



zutronic[®]

by ENERGY SERVICE

NEVER WITHOUT POWER

GENERAL CATALOGUE



Zutronic® is an **ENERGY SERVICE SRL** Brand, specialized in designing and producing energy conversion systems (also known as Rectifiers Battery Charger), customized on clients needs.

ENERGY SERVICE SRL, founded and headed by Giovanni Tartaglia (who may boast a twenty years experience in this branch), has accomplished hundreds of supplies to important companies to be installed both in Italy and abroad, and it has a valuable technical knowledge, recognized from our Clients and Consulting Societies.

APPLICATIONS

- MV ELECTRICAL PANELS AND SUBSTATIONS
- ELECTRIC AND HYDROELECTRIC POWERSTATION
- TECHNOLOGICAL INSTALLATIONS
- MANUFACTURES
- TRANSPORTS
- OFFICES BUILDINGS
- HOSPITALS



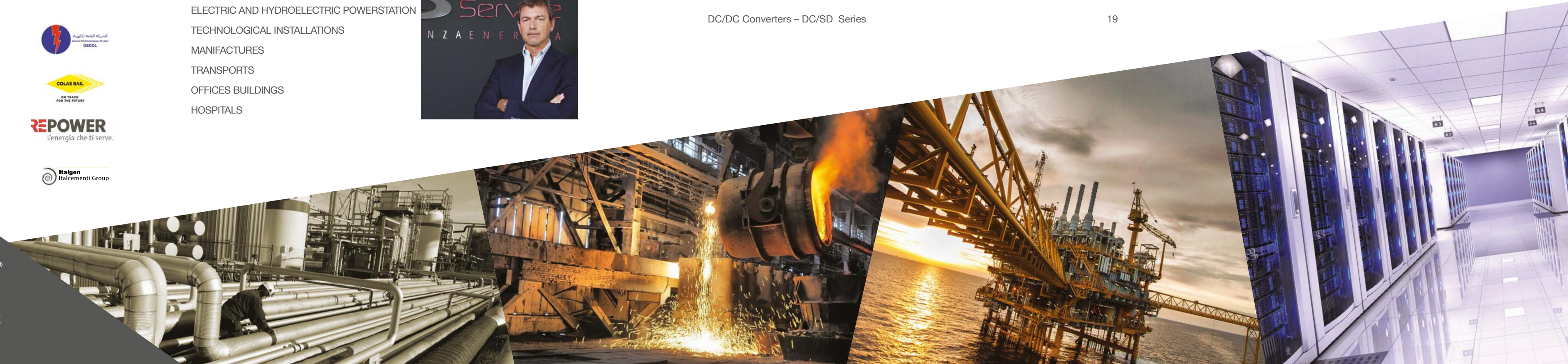
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DC-UPS

UNINTERRUPTIBLE SYSTEMS WITH BATTERY CHARGER
AC/DC

DIN rail Z-CBD Series

The power supply systems ZUTRONIC Z-CBD series, combined with batteries, can be used to create an uninterruptible supply system.

The battery is connected in parallel to the load to guarantee continuous supply, without interruptions, in case of mains failure

APPLICATIONS

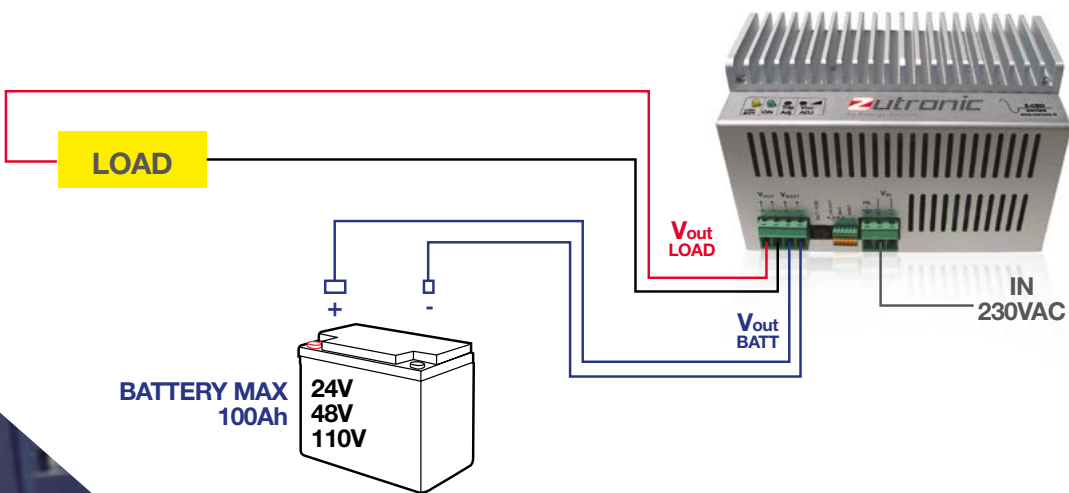
- Auxiliary services of MV electric substations
- PLC industrial automation
- Solenoid valves of hydro power plants
- Fire control units (according to Standard UNI EN 54.4)
- Safety systems

PRODUCT PLUS

- Wide voltage range
- Galvanic insulation IN/OUT
- Integrated protection battery fuse (types <500W)
- Internal device for battery disconnection (types<500W)
- Battery efficiency test
- Internal decoupling diode (for parallel with other power supply)
- Reverse polarity Vdc output
- Compliance for the UNI EN54.4 Standard (types <500W)

ACCESSORIES

- VRLA batteries (AGM and GEL technology)
- Battery box



MODEL		DC-UPS	
GENERAL	BATTERY TYPE	Suitable for sealed lead acid (VRLA) AGM or Gelled type, with supply the load at the same time	
	CHARGING CHARACTERISTICS	IU (according to DIN 41773) – single voltage level	
	EFFICIENCY AT 10% LOAD	>80%	
	HOLD UP TIME V MAINS (100% LOAD)	IN Vac>150W = >80ms	IN Vac<150W = >40ms
	INSULATION VOLTAGE	Input/Output/Ground 2kVac – 50Hz 60s – 3kVdc 60s	
	ISOLATION RESISTANCE	>100 Mohm	
	MTBF	>1.000.000 hours (T amb +25°C)	>500.000 hours (T amb +40°C)
	LIFE TIME	>7 years (T amb +25°C)	
	PARALLEL/REDUNDANCY OPERATION	Standard	
	CURRENT SHARING (PARALLEL MODE OPERATION)	CSA active version (>150W)	
	SERIES OPERATION	Std for modules (max voltage 500Vdc)	
	NO LOAD OPERATION	Allowed	
	COOLING SYSTEM	Natural convection (forced ventilation just for Z751CBD1 e Z1001CBD1), with FCD fan control device	
	MECHANICS	Strong anodized aluminium cases with ventilation grids or fans	
	PROTECTION DEGREE	IP20	
OUTPUT	MOUNTING	DIN 35x15/7,5 rail mounting mm EN50022 Weight 330÷4000 g. (according to power)	
	NOMINAL VOLTAGE	12-24-48-110 Vdc	
	POWER RANGE	150÷1000W	
	RANGE OF SETTING	±10% with setting trimmer	
	CORRENT CONTROL	+10% I nom. (+50% short circuit)	
INPUT	VOLTAGE REGULATION	With variation of: input voltage ±20% = 0,1% load 0÷100% = 0,2% ambient temperature = 0,02%/°C	
	VOLTAGE RANGE	88÷264Vac 48÷62 Hz <500W	115Vac ±20% or 230Vac ±20% >500W
	INRUSH CURRENT	5x I nomin. 50 ms	
	POWER FACTOR	Version <150W = 0,7	Version >150W = 0,95
	INPUT	Fuse protection	
PROTECTIONS	OUTPUT	Reverse polarity VDC protection	
		SCP Short circuit protection	
		OVP overvoltage protection	
		OVT OVERTEMPERATURE PROTECTION T (from Z151DX): switching off at 90°C internal with automatic restart	
AMBIENT	OPERATING AMBIENT TEMPERATURE	-10÷+60°C without “derating”	+60÷+70°C, “derating” <2,5% /°C
ALARMS	Types <500W = SPDT contact for “Low battery” on request it can be converted into “Fault”		
	Types ≥500W = SPDT contacts for “Low battery” and “Fault”		

