

DC POWER SUPPLY SYSTEMS

Double branch Rectifier - IGBT type

TITANIUM 2R-CH PLUS SERIES



TITANIUM 2R-CH PLUS 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 Chopper IGBT technology, step down, 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
- Bridge rectifier Chopper IGBT **ON REMOVABLE UNITS** with connector
- Control type: High Frequency PWM
- 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)
- POWERBOOST function (optional)



DATA SHEET

MODEL

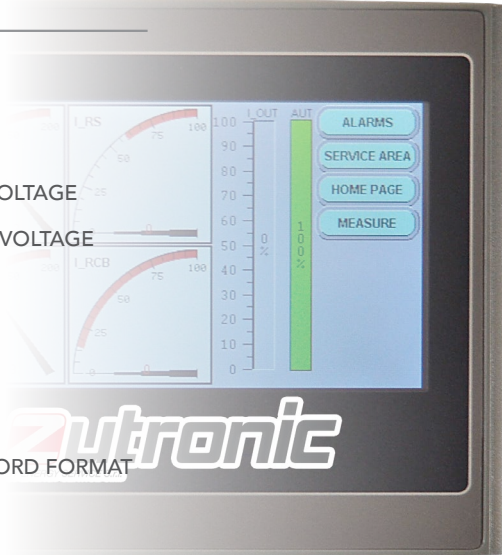
TITANIUM 2R-CH PLUS

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
	CURRENT RANGE	10 ÷ 60A		
	MAXIMUM POWER (W)	1440	2880	6600
	RIPPLE NOISE (RMS)	≤ 0.5% Vn		
	Vout SETTING RANGE	+/- 5%		
	STABILITY	+/- 1%		
	Vin VARIATION SETTING	+/- 1%		
	LOAD VARIATION SETTING	+/- 1%		
	START-UP TIME	2 sec.		
INPUT	VOLTAGE RANGE	1Ph 230Vac +/- 10% or 3Ph 400Vac +/- 10%		
	INPUT FREQUENCY	50 ÷ 60 +/-7%		
	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		
	OVERLOAD	2In x 5ms. Shut down for 250ms - Automatic restart		
	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	2090% (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



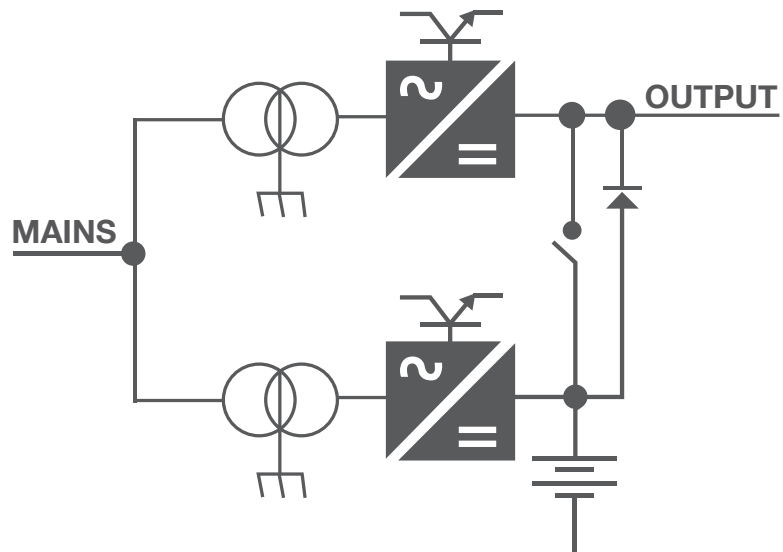
ELECTRICAL MEASURES ON TOUCH SCREEN

RS OUTPUT VOLTAGE
RS OUTPUT CURRENT
RCB OUTPUT VOLTAGE
RCB OUTPUT CURRENT
OUTPUT POWER
% USED OUTPUT CURRENT
% RESIDUAL CAPACITY

SPECIAL FUNCTIONS AVAILABLE

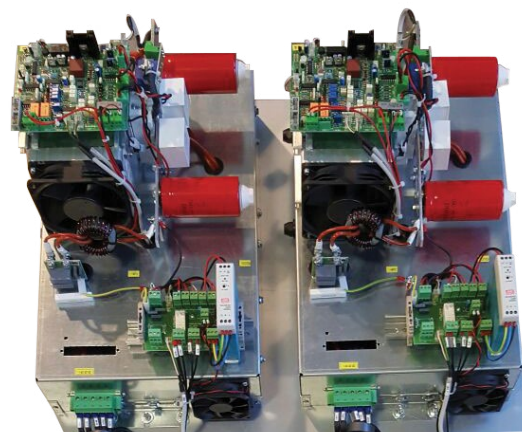
EARTH FAULT SENSOR
OVERLOAD INDICATOR
MODBUS TCP/IP and VNC viewer COMMUNICATION

SINGLE-LINE DIAGRAM



REMOVABLE AC/DC CONVERTERS

REMOVABLE AC/DC CONVERTERS USING POLARIZED CONNECTORS IN ORDER 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 $\pm 1\%$ 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 $\pm 1\%$.

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 $V_n + 10\%$ (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 $V_n + 10\%$ (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 ($I_{nRS} = I_{nRCB}$) - 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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Certification

