs of industrial environments, SCADA systems, BMI systems.

INTELLIGENT BATTERY MANAGEMENT

When the battery set is connected to the TCR, the device automatically senses the battery and starts the process. Battery care system include a range of features designed to prolong battery life. When the battery reaches full state, the TCR maintains the battery set with float charging without any human intervention.

PRECISE DC OUTPUT

The TCR regulates the output DC power very precisely and supply the output load. It enables the user to access the information operation status, faults & events.

CUSTOM CHARGING MODES

Beside standard charging methods and standard battery types generally used, it can be designed with custom charging modes.

FIELDS OF USE

Industrial Applications, Process Control Applications
Transport/ Railways
Hydroelectric, Power Plants
Petro-Chemical and Oil&Gas Industries
Battery Charge Stations/ Reserve Power Applications
Pump Control/ Pumping Applications
Emergency Lighting



AC Input [Single Phase]

Rated Voltage Range	220/ 230VAC 1P+N+PE
Operating Voltage Range	±15%
Frequency Range	45~66 Hz

DC Output	Rated Voltage [DC]	Rated Current [A]
	12	Between 20-300A
	24	Between 10-300A
	36	Between 10-126A
	48	Between 10-150A
	60	Between 20-300A
	72	Between 10-300A
	96	Between 10-200A
	110	Between 10-200A
	220	Between 10-100A

Voltage Range [DC]	Adjustable via LCD & Controller
Battery Charging [DC]	All Battery Types, Programmable
Ripple	≤ 1%

Efficiency

AC~DC	≥ 91% for Transformer Based Thyristor Controlled Technology ≥ 98% for Switch Mode Technology
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AC Input [Three Phase]

Rated Voltage Range	380/ 400VAC 3P+N+PE
Operating Voltage Range	±15%
Frequency Range	45~66 Hz

DC Output	Rated Voltage [DC]	Rated Current [A]
	12	Between 50-200A
	24	Between 30-300A
	36	Between 30-150A
	48	Between 30-150A
	60	Between 30-150A
	72	Between 30-200A
	96	Between 30-200A
	110	Between 30-200A
	220	Between 30-300A

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General Characteristics

Type & Technology	Latest Technology, DSP Microprocessor Controlled, Advanced Connectivity Options
MTBF	> 350 000 hrs
Input Voltage Range [AC]	±15% & Extended Versions are Available
Standard Protection Features	Current limit/short circuit, Start delay, Input/output fuses, Output high/low voltage shutdown, Power limiting, Thermal foldback/shutdown, Input transient, AC low line foldback shutdown, DC Leakage, Mains Fault
Operating Conditions	15~25 °C, <1500m Above Sea Level, <45% to 55% RH, for Best Performance
Cooling/ HV Isolation	Forced Air Cooling/ 1500VAC [Mains-Chassis], 500VAC [Output-Chassis], 500VAC [Mains-Output], Display: 2-16 or 4*16 Character Alphanumeric LCD, Touchscreen (Optional)
Display & Parameters & Audible Alarms	Indicators: AC mains OK - Green LED System Status OK - Green LED Controls: User friendly LCD Adjustments: Float voltage, Equalize voltage High/low voltage alarm, High voltage shutdown Current limit, Slope, Start delay
Maintenance Bypass	OPTIONAL
Material [Casing]/ Colour	Coated steel-ALU ZINC, BLACK RAL 9005, RAL 7035, 7032
Cable Entry & Connections	FRONT/ REAR, BOTTOM/ TOP to System Enclosure, Clamps/ W Automat

Communication & Supervision

Remote Monitoring & Management	Options: MODBUS, ProfiBus, ProfiNET, RS232, RS485, Dry contacts, PLC [S71200, S7300]
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Environment

Operating Temperature Range	
Prespecified Operating T.	-20°C - 50°C/15°C - 25°C / -40°C ~ 70°C
Storage Temperature	
Altitude/ Relative Humidity	< 1500m above sea level/ derating < 95% (non-condensing)
Acoustic Noise	<50 dBA @ 1m (3ft)

Certifications

Safety	EN 60950-1
EMC	EN 61000-6-4 [emissions], EN 61000-6-2 [immunity]
LVD	EN 50178
Quality Management	ISO 9001:2015, CE

Optional Features & Accessories

Custom Electrical Characteristics	Available
	DC LEAKAGE SENSING
	W AUTOMAT AUXILIARY CONTACTS
	INDEPENDENT DISTRIBUTION OF LOAD & BATTERY
	DROPPER DIODE
	TEMPERATURE COMPENSATED CHARGING SYSTEM
	BATTERY MAINTENANCE
	LVD
	19' RACKMOUNT ENCLOSURE
IP Classified Enclosure	Available from IP21 ~ IP 66

Physical

Dimensions & Weight	See Ratings & Dimensions Chart
Protection Degree	IP20 & IP21 (Standard)



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