MODEL	POWER	INPUT VOLTAGESVAC	OUTPUT VOLTAGES
Z151CBDZ	150W	88 ÷ 264 VAC wide range PFC (Power Factor Correction)	12(13,8) VDC
Z201CBDZ	200W		24(27,6)VDC
Z251CBDZ	250W		48(55)VDC
Z301CBDZ	300W		110(125)VDC
Z351CBDZ	350W	115 VAC ±20% range 230 VAC ±20% range PFC (Power Factor Correction)	24(27,6)VDC
Z501CBD1	500W		48(55)VDC
Z601CBD1	600W		110(125)VDC

MODEL	POWER	DIMENSIONS (mm) Widht x Hight x Depth	WEIGHT (g)	CHARACTERISTICS *STANDARD ° OPTIONAL			
				D	CEI-016	F	L
Z151CBDZ	150W	200Lx130Ax110P	1800	*	°	°	°
Z201CBDZ	200W			*	°	°	°
Z251CBDZ	250W			*	°	°	°
Z301CBDZ	300W	200Lx130Ax130P	2500	*	°	°	°
Z351CBDZ	350W			*	°	°	°
Z501CBD1	500W	200Lx185Ax130P	3500	*	°	*	°
Z601CBD1	600W			*	°	*	°

* On request also 750W and 1000W types available

D: Output diode for parallel/redundancycoupling.

CEI 0-16: Battery START FUNCTION.

F: SPDT contact for FAULT allarm (replaces the “low battery” alarm on the < 500W types).

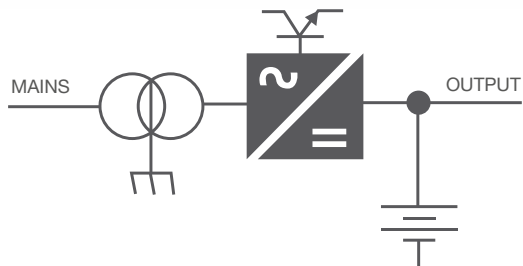
L: Tropicalized versions for marine/hars ambient.

TITANIUM 1R-CH

DC POWER SUPPLY SYSTEMS



SINGLE-LINE DIAGRAM



SINGLE BRANCH Rectifier - IGBT type

TITANIUM 1R-CH rectifier series belongs to the Single Branch category thus provided with a single AC/DC converter that powers the direct current loads and simultaneously charges a battery. Cabinet and open frame versions are available, combined with vented/sealed Lead Acid and Ni/Cd batteries. An input insulation transformer 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 thisway the MTBF is high and MTTR extremely low.

APPLICATIONS

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

REMOVABLE AC/DC CONVERTERS

Removable AC/DC converters using polarized connectors in order to simplify the replacement in case of failure (very short MTTR)

ELECTRICAL MEASURES ON LCD

- Output voltage
- Output current
- Battery recharging current (optional)
- Battery end of test countdown (sec.)

MULTIPURPOSE BUTTON

- Buzzer off
- Alarm reset
- Led test
- Manual battery test

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
- Charge curve for each type of battery
- Digital control panel with backlit alphanumeric display
- High efficiency and reliability
- Easy maintenance with access from the front and removable power units
- Extended frequency range accepted as input
- Low residual ripple as output and on batteries (RIPPLE)
- Automatic and manual battery test (performing a true discharge battery test)
- Earth fault sensor with POLE+ and POLE- LED indications
- Field Bus communication available with various protocols (optional)
- Parallel connection ability for redundancy (optional)

LED INDICATORS

- Operating AC/DC
- Rapid charge (optional)
- Manual charge (optional)
- Maximum output voltage
- Output overload
- Battery test failed
- Earth fault negative pole
- Earth fault positive pole
- Battery test failed
- Battery operation
- Battery low voltage
- End of battery
- System maintenance request



SPECIAL FUNCTIONS AVAILABLE

- Automatic and manual battery test
- Earth fault sensor with discriminated polarity
- Overload indication

	MODEL	TITANIUM 1R-CH		
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 ÷10 0A		
	MAXIMUM POWER (W)	2400	4800	11000
	RIPPLE NOISE (RMS)	≤ 0.5% Vn		
	Vout SETTING RANGE	+/- 5%		
	STABILITY	+/- 1%		
	Vin VARIATION SETTING	+/- 1%		
	LOAD VARIATION SETTING	+/- 1%		
INPUT	START-UP TIME	2 sec.		
	VOLTAGE RANGE	1PH 230VAC +/- 10% OR 3PH 400VAC +/- 10%		
	INPUT FREQUENCY	50 ÷ 60 +/-7%		
	EFFICIENCY (Typ.)	≥ 90 %		
PROTECTIONS	I/O INSULATION	4KV BY TRANSFORMER		
	INPUT	FUSE SWITCH		
	BATTERY	FUSES		
	OUTPUT	SWITCH		
	OVERLOAD	2IN X 5MS shut down duration: 250MS - Automatic Restart		
	CURRENT CURVE	CONSTANT		
	OVERVOLTAGE	+ 10% Vn		
	UNDERVOLTAGE	- 50% Vn		
	OVERTEMPERATURE	SHUT DOWN; Automatic restart after temperature reset		
SPDT ALARMS 8Amp/250Vac	AC/DC ON *	BATTERY LOW VOLTAGE		
	CUMULATIVE SYSTEM FAILURE*	EARTH FAULT		
	BATTERY TEST FAILURE			
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 60146-1-2		
DEGREE OF PROTECTION (closed door)		IP30		
COLOUR		RAL 7035		

* = Relay normally operating in positive safety

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
- 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)
- Measurement kit for battery charging current for LCD panel
- Battery monitoring system to check single mono blocks or “channels” with failure alarm
- Field Bus communication interface available with different protocols allowing the status transmission
- Voltage drop cell; It contains the voltage loads within acceptable limits
- Special cabinets with seismic certification or with high degree of protection
- Distribution; circuit breakers for output line protection



