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DC POWER SUPPLY SYSTEMS

double branch Rectifier - SCR type

TITANIUM 2R-SCR PLUS SERIES

TITANIUM 2R-SCR rectifier series belongs to the Double Branch category thus provided with two independent AC / DC converters, one powering the direct current loads with stabilized voltage and the other dedicated to the battery charging. Cabinet and open frame versions are available, combined with vented/sealed Lead Acid and Ni/Cd batteries. An input insulation transformer for each converter is present while the AC / DC power converter is of the removable type and made with SCR full controlled technology in order to improve the efficiency and contain the ripple at the output. In this way the MTBF is high and MTTR extremely low.

APPLICATIONS:

Oil & Gas
Energy production and distribution
Process controls
Transportation
Safety
Telecommunications
Tertiary

PRODUCT PLUS:

- An input insulation transformer at power frequency, with an electrostatic shield
- SCR Power Bridge Rectifier full controlled **ON REMOVABLE UNITS**
- Control type: SCR with phase-cutting regulation
- Digital control Microprocessor + PLC
- Charge curve for each type of battery
- Digital control panel with touchscreen display
- High efficiency and reliability
- Easy maintenance with access from the front and removable power units
- Extended frequency range accepted as input
- Automatic and manual battery test (optional)
- Earth fault sensor with LED indications
- Low residual ripple as output and on batteries (RIPPLE)
- Exchange functions between the two branches (optional)
- MODBUS TCP/IP communication
- POWERBOOST function (optional)

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DATA SHEET

MODEL — TITANIUM 2R-SCR PLUS

GENERAL	BATTERY TYPE	Suitable for Sealed (VRLA) Lead Acid - Vented Lead Acid - Ni/Cd			
	CHARGING CHARACTERISTICS	IU (according to DIN 41773)			
OUTPUT	NOMINAL VOLTAGE (V)	24	48	110	220
	CURRENT RANGE	100 ÷ 500A			60 ÷ 250A
	MAXIMUM POWER (W)	12000	24000	55000	55000
	RIPPLE NOISE (RMS)	≤ 1% Vn			
	Vout SETTING RANGE	+/- 5%			
	STABILITY	+/- 1%			
	Vin VARIATION SETTING	+/- 1%			
	LOAD VARIATION SETTING	+/- 1%			
	START-UP TIME	10 sec.			
INPUT	VOLTAGE RANGE	3Ph 400 Vac+/-10%			
	INPUT FREQUENCY	50 ÷ 60 +/-5%			
	EFFICIENCY (Typ.)	≥ 90 %			
	I/O INSULATION	4kV BY TRANSFORMERS			
PROTECTIONS	INPUT	Network switch and RCB e RS input fuses			
	BATTERY	Fuses			
	OUTPUT	Service section switch			
	CYCLE DIRECTION	Shut down; automatic restart after phase adjustment			
	Vac MINIMUM VOLTAGE	Shut down if Vin<325Vac; automatic restart if Vin>330Vac			
	CURRENT CURVE	CONSTANT			
	OVERVOLTAGE	+ 10% Vn			
	UNDERVOLTAGE	- 50% Vn			
	OVERTEMPERATURE	Shut down; automatic restart after temperature reset			
SPDT ALARMS 6Amp-250VAC	CUMULATIVE FAILURE*				
	LOW BATTERY VOLTAGE				
	OTHER OPTIONS AVAILABLE UPON REQUEST				
ENVIRONMENTAL DATA	OPERATING TEMPERATURE	-10 ……+40°C			
	OPERATING HUMIDITY	20 ……90% (NO COND.)			
	STORAGE TEMPERATURE	-20 ……+50°C			
STANDARDS	MARKING	CE			
	DEGREE OF PROTECTION	IEC 60529			
	EMC	EN 61000-6-2 EN 61000-6-4			
	STATIC CONVERTERS	EN 60146			
DEGREE OF PROTECTION (closed door)		IP30			
COLOUR		RAL 7035			

