tecned

industrial energy systems

Charger Rectifier System











Thyristor + Concept

Rectifier/Chargers series GR (SF/D)

Battery-backed DC-power supply systems are securing the supply power to monitoring and regulation devices for industrial processes, transportation and the public power grid. DC-power supplies are widely used in nearly all fields of industry and public life and, play a vital role in areas of safety, power management and power availability.

The TECNED GR (SF/D) Rectifier / Charger series is available with up to 500A output current in a single cabinet. The GR (SF/D) series can be configured to charge common battery types from VRLA to Ni-Cad. The GR (SF/D) series can be supplied as standard or fault tolerant systems within a single enclosure to meet customer requirements for safety and reliability.

TECNED rectifier/chargers are based on Thyristor + Concept (SCR+IGBT) technology with a galvanic separation transformer, input PF 0.98, low input harmonics (<5%), extreme low DC ripple (< 1% for 3-phase systems) and charging characteristic according to DIN 41773 (UI).





Product Range

- Input Voltage: 230 Vac, Single phase,50/60 Hz, or 380 to 575Vac, 3-phase,50/60 Hz (3W+E)
- Output voltage: 24 - 650Vdc
- Output Current: up to 500 A

Depending on the application lead acid flooded or valve regulated lead-acid, nickel cadmium batteries are used for energy storage in the power supply system. Each type of battery requires an individual charging characteristic.

Your advantages:

- Best price/ performance relation
- Highest reliability and functionality
- Separation of regulation and monitor unit
- Flexible monitoring & control programming
- LCD display with measuring values and alarm
- LED-indication of the most important states of operation
- Easy guidance and set-up menus
- Possibility of communication by Mod-bus RS-485

GR- SF Series



Features

The GR-SF (software free) model is a strictly analog charger available with natural convection and forced air cooling depending on rating. Standard features include battery- A, load- V metering, mains failure, DC-high/low and general alarm with potential free contacts and input, rectifier, battery and load fuse monitoring.

- Complete power supply system
- DC–distribution panels (option)
- Stand-alone DC-back-up systems
- DC-power supply for industrial processes.
- Integration in process technology equipment

Description of operation

The rectifier has a regulated output IU-characteristic according to DIN 41773. The output voltage will be kept constant at the set value with a deviation of 1% within the full input voltage, frequency and load range. The metering on the front panel shows output voltage and battery charge/discharge current (optional mains voltages, current, frequency and load current).

The GR (SF) series is available with voltages from 24V and 650 Vdc and is suitable for use in power plants, power supply facilities, transport installations such as railways, airports and underground, chemical plants, mining and heavy industries.

Front panel LED
Standard

- Operation
- Battery operation
- General alarm
- Utility failure
- DC voltage high
- DC voltage low

On Mimic diagram

- Input fuse indicator
- Rectifier fuse indicator
- Battery fuse indicator
- Rectifier fuse indicator

Option

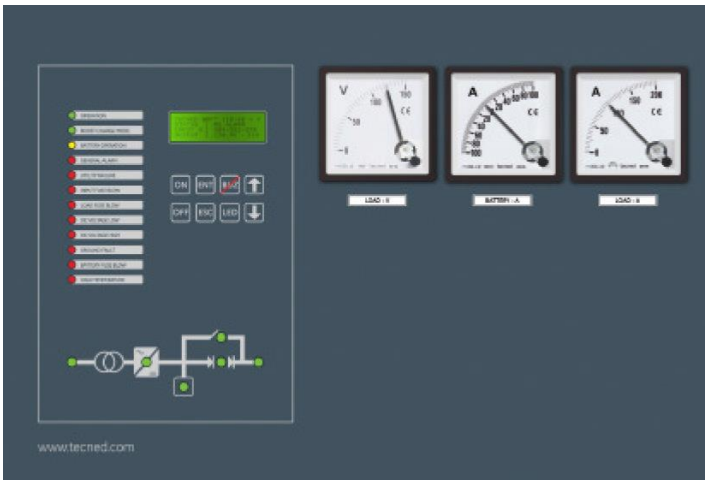
- Fan failure alarm
- Earth fault
- Automatic boost charge
- Manual boost charge

Potential free contact
Standard

- Operation
- Battery operation
- General alarm
- Utility failure

Option

All alarms and indicators can be made available with expanding up to maximum 12x PF contacts



GR- D Series

Features

The GR-D model includes a digital controller with LCD display that shows the systems current state of operation, system values and allows setting of system parameters.