TITANIUM 1R-CH PLUS

DC POWER SUPPLY SYSTEMS



SINGLE BRANCH Rectifier - IGBT type

TITANIUM 1R-CH PLUS rectifier series belongs to the Single Branch category thus provided with a single AC/DC converter that powers the direct current loads and simultaneously charges a battery. Cabinet and open frame versions are available, combined with vented/sealed Lead Acid and Ni/Cd batteries. An input insulation transformer 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

REMOVABLE AC/DC CONVERTERS

Removable AC/DC converters using polarized connectors in order to simplify the replacement in case of failure (very short MTTR)

TOUCH SCREEN ALARMS

- Network power off
- Rectifier failure
- Battery operation
- Battery low voltage
- End of battery
- Battery test failure
- Overload
- Rectifier maximum voltage
- Rectifier minimum voltage
- Alarms available on word format

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
- Low residual ripple as output and on batteries (RIPPLE)
- Automatic and manual battery test (performing a true discharge battery test)
- Earth fault sensor with LED indications
- MODBUS TCP/IP communication
- Parallel connection ability for redundancy (optional)

TOUCH SCREEN ELECTRICAL MEASURES

- OUTPUT voltage
- OUTPUT current
- Battery recharging current
- OUTPUT power
- % OUTPUT current used
- % REMAINING CHARGE



SPECIAL FUNCTIONS AVAILABLE

- Automatic and manual battery test
- Earth fault sensor with discriminated polarity
- Overload indication
- Modbus tcp/ip and vnc viewer communication

MODEL		TITANIUM 1R-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 ±10 0A		
	MAXIMUM POWER (W)	2400	4800	11000
	RIPPLE NOISE (RMS)	≤ 0.5% Vn		
	Vout SETTING RANGE	+/- 5%		
	STABILITY	+/- 1%		
	Vin VARIATION SETTING	+/- 1%		
	LOAD VARIATION SETTING	+/- 1%		
INPUT	START-UP TIME	2 sec.		
	VOLTAGE RANGE	Single-phase 230 Vac +/- 10% or three-phase 400Vac +/- 10%		
	INPUT FREQUENCY	50 ÷ 60 +/-7%		
	EFFICIENCY (Typ.)	≥ 90 %		
	I/O INSULATION	4kV BY TRANSFORMER		
PROTECTIONS	INPUT	Fuse switch		
	BATTERY	Fuses		
	OUTPUT	Switch		
	OVERLOAD	2In x 5mS, Shut down duration: 250ms - automatic restart		
	CURRENT CURVE	CONSTANT		
	OVERVOLTAGE	+ 10% Vn		
	UNDERVOLTAGE	- 50% Vn		
	OVERTEMPERATURE	Shut down; automatic restart after temperature reset		
SPDT ALARMS	CUMULATIVE SYSTEM FAILURE *			
	BATTERY TEST FAILURE			
	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		IP30		
COLOUR		RAL 7035		

* = Relay normally operating in positive safety

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
- 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 alarms customization
- Battery monitoring system to check single mono blocks or “channels” with failure alarm
- Field Bus communication interface available with different protocols allowing the status transmission
- Voltage drop cell; It contains the voltage loads within acceptable limits
- Special cabinets with seismic certification or with high degree of protection
- Distribution; circuit breakers for output line protection

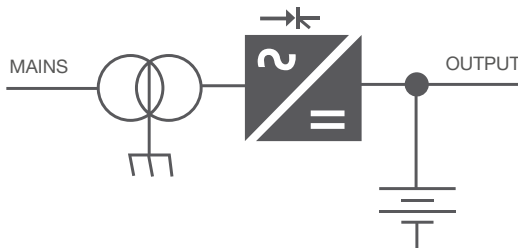


TITANIUM 1R-SCR

DC POWER SUPPLY SYSTEMS



SINGLE-LINE DIAGRAM



SINGLE BRANCH Rectifier - SCR type

TITANIUM 1R-SCR rectifier series belongs to the Single Branch category thus provided with a single AC / DC converter that powers the direct current loads and simultaneously charges a battery. Cabinet and open frame versions are available, combined with vented/sealed Lead Acid and Ni/Cd batteries. An input insulation transformer 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

REMOVABLE AC/DC CONVERTERS

Removable AC/DC converters using polarized connectors in order to simplify the replacement in case of failure (very short MTTR)

ELECTRICAL MEASURES ON LCD

- Output voltage
- Output current
- Battery recharging current (optional)
- Battery end of test countdown (sec.)

MULTIPURPOSE BUTTON

- Buzzer off
- Alarm reset
- Led test
- Manual battery test

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
- Charge curve for each type of battery
- Digital control panel with backlit alphanumeric display
- High efficiency and reliability
- Easy maintenance with access from the front and removable power units
- Extended frequency range accepted as input
- Low residual ripple as output and on batteries (RIPPLE)
- Automatic and manual battery test (performing a true discharge battery test)
- Earth fault sensor with POLE+ and POLE- LED indications
- Field Bus communication available with various protocols (optional)
- Parallel connection ability for redundancy (optional)

LED INDICATORS

- Operating AC/DC
- Rapid charge (optional)
- Manual charge (optional)
- Maximum output voltage
- Output overload
- Battery test failed
- Earth fault negative pole
- Earth fault positive pole
- Battery test failed
- Battery operation
- Battery low voltage
- End of battery
- System maintenance request



SPECIAL FUNCTIONS AVAILABLE

- Automatic and manual battery test
- Earth fault sensor with discriminated polarity
- Overload indication

MODEL		TITANIUM 1R-SRC			
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	110
	CURRENT RANGE	60÷500			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%			
INPUT	START-UP TIME	10 sec.			
	VOLTAGE RANGE	3Ph 400 Vac +/-10%			
	INPUT FREQUENCY	50 ÷ 60 +/-5%			
	EFFICIENCY (Typ.)	≥ 90 %			
PROTECTIONS	I/O INSULATION	4kV BY TRANSFORMER			
	INPUT	Fuse switch			
	BATTERY	Fuses			
	OUTPUT	Switch			
	CYCLE DIRECTION	Shut down. Restart after phase adjustment			
	MINIMUM INPUT 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 8Amp/250Vac	AC/DC ON *	BATTERY LOW VOLTAGE			
	CUMULATIVE SYSTEM FAILURE *	EARTH FAULT			
	BATTERY TEST FAILURE				
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 60146-1-2			
DEGREE OF PROTECTION (closed door)		IP30			
COLOUR		RAL 7035			

* = Relay normally operating in positive safety

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
- 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)
- Measurement kit for battery charging current for LCD panel
- Battery monitoring system to check single mono blocks or “channels” with failure alarm
- Field Bus communication interface available with different protocols allowing the status transmission
- Voltage drop cell; It contains the voltage loads within acceptable limits
- Special cabinets with seismic certification or with high degree of protection
- Distribution; circuit breakers for output line protection



TITANIUM 1R-SCR PLUS

DC POWER SUPPLY SYSTEMS



SINGLE BRANCH Rectifier - SCR type

TITANIUM 1R-SCR PLUS rectifier series belongs to the Single Branch category thus provided with a single AC/DC converter that powers the direct current loads and simultaneously charges a battery. Cabinet and open frame versions are available, combined with vented/sealed Lead Acid and Ni/Cd batteries. An input insulation transformer 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
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- Process controls
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- Safety
- Telecommunications
- Tertiary