* = Relay normally operating in positive safety

TOUCH SCREEN ALARMS

NETWORK PRESENCE

RS RECTIFIER ON

RCB RECTIFIER ON

MINIMUM AND MAXIMUM RS VOLTAGE

MINIMUM AND MAXIMUM RCB VOLTAGE

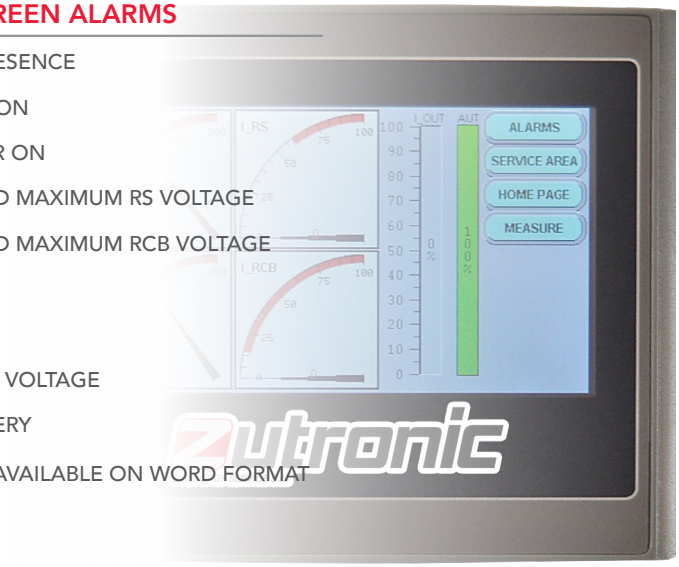
OVERLOAD

EARTH FAULT

LOW BATTERY VOLTAGE

END OF BATTERY

ALARMS ARE AVAILABLE ON WORD FORMAT



ELECTRICAL MEASURES ON TOUCH SCREEN

RS OUTPUT VOLTAGE

RS OUTPUT CURRENT

RCB OUTPUT VOLTAGE

RCB OUTPUT CURRENT

OUTPUT POWER

% USED OUTPUT CURRENT

% RESIDUAL CAPACITY

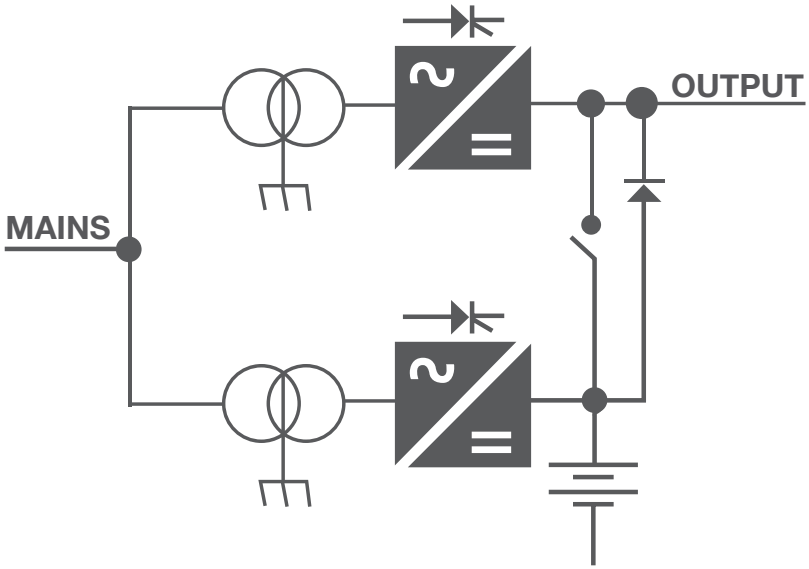
SPECIAL FUNCTIONS AVAILABLE

EARTH FAULT SENSOR

OVERLOAD INDICATOR

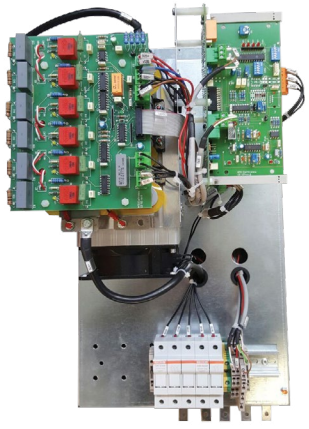
MODBUS TCP/IP AND VNC VIEWER COMMUNICATION