- Complete power supply system
- DC–distribution panels (option)
- Stand-alone DC-back-up systems
- DC-power supply for industrial processes
- Integration in process technology equipment

Description of operation

The rectifier has a regulated output IU-characteristic according to DIN 41773. The output voltage is kept constant at the set value with a deviation of 1% within the full input voltage, frequency and load range.

The GR(D) is equipped with a microprocessor to monitor and control rectifier and battery functions.

The LCD display shows output voltage, current, battery voltage charge/discharge and mains voltages current. Detailed information display with measurement values, settings and alarm messages.

The series GR. (SF) is available with voltages from 24V and 650 Vdc and is suitable for use in power plants, power supply facilities, transport installations such as railways, airports and underground, chemical plants, mining and heavy industries.

Additional features GR-D

- Advanced Battery Monitoring
- Battery Asymmetric Supervision
- Silicon Dropper Modules
- Programmable values for charge voltage/current, boost-charge
- Programmable thresholds silicon dropper modules
- RS232 / RS485 / Modbus communication





Specifications GR (SF/D) 24- 650/ 10- 500 A		
Input	Voltage single phase	110/ 120/ 220/ 230/ 240/ 277 V, (2W+E), (-15% to +20%)
	Voltage three phase	208/ 220/ 240/ 380/ 415/ 480 V, (3W+E), (-15% to +20%)
	Voltage tolerance	+15%/ -20%
	Frequency	50 Hz/ 60Hz +/- 10%
	Harmonic distortion	< 5% THDI
	Power factor	0,99
Output	Voltage (nominal)	24/ 48/ 60/ 110 (125)/ 220/ 380 Vdc
	Voltage tolerance	< 0,5% (0- 100% load)
	Voltage ripple	< 2% 3-phase without battery/ < 5% 1-phase without battery
	Current rating	10- 500 A per enclosure (optional parallel)
	Characteristics	I-U according to DIN 41773
General	Ambient temperature	-20 to +70 ^{0}C storage/ -10 to +40 ^{0}C operation
	Altitude above sea level	1000 m
	Enclosure	Aluzinc frame/ powder coat RAL 7035
	Standards	Safety IEC/ EN 62040- 1/ EMC 55011
	Conformity	IEC 60146/ CE-label

Innovative Technology

TECNED manufactures standard and fault-tolerant systems according to customer specifications built around strictly analog, software free and SMD free Energy Conversion Units (ECU), TECNED delivers the ultimate reliability by design.

Fault Tolerant Systems

Standard systems will stop operating when a critical component fails. Fault-tolerant systems are designed to continue its intended operation at a reduced or default level when a critical component failure occurs. A truly fault tolerant design will prevent a complete loss of output power notwithstanding the type of fault. All TECNED products are available as Fault-tolerant Systems within a single enclosure.



We distinguish two levels of fault tolerant design aspects within a single system

Fault Tolerant - in Controls –

TECNED systems are built up with Energy Conversion Units or ECU's as building blocks within a single enclosure.
The ECU's are governed by a central controller to execute monitoring and control functions. In the event of a control failure, each ECU will automatically run on its default settings independent on the main controller. This allows the removal and replacement of a control board without any interruption to the output.

Fault Tolerant - in Power –

All TECNED Ft's are fault tolerant by topology as each unit consists of minimum two ECU's. The sizing of each ECU allows continued operation near nominal level in the event of a serious fault. Every ECU can be electrically isolated for maintenance and replaced without any interruption to the output.

Fault tolerant design in both Control & Power ensures absolute reliability and eliminates down-time.

Standards

International Quality certificate	ISO 9001
Isolating Transformers and safety Isolating Transformers	EN60742
Limits and Methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment	EN55011
Electronic equipment for use in power installation	EN50178
Low-Voltage Switchgear and control gear assemblies	EN60439
Erection of Power installation with rate voltage below 1000V	VDE 0100



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