REMOVABLE AC/DC CONVERTERS

Removable AC/DC converters using polarized connectors in order to simplify the replacement in case of failure (very short MTTR)

TOUCH SCREEN ALARMS

- AC Network power off
- Rectifier failure
- Battery operation
- Battery low voltage
- End of battery
- Battery test failure
- Overload
- Rectifier maximum voltage
- Rectifier minimum voltage
- Alarms available on word format

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
- Low residual ripple as output and on batteries (RIPPLE)
- Automatic and manual battery test (performing a true discharge battery test)
- Earth fault sensor with LED indications
- MODBUS TCP/IP communication
- Parallel connection ability for redundancy (optional)

TOUCH SCREEN ELECTRICAL MEASURES

- OUTPUT voltage
- OUTPUT current
- Battery recharging current (optional)
- OUTPUT power
- % OUTPUT current used
- % REMAINING CHARGE



SPECIAL FUNCTIONS AVAILABLE

- Automatic and manual battery test
- Earth fault sensor with discriminated polarity
- Overload indication
- Modbus tcp/ip and vnc viewer communication

	MODEL	TITANIUM 1R-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	60÷500			60 ÷ 250A
	MAXIMUM POWER (W)	12000	24000	55000	55000
	RIPPLE NOISE (RMS)	≤ 1% Vn			
	Vout SETTING RANGE	+/- 5%			
	STABILITY	+/- 1%			
	Vin VARIATION SETTING	+/- 1%			
INPUT	LOAD VARIATION SETTING	+/- 1%			
	START-UP TIME	10 sec.			
	VOLTAGE RANGE	3Ph 400Vac +/-10%			
	INPUT FREQUENCY	50 ÷ 60 +/-5%			
	EFFICIENCY (Typ.)	≥ 90 %			
PROTECTIONS	I/O INSULATION	4kV BY TRANSFORMER			
	INPUT	Fuse switch			
	BATTERY	Fuses			
	OUTPUT	Switch			
	CYCLE DIRECTION	Shut down. Automatic restart after phase adjustment			
	MINIMUM INPUT VOLTAGE	Shut down if Vin<325Vac; Automatic restart if Vac>330Vac			
	CURRENT CURVE	COSTANT			
	OVERVOLTAGE	+ 10% Vn			
	UNDERVOLTAGE	- 50% Vn			
	OVERTEMPERATURE	Shut down; automatic restart after temperature reset			
SPDT ALARMS 6Amp/250V	CUMULATIVE SYSTEM FAILURE*				
	BATTERY LOW 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			

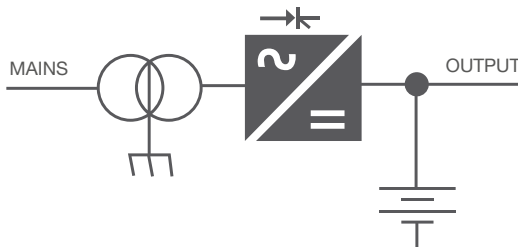
* = Relay normally operating in positive safety

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
- 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
- Field Bus communication interface available with different protocols allowing the status transmission
- Voltage drop cell; It contains the voltage loads within acceptable limits
- Special cabinets with seismic certification or with high degree of protection
- Distribution; circuit breakers for output line protection



SINGLE-LINE DIAGRAM

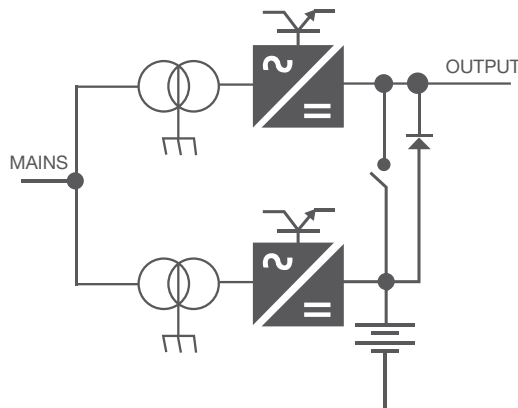


TITANIUM 2R-CH

DC POWER SUPPLY SYSTEMS



SINGLE-LINE DIAGRAM



DOUBLE BRANCH Rectifier - IGBT type

TITANIUM 2R-CH 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

REMOVABLE AC/DC CONVERTERS

Removable AC/DC converters using polarized connectors in order to simplify the replacement in case of failure (very short MTTR)

ELECTRICAL MEASURES ON LCD

- RS output voltage
- RS output current
- RCB battery recharging voltage
- RCB battery recharging current

MULTIPURPOSE BUTTON

- Buzzer off
- Alarm reset
- Test led activation

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
- Charge curve for each type of battery
- Digital control panel with backlit alphanumeric 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)
- Field Bus communication available with various protocols (optional)

LED INDICATORS

- AC network presence
- RS RECTIFIER ON
- RCB RECTIFIER ON
- BOOST CHARGE ACTIVE (optional)
- Manual charge active
- Minimum and maximum RS voltage
- Minimum and maximum RCB voltage
- Overload
- Earh fault
- Battery operation
- Low battery voltage
- End of battery
- System maintenance request



SPECIAL FUNCTIONS AVAILABLE

- Earth fault sensor with discriminated polarity
- Overload indication

MODEL		TITANIUM 2R-CH		
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 ÷ 100A		
	MAXIMUM POWER (W)	2440	4880	11000
	RIPPLE NOISE (RMS)	≤ 0.5% Vn		
	Vout SETTING RANGE	+/- 5%		
	STABILITY	+/- 1%		
	Vin VARIATION SETTING	+/- 1%		
	LOAD VARIATION SETTING	+/- 1%		
INPUT	START-UP TIME	2 sec.		
	VOLTAGE RANGE	1Ph 230Vac +/- 10% or 3Ph 400Vac +/- 10%		
	INPUT FREQUENCY	50 ÷ 60 +/-7%		
	EFFICIENCY (Typ.)	≥ 90 %		
PROTECTIONS	I/O INSULATION	4kV BY TRANSFORMER		
	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	COSTANT		
	OVERVOLTAGE	+ 10% Vn		
	UNDERVOLTAGE	- 50% Vn		
	OVERTEMPERATURE	Shut down; automatic restart after temperature reset		
SPDT ALARMS 8Amp/250Vac	AC NETWORK OFF *	BATTERY LOW VOLTAGE		
	CUMULATIVE FAILURE *	EARTH FAULT		
	OVERLOAD			
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

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.