SINGLE-LINE DIAGRAM



REMOVABLE AC/DC CONVERTERS

REMOVABLE AC/DC CONVERTERS TO SIMPLIFY THE REPLACEMENT IN CASE OF FAILURE (VERY SHORT MTTR)



FUNCTIONS EXCHANGE BETWEEN THE TWO BRANCHES

Titanium rectifier series includes two units of AC/DC conversion which work independently when input power is present. The converter "battery branch" charges the battery independently from the load; contemporarily the "system branch" will independently supply the load to a voltage threshold with tolerance ± 1% from the voltage of charge the batteries.
In order to avoid the power interruption to the load in case of failure of the System Branch (RS) or the Battery Branch (RCB) the following solution is performed:

STANDARD OPERATION: during network operation, the two converters operate independently; The Battery Branch charges the battery with voltage dependent on the type of battery provided while the System Branch powers the load with stabilized nominal voltage ± 1%.

BLACKOUT OPERATION: In case of total loss of line or breakdown of both rectifiers, a sequence of operations in order to connect the load directly to the battery (without voltage drops) is activated.

RS FAILURE (System Branch): The System Branch failure activates the automatic and simultaneous switch on the branch battery, thus powering the load and simultaneously charging the battery in buffer. In this case, the voltage at the load is contained in the range Vn + 10% (adjustable).

RCB FAILURE (Battery Branch): in case of battery branch failure the branch battery, the switch to activate the service branch to power the loads and ensure battery charging with emergency voltage equal to Vn + 10% (adjustable) is automatically activated.

After failure recovery, the system automatically starts to operate again restoring the original function to each of the converters.

POWER BOOST FUNCTION (InRS = InRCB) - OPTIONAL

In case of RS overload, the RCB branch activates automatically connecting itself in parallel with the load and with the entire battery bank.
The device automatically turns its configuration from DOUBLE BRANCH to SINGLE BRANCH with TWO UNITS IN PARALLEL, only for the overload status duration; in this condition, the output voltage of the entire system will be set to the "charge conservation" voltage value to allow also the battery bank simultaneous charging.
The function can be permanently activated by the user via the appropriate keys on HMI in the password-protected area. It is important to notice that both the branches must have the same power and the same characteristics.
With this type of system, a configuration of "REDUNDANCY AND PARALLEL of POWER" is obtained in order to increase system reliability and to ensure a high degree of safety towards the load.

AVAILABLE ACCESSORIES (OPTIONAL):

- Automatic circuit breaker on input, output and battery (with or without auxiliary contact and/or opening coil)
- UP board for BOOST CHARGE and MANUAL functions
- UP board for Compensation in temperature function automatically adjusting the charging voltage to the battery temperature
- Temperature probe
- Manual and automatic battery test
- Exchange functions between the two branches
- POWERBOOST function
- BRPCU device; protection against reverse battery polarity. It may be associated with an automatic battery circuit breaker with automatic opening
- Disconnection device for battery discharge end; disconnects the load from the battery to prevent a battery deep discharge and makes the equipment compliant with CEI 0-16 standard
- E.P.O. Device (Emergency Power Off)
- Relay alarm customization
- Battery monitoring system to check single mono blocks or "channels" with failure alarm
- Special cabinets with seismic certification or with high degree of protection
- Distribution; circuit breakers for output line protection

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A BRAND OF ENERGY SERVICE S.r.l.

Via Gaetano Donizetti, 109/111 - 24030 Brembate Di Sopra (BG)
Geller Business Centre - D2 Building

Phone **+39 035 4379962** Fax **+39 035 592935**
sales@zutronic.it - **www.zutronic.it**

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