Working to provide energy since 1996

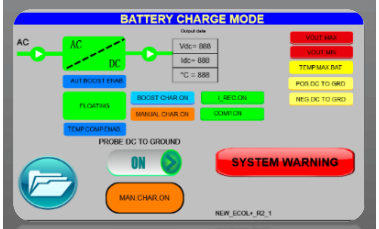
DC UPS – COMPACT ECOLINEplus

These devices are the result of careful research and development carried out by our company, aimed at obtaining maximum reliability and the best performance in the field of DC emergency power supply system **where the accumulator battery already exists in the plant and there is therefore a need to replace only the DCUPS**.
The improvements we have made now allow us to offer a single system that can be offered in different electrical configurations, all with IGBT (CHOPPER) conversion technology .

Single branch - code **1R**
Double branch - code **2R** (one input transformer for each AC/DC module)
Double branch - code **2R1T** (a single input transformer for both AC/DC modules)
Parallel double branch - code **2RP** (one input transformer to each AC/DC module)
Double parallel branch - code **2RP1T** (a single input transformer for both AC/DC modules)
Battery charger - code **CB**

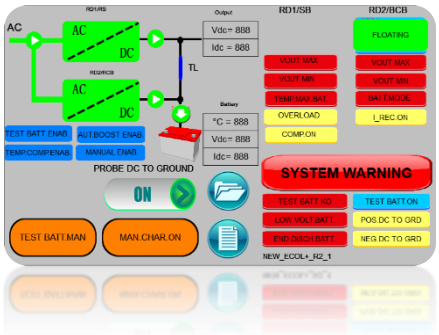
The **SYSTEM CONTROL** is based on an industrial **PLC**, which is therefore characterized by very high reliability, and allows a greater number of technical requirements and consequent applications to be met. This section, which constitutes the 'intelligent' heart of our system, is connected to the AC/DC power units, which recognize the loss of communication with the PLC and set themselves up in **'AUTOMATIC SAVE MODE'** working independently and guaranteeing continuity of operation.
Once the connection is re-established, the AC/DC units will operate again under the automatic control of the PLC, resuming normal and complete operation.

The HMI (Human Machine Interface) system features a 4.3" resistive touch panel with excellent visibility and mechanical resistance to wear.



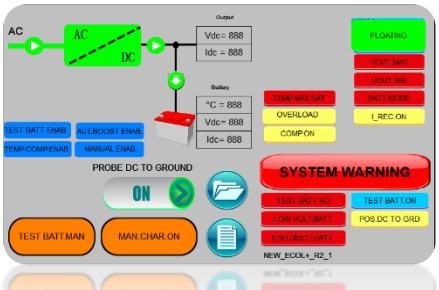
MAIN FEATURES

- Power element: IGBT
- Insulating transformer on AC input line complete with electrostatic screen between primary and secondary
- System control with industrial PLC
- 4.3” touchscreen color panel
- High MTBF and low MTTR
- Easy maintenance with access from the front
- Low % ripple at output and batteries



- **FIELD of APPLICATION**

- Oil & Gas (Petrochemical, offshore, pipeline)
- Power generation (Power plant, hydropower, transmission, distribution, utilities)
- Transport (Airport, naval, railway)
- Process control (mining industry, steelwork, paper production, etc.)
- Desalination and water treatment plant



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GENERAL TECHNICAL CHARACTERISTICS

ELECTRICAL CHARACTERISTICS

		IGBT			
Output voltage (VDC)		24	48	110	
Input voltage	**1-phase**	230V AC ± 10%			
	3-phase	400V AC ± 10%			
Input frequency		50–60 Hz ± 5%			
Input DC current		≤ 10kA RMS (with rated VAC — ref. CEI EN 60947-2)			
Input current distortion	**THD**	≤ 27 (with rated load)			
Input power factor		≥ 0.80 (with rated voltage, at 100% load)			
I/O isolation		4kV VIA TRANSFORMER			

OUTPUT CHARACTERISTICS

		1-phase INP. power supply	**3-phase INP. power supply**
Output current (IGBT)	**Config.1R** (Note 4)	10÷50 Amp	10÷50 Amp
	Config.2R (Note 4)	10÷30 Amp	10÷30 Amp
	Config.2R1T (Note 3) (Note 4)	10÷50 Amp	10÷50 Amp
	Config.2RP (Note 4)	10÷30 Amp	10÷30 Amp
	Config.2RP1T (Note 3) (Note 4)	10÷50 Amp	10÷50 Amp
	Config.CB (Note 4)	10÷50 Amp	10÷50Amp

Battery charging voltage	**Floating** (can be set via HMI)	2.27 V/cell for VRLA batteries 2.2–2.3 V/cell for VLA batteries 1.4–1.5 V/cell for Ni-Cd batteries
	Boost (optional) (can be set via HMI)	2.4–2.45 V/cell for VLA batteries 1.5–1.65 V/cell for Ni-Cd batteries
	Manual (optional) (can be set via HMI)	2.35 V/cell for VRLA batteries 2.7 V/cell for VLA batteries 1.7 V/cell for Ni-Cd batteries
Battery charging current	(can be set via HMI)	1–In A (Note 2)
Current curve		CONSTANT
Output voltage stability		1%
Line regulation (VLine)		1%
Load regulation (VLoad)		1%
Output ripple	**RMS**	1%
Overcharge	(with no batteries)	100% In (Note 1) or 2 In x 5 ms

ENVIRONMENTAL CHARACTERISTICS

Noise level	**As per EN50091**	< 60 dBA (typical value with forced ventilation in operation)
EMI		EN 61000-6-2 & EN 61000-6-4
Operating temperature range	**°C**	-10° – +40°
Storage temperature range	**°C**	-20° – +70°
Relative humidity range	**Without condensation**	< 95%
Ventilation (on AC/DC conversion module)		Electronic speed control based on current supplied
Altitude	**m.a.s.l.**	< 1000 (de-rating as per EN62040-3)

MECHANICAL CHARACTERISTICS

Degree of external protection	**As per IEC 60529**	IP 20 standard
Degree of internal protection	**As per IEC 60529**	IP 20 with main door open and additional protections inserted
Colour		RAL 7035
Dimensions (W x D x H) mm		600 x 650 x 1600
IN/OUT cable connections		From the front, with cables entering from below
Transporting		Base for moving unit using pallet jack
Installation		Floor-mounted
Access		Front

PROTECTION

Input		See Tab. 1
Output		See Tab. 1
Batteries		See Tab. 1
General		Vout > / Vout < / Maximum temperature / ICC / Wrong cyclic sense on input

More details can be found in the technical document initialed STC22-00.

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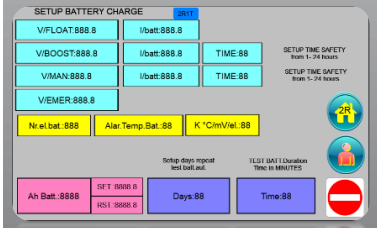