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
- 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)
- Battery monitoring system to check single mono blocks or “channels” with failure alarm
- Field Bus communication interface available with different protocols allowing the status transmission
- Special cabinets with seismic certification or with high degree of protection
- Distribution; circuit breakers for output line protection

TITANIUM 2R-CH PLUS

DC POWER SUPPLY SYSTEMS



DOUBLE BRANCH Rectifier - IGBT type

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

REMOVABLE AC/DC CONVERTERS

Removable AC/DC converters using polarized connectors in order to simplify the replacement in case of failure (very short MTTR)

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)

TOUCH SCREEN ELECTRICAL MEASURES

- RS output voltage
- RS output current
- RCB output voltage
- RCB output current
- OUTPUT power
- % used output current
- % residual capacity

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



SPECIAL FUNCTIONS AVAILABLE

- Earth fault sensor
- Overload indicator
- MODBUS TCP/IP and VNC viewer COMMUNICATION

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 ÷ 100A		
	MAXIMUM POWER (W)	2400	4800	11000
	RIPPLE NOISE (RMS)	≤ 0.5% Vn		
	Vout SETTING RANGE	+/- 5%		
	STABILITY	+/- 1%		
	Vin VARIATION SETTING	+/- 1%		
	LOAD VARIATION SETTING	+/- 1%		
INPUT	START-UP TIME	2 sec.		
	VOLTAGE RANGE	1Ph 230Vac +/- 10% or 3Ph 400Vac +/- 10%		
	INPUT FREQUENCY	50 ÷ 60 +/-7%		
	EFFICIENCY (Typ.)	≥ 90 %		
PROTECTIONS	I/O INSULATION	4kV BY TRANSFORMERS		
	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	COSTANT		
	OVERVOLTAGE	+ 10% Vn		
	UNDERVOLTAGE	- 50% Vn		
SPDT ALARMS 6Amp 250VAC	OVERTEMPERATURE	Shut down; automatic restart after temperature reset		
	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

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.

FUNZIONE POWER BOOST (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)

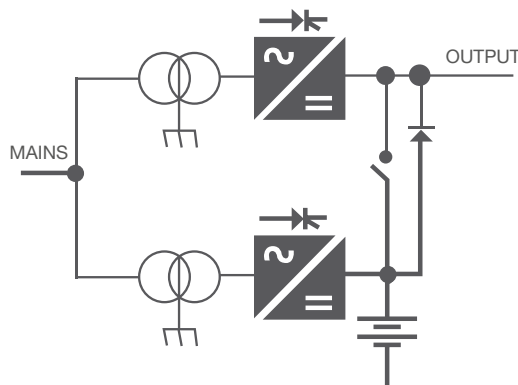
- Automatic circuit breaker on input, output and battery (with or without auxiliary contact and/or opening coil)
- UP board for BOOST CHARGE and MANUAL functions
- UP board for Compensation in temperature function automatically adjusting the charging voltage to the battery temperature
- Temperature probe
- 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

TITANIUM 2R-SCR

DC POWER SUPPLY SYSTEMS



SINGLE-LINE DIAGRAM



DOUBLE BRANCH Rectifier - SCR type

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

REMOVABLE AC/DC CONVERTERS

Removable AC/DC converters using polarized connectors in order to simplify the replacement in case of failure (very short MTTR)

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
- Charge curve for each type of battery
- Digital control panel with backlit alphanumeric 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)
- Field Bus communication available with various protocols (optional)

ELECTRICAL MEASURES ON LCD

- RS output voltage
- RS output current
- RCB battery recharging voltage
- RCB battery recharging current

MULTIPURPOSE BUTTON

- Buzzer off
- Alarm reset
- Test led activation

LED INDICATORS

- AC network presence
- RS RECTIFIER ON
- RCB RECTIFIER ON
- BOOST CHARGE ACTIVE (optional)
- MANUAL CHARGE ACTIVE (optional)
- Minimum and maximum RS voltage
- Minimum and maximum RCB voltage
- Overload
- Earh fault
- Battery operation
- Low battery voltage
- End of battery
- System maintenance request



SPECIAL FUNCTIONS AVAILABLE

- Earth fault sensor with discriminated polarity
- Overload indication

MODEL		TITANIUM 2R-SCR			
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	60÷500			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 400Vac +/-10%			
	INPUT FREQUENCY	50 ÷ 60 +/-5%			
	EFFICIENCY (Typ.)	≥ 90 %			
	I/O INSULATION	4kV BY TRANSFORMER			
PROTECTIONS	INPUT	Network switch and RCB e RS input fuses			
	BATTERY	Fuses			
	OUTPUT	Service section switch			
	CYCLE DIRECTION	Shut down. Automaric restart after phase adjustment			
	MINIMUM INPUT VOLTAGE	Shut down if Vin<325Vac; automatic restart if Vin>330Vac			
	CURRENT CURVE	COSTANT			
	OVERVOLTAGE	+ 10% Vn			
	UNDERVOLTAGE	- 50% Vn			
	OVERTEMPERATURE	Shut down; automatic restart after temperature reset			
SPDT ALARMS 8Amp/250Vac	AC NETWORK PRESENCE *	BATTERY LOW VOLTAGE			
	CUMULATIVE FAILURE *	EARTH FAULT			
	OVERLOAD				
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

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.

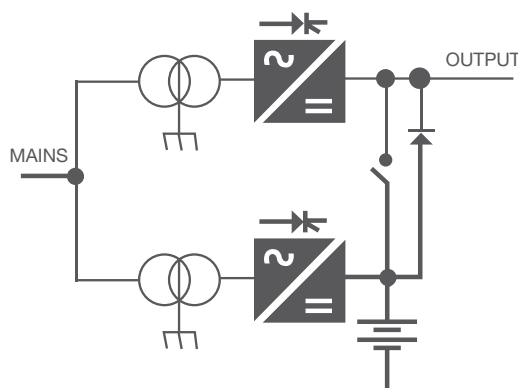
After failure recovery, the system automatically starts to operate again restoring the original function to each of the converters.

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
- 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)
- Battery monitoring system to check single mono blocks or “channels” with failure alarm
- Field Bus communication interface available with different protocols allowing the status transmission
- Special cabinets with seismic certification or with high degree of protection
- Distribution; circuit breakers for output line protection

TITANIUM 2R-SCR PLUS

DC POWER SUPPLY SYSTEMS



DOUBLE BRANCH Rectifier - SCR type

TITANIUM 2R-SCR 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 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

REMOVABLE AC/DC CONVERTERS

removable AC/DC converters to simplify the replacement in case of failure (very short MTTR)

TOUCH SCREEN ELECTRICAL MEASURES

- RS output voltage
- RS output current
- RCB output voltage
- RCB output current
- OUTPUT power
- % used output current
- % residual capacity

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)

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



SPECIAL FUNCTIONS AVAILABLE

- Earth fault sensor
- Overload indicator
- MODBUS TCP/IP and VNC viewer COMMUNICATION

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.			
	VOLTAGE RANGE	3Ph 400 Vac+/-10%			
INPUT	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			
	MINIMUM INPUT VOLTAGE	Shut down if Vin<325Vac; automatic restart if Vin>330Vac			
	CURRENT CURVE	COSTANT			
	OVERVOLTAGE	+ 10% Vn			
	UNDERVOLTAGE	- 50% Vn			
	OVERTEMPERATURE	Shut down; automatic restart after temperature reset			
	CUMULATIVE FAILURE *				
SPDT ALARMS 6Amp/250V	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

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

DC-SD

DC POWER SUPPLY SYSTEMS



DC/DC CONVERTERS

DC / DC converters of this class are used to power utilities in DC with constant voltage, when a source having variable performance is provided such as batteries that need charging curves with voltage values not always acceptable by the loads.

APPLICATIONS

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

PRODUCT PLUS

- Static Converter
- Configuration: STEP-DOWN
- Control Type: High Frequency PWM
- I/O insulation: not insulated
- Pass-through negative pole
- ON/OFF type forced ventilation
- DIN terminal rail blocks for I/O/ALARMS connections

LED INDICATORS

- VDC AUX1 OK
- VDC AUX2 OK
- IGBT pilot signal OK
- Output undervoltage present
- Output overvoltage present
- Overtemperature present
- Selector switch commeand
- Green led ON/OFF

COMMANDS

- Converter selector switch ON/OFF
- Output current

SPECIAL FUNCTIONS AVAILABLE

- LCD device (VOUT & IOUT)
- Output locking diode

SINGLE-LINE DIAGRAM



	MODEL		DC-SD		
OUTPUT	NOMINAL VOLTAGE (V)	12	24	48	110
	CURRENT RANGE	10 ÷ 60A			
	MAXIMUM POWER (W)	720	1440	2880	66000
	RIPPLE NOISE (RMS)	≤ 0.3% Vn			
	Vout SETTING RANGE	+/- 5%			
	STABILITY	+/- 1%			
	Vin VARIATION SETTING	+/- 1%			
	LOAD VARIATION SETTING	+/- 1%			
INPUT	START-UP TIME	2 sec.			
	REDUNDANCY PARALLEL CONF.	Possible with optional block diode			
	VOLTAGE RANGE	18 ÷ 36	30 ÷ 36	54 ÷ 70	116 ÷ 170
	EFFICIENCY (Typ.)	≥ 90 %			
	DRAW CURRENT (NO LOAD)	~ 0.2 A			
PROTECTIONS	INRUSH CURRENT (Typ.)	~ 80 A			
	OVERLOAD	2In x 5ms Shut down duration: 250mS - Automatic restart			
	CURRENT CURVE	COSTANT			
	OVERVOLTAGE	+ 10% Vn			
	UNDERVOLTAGE	- 50% Vn			
ALARM FUNCTIONS	OVERTEMPERATURE	Shut down; automatic restart after temperature reset			
	REMOTE ON/OFF	YES			
	DC/DC OK	SPDT CONTACT (0.1 A/ 230 Vac)			
	DC/DC Vout MAX/MIN	SPDT CONTACT (0.1 A/ 230 Vac)			
ENVIRONMENTAL DATA	OPERATING TEMPERATURE	-10+40°C			
	OPERATING HUMIDITY	2090% (NO COND.)			
	STORAGE TEMPERATURE	-20+50°C			
ENVIRONMENTAL DATA	MARKING	CE			
	DEGREE OF PROTECTION	IEC 60529			
	EMC	EN 61000-6-2 EN 61000-6-4			
	STATIC CONVERTERS	EN 60146			
	DIMENSION	482*460*220(5U-19")			
DEGREE OF PROTECTION		IP20			
COLOUR		RAL 7035			



DC/AC INVERTERS

IRON SERIES

AC POWER SUPPLY SYSTEMS



DC/AC SINGLE PHASE OR THREE PHASE OUTPUT

Iron series are Industrial, Heavy Duty Inverters designed to supply critical AC Loads with stabilised continuos voltage. Products can be easily customized depending on the peculiar Customer request. Transformer for AC/DC galvanic separation are included Microprocessor control and Digital control panels

APPLICATIONS

- Oil & Gas
- Petrochemical
- Power & Utilities
- Industry
- Hydroelectric and Geothermal plant

PRODUCT PLUS

- Industrial Layout
- Static Conversion
- Microprocessor control
- Digital control panel
- Reduced output THD with not linear load
- IGBT technology bridge (PWM)
- Natural convection cooling
- Easy maintenance/front access
- Insulation: input/output galvanic insulation

MAIN OPTIONS

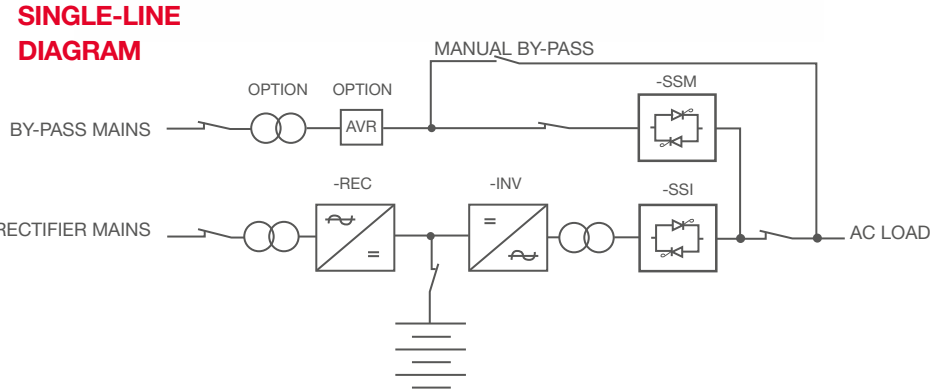
- Static and manual Switch
- Bypass Transformers and Voltage Regulators
- AC Distribution Panels
- Redundant ventilation
- Communication Port: USB or RS485 or Ethernet TCP/IP with Modbus protocol
- Tropicalization

	MODEL	IRON
INPUT	VOLTAGE	110, 220 Vdc (Other options upon request)
	VOLTAGE RANGE	-20% +40%
	BY-PASS EMERGENCY LINE INPUT VOLTAGE	1Ph 230Vac ±10% or 3Ph 400Vac ±10% (Other options upon request)
	INRUSH CURRENT	<8 In
	PROTECTIONS	Over-voltage, Under-voltage
OUTPUT	VOLTAGE	1Ph 230 Vac - 3Ph 400Vac (Other options upon request)
	FREQUENCY	50 ÷ 60 Hz
	NOMINAL POWER (cosphi=0,8)	1Ph max 25KVA (110Vdc) - 1Ph max 50KVA (220Vdc) 3Ph max 45KVA (110Vdc) - 3Ph max 90KVA (220Vdc)
	STATIC REGULATION	±1%
	DYNAMIC REGULATION	<5% with recovery to 2% in 40 ms
	TOTAL HARMONIC DISTORTION (THD)	≤ 3% with linear load / ≤ 5% with not linear load CF 3:1
	OVERLOAD	110% Pn for 2h - 125% for 10 min - 150% for 10 sec
GENERAL	PROTECTIONS	Over-voltage, Under-voltage
	COOLING METHOD	Natural convection cooling (depending on the powers)
	TEMPERATURE (WORKING)	-10°C + 50°C
	RELATIVE HUMIDITY	≤ 95% a 40°C
	ALTITUDE	≤ 1000 m
	ACOUSTIC NOISE	≤ 60dbA a 1 metro
	EFFICENCY AT FULL LOAD	≥ 88%
	MTBF	140.000 hr A 30 °C
	MARKING	CE
STANDARDS	DEGREE OF PROTECTION	IEC 60529
	EMC	EN 61000-6-2 EN 61000-6-4
	SAFETY	IEC EN 50178
	SEMICONDUCTOR CONVERTORS	EN 60146
	DEGREE OF PROTECTION	IP20
	COLOUR	RAL 7035 (Other options upon request)



INDUSTRIAL UPS
WAVE SERIES

AC POWER SUPPLY SYSTEMS



AC/AC SINGLE PHASE OR THREE PHASE OUTPUT UPS

Wave series are Industrial, Heavy Duty ON-LINE Double Conversion UPS designed to supply critical AC Loads with stabilised continuos voltage.

Products can be easily customized depending on the peculiar Customer request.

Transformer for AC/DC galvanic separation and static and manual By-Pass is included

APPLICATIONS

- Oil & Gas
- Petrochemical
- Power & Utilities
- Industry
- Hydroelectric and Geothermal plant

PRODUCT PLUS

- Industrial Layout
- ON_LINE Static Double Conversion
- Microprocessor control
- LCD Multifunctional control panel
- Reduced output THD with not linear load
- IGBT technology bridge (PWM) – (Inverter)
- Battery voltage Temperature compensation
- Easy maintenance/front access
- Insulation: input/output galvanic insulation

MAIN OPTIONS

- 12 Pulse rectifier
- Bypass line isolator
- Transformer for AC/DC galvanic separation
- Bypass Transformers and Voltage Regulators
- AC & DC Distribution Panels
- Redundant ventilation
- Dual Parallel Operation
- Communication Port: USB or RS485 or Ethernet TCP/IP with Modbus protocol

	MODEL	WAVE
AC OUTPUT	OUTPUT VOLTAGE	1Ph 230 Vac / 3Ph 400Vac 50/60 Hz (other options available upon request)
	BY-PASS EMERGENCY LINE INPUT VOLTAGE	1Ph 230Vac ±10% or 3Ph 400Vac ±10% (other options available upon request)
	NOMINAL POWER (COSPFI=0,8)	1Ph max 25KVA (Battery=110Vdc) - 1Ph max 50KVA (Battery=220Vdc) 3Ph max 45KVA (Battery=110Vdc) - 3Ph max 90KVA (Battery=220Vdc)
	STATIC STABILITY	±1%
	DYNAMIC STABILITY	± 5% (load step) with recovery to 2% in 40 ms
	TOTAL HARMONIC DISTORTION (THD)	≤ 2% with linear load / ≤ 5% with not linear load CF 3:1
	OVERLOAD	105% permanent - 125% for 10 min - 150% for 1 min. 200% for 100 ms
AC INPUT	PROTECTIONS	Over-voltage, Under-voltage
	RATED VOLTAGE	3Ph 400Vac 50/60Hz (other options available upon request)
	POWER FACTOR	0,8 @ full load
	THD	≤ 30% tipico
DC LINK	DC VOLTAGE	110Vdc (90-150Vdc) /220Vdc (180-300Vdc)
CONTROL & SIGNALISATION	MICROPROCESSOR	High Performance 8-Bit Microcontroller
	LCD PANEL	Backlit graphic LCD for meters, alarm and status messages
	MIMIC PANEL	Principle block diagram of the UPS with 9 integrated LED
	SIGNALLING LED	Inverter normal, Inverter Fault, Rectifier normal, Rectifier Fault
	VOLT FREE SIGNALLING CONTACTS	AC input supply failure, Rectifier Failure, DC voltage low,/Hi, Battery discharging, Battery disconnected, Inverter failure, Inverter overload, Inverter over temperature, Ac output voltage LOW/HI, Ventilation failure, DC earth fault (option)
GENERAL	COOLING METHOD	Cabinet: Natural - Semiconductor heat sink: Fan assisted
	TEMPERATURE (WORKING)	0°C + 40°C not condensing
	RELATIVE HUMIDITY	≤ 95% a 40°C
	ALTITUDE	≤ 1000 m without derating
	ACOUSTIC NOISE	≤ 65-70dbA at 1 meter
	EFFICENCY AT FULL LOAD	≥ 88%
	MTBF	140.000 hr at 30 °C
	DEGREE OF PROTECTION	IP20 (other options available upon request)
	COLOUR	RAL 7035 (other options available upon request)
	ACCESS	Front Door
STANDARDS	MARKING	CE
	DEGREE OF PROTECTION	IEC 60529
	EMC	EN 61000-6-2 EN 61000-6-4
	SAFETY	IEC EN 50178
	SEMICONDUCTOR CONVERTERS	EN 60146

BATTERY MONITORING UNIT

ACCESSORIES



BM1
Single
Module



Detail of the
Front panel



Optional communication device
for remote battery status signal
(it doesn't measures voltage)

DATA SHEET

NOMINAL INPUT VOLTAGE	12 VDC
INPUT VOLTAGE RANGE	8 ÷ 16 VDC
CURRENT ABSORPTION	19 ÷ 50 mA
CIRCUIT FEEDING	battery
OPERATING TEMPERATURE	0 ÷ 40 °C
RELATIVE HUMIDITY	< 90 % not condensing
TEMPERATURE MEASUREMENT RANGE	0/100° C +/- 1.5°c Resolution: 0.1° C
DEGREE OF PROTECTION	IP20
ELECTRICAL PROTECTIONS	With self-resetting fuse
PROTECTIONS FOR POLARITY INVERSION	Integrate
ALARM THRESHOLDS	12 VDC Vmax*: SET = 14.5 RESET = 13.5 VDC Vmin: SET = 9.5 RESET = 12.5 VDC Vric/rech** SET = 11.5 RESET = 13.0 VDC
FEATURES RELAY CONTACTS	Maximum switchable voltage: 125 Vac 30 Vdc Maximux switchable current: 1 Amp
DIMENSIONS (LXDXHX)	Device Type BM1: 36x58x90 2M standard DIN 43880

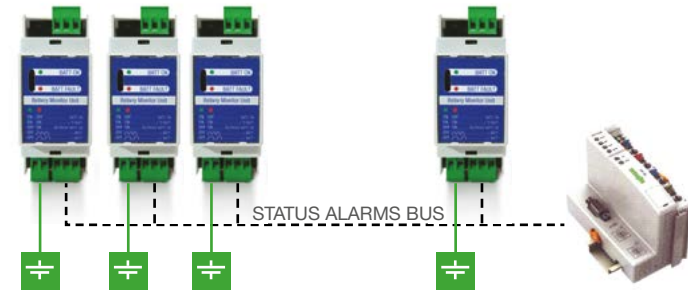
* Alarm status gets activated when two minutes pass since since battery return into the indicated range.

** If battery remains in this status for 8 hours alam is activated.

In energy continuity systems field, Batteries fulfill a strategic but also vulnerable role. It is not always easy to guarantee the batteries performance control. This is the reason why ZUTRONIC has designed a tool that allows the continous monitoring of both the single battery than of the full branch. BM1 device is furnished with LEDs for immediate location of the faulty battery and of the contacts without power to control remote alarm. It is realized in a handfull shell with DIN Rail (two modules) and can be installed over the batteries, in an electrical cabin or inside the battery box. BM1 devices can be associated to optional interface modules to send remotely the battery working status. The main scope of monitoring system is to prevent faults and to give the oportunity to programme maintenance interventions in advance, avoiding sudden faults that may cause a service loss.

BM1 is thought for 12V batteries that have the same electrical features.

TYPICAL OF CONNECTION WITH POSSIBLE REMOTE ALARM REPORT



Easy installation with reduced dimensions, it allows *(event to an unexpert person)* to verify immediatly the battery status identifying the faulty ones

ALARMS REPORTING PANEL

ACCESSORIES



Table version



Guide version

The device is designed for managing four incomes coming from contacts free of power (relay), each is accociated to a LED signal. It is possible to select the type of incoming contact (NO or NC), through internal specific dip-swithc, available for each channel. Further this, each input is equipped with the excitation delay function adjustable by a trimmer, in a range between 0÷300 sec, giving to the device a great flexibility.

On the front panel you may find six LEDs and a button:

- 4 leds in red colour per incoming status
- 1 led in green colour per regular working status
- 1 led in red colour per general failure
- 1 button to switch off acustic alarm and LEDs test

In the terminal boxes are available the contacts (COM-NO-NC) of a relay associated to general failure function, to reporting the status also to other external devices. The four income channel connections are available through a modular terminal box or through a RJ45 jack for a twisted cable category 5 (only for RA-09 version).

RA-09 version requires a 12 Vdc guaranted by an external charger with 230Vac input voltage, provided within the supply. The RA-09 DIN version may accept also a wider range of auxiliar supply.

DATA SHEET

RA-09

RA-09-DIN

SUPPLY VOLTAGE	VAC	230VAC	12VAC ¹ 230VAC ²
	VDC		12VDC ¹ 24VDC ¹ 48VDC ² 110VDC ²
INCOME N.		4	4
INCOME TYPES		N.O. and N.C.	N.O. and N.C.
DELAY IN ADJUSTABLE ACTIVATION		0 ÷ 300 sec.	0 ÷ 300 sec.
DELAY TO DE-EXCITATION		5 sec. - fixed	5 sec. - fixed
OPERATIONAL ELEMENTS		Test LED button and buzzer mute Config. Dip-switch	Pulsante test LED e tacitazione buzzer Dip-switch di configurazione
ALARM OUTPUT FEATURES		LED + Buzzer + Cumulative relay	LED + Buzzer + Cumulative relay
POSITIVE/NEGATIVE CONFIGURABLE CUMULATIVE RELAY		YES	YES
CONNECTION TYPE FOR INCOME/OUTCOME		Clamps and RJ45	Clamps and RJ45
CABIN DIMENSIONS		168*138*48(p) mm	DIN 4M
PROTECTIN DEGREE		IP30	IP20 - box/IP50 - front
CABIN TYPE		Metallic	Plastic / Self-extinguishing
RELAY ELECTRIC FEATURES		CONTACT N.O-C-NC 1 Amp - 24VDC / 0,5 Amp - 110VAC	CONTACT N.O-C-NC 1 Amp - 24VDC / 0,5 Amp - 110VAC
WEIGHT		450 g	120 g
AUXILIARY POWER SUPPLY GIVEN AS STANDARD		YES	NO

¹ Accepts direct feed.

² Requires external adaptor (optional).

BATTERIE ACCESSORIES

Zutronic® has strengthen a solid cohoperation with the main international batteries manufacturers. We may supply technical support for the correct choice and sizing (even with IEEE software), for the several technologies:

- VRLA (Valve Regulated Lead-Acid); commonly know as hermetic Lead-acid Batteries, they are available both in GEL or AGM (Absorbent Glass Mat).
- VENTED; commonly know as open Lead-acid Batteries (Flooded), they are the traditional batteries in an open transparent shell, usually available in single 2V cell and normally installed in dedicated room
- NI-CD; Nichel-cadmium batteries with high performances and very long life for critical applications
- LITHIUM; The most recent technology, particularly suited for storage and cyclic use.

Due on applications and technologies, we may offer metal Rack for batteries sustain, or steel battery boxes fulled with electrical protections and monitoring systems.

FIAMM

EnerSys
Power/Full Solutions™

EXIDE
TECHNOLOGIES

GAZ

LEOCH
Leoch Battery

SAFT

HOPPECKE
POWER FROM INNOVATION



SERVICES ACCESSORIES

SERVICES OFFERED BY **Zutronic**®

Technologic devices require a special attention during the set in service and long their working on the site. This is the reason why **Zutronic**® company, directly or through local partners, may offer several dedicated services:

PUTTING INTO SERVICE

It is the activity that, performed by a specialized technician following a precise procedure decided by the Company Quality System, verify all the working conditions both of the site and of the machine as well. Then the first start can be performed.

Briefly, the putting into service consists in:

- Verification that all the site installation conditions comply
- Visual verification of all the devices and batteries to identify possible damages
- Verification that the devices are correctly connected to the system
- Verification that the batteries are correctly connected
- Verification that all security legislation have been fulfilled
- Verification that all security devices (upstream and downstream the machine) have been correctly placed
- Verification of the power supply system
- First start of the machine and check of all working parameters
- Test with a real load
- Simulation of power blackout and return
- Eventual test of communication devices

The advantages of a Putting into service assisted by our technician are:

- Certainty of the proper working of the machine
- Training of the employees that will have in charge the leading of the site
- Longer life of the system
- Customization of the working parameters due to the real needs of the system
- Possibility to extend the warranty



POST SELL ASSISTANCE

Zutronic® can offer several level of assistance based on the needs of the final customer and of the system itself. Our contracts offer an efficient protection for all installations type. Maintenances activities are performed by our specialized technicians or by authorized company of the territory.

Below the services offered:

- Maintenance agreement (with several level of assistance, that can be also multi-annual), for UPS and Rectifiers battery charger
- Warranty extention connected to the maintenance agreement
- Planned test of batteries charge (capacity and efficiency test)
- Training to the employees that will have in charge the leading of the system
- Old batteries substitution and their disposal
- Phone assistance (or directly to the site) by our specialized technician
- Plant survey

The advantages of a maintenance agreement are:

- Reduction of loss of production and system stop costs
- Guaranteed response time
- Technical report for each intervention
- Historical report of all the activities at the site
- Only original spare parts use
- Certified tools use
- Site assistance by specialized and authorized technicians

BATTERIES SUBSTITUTION

Batteries substitution requires a specific knowledge to guarantee the system efficiency and to prevent serious damages due to a wrong connection. You must keep in mind that just putting the wrong polarity can cause an irreversible damage to the power continuity system.

Zutronic® is able to substitute all types of batteries, ensuring the correct return of the service and a correct assistance to old batteries disposal.



zutronic[®]

by ENERGY SERVICE

Via Gaetano Donizetti, 109/111 - 24030 Brembate Di Sopra (BG) - Italy

Geller Business Centre - D2 Building

Phone 035 4379962 Fax 035 592935

sales@zutronic.it

ISO9001:2015

BUREAU VERITAS
Certification



www.zutronic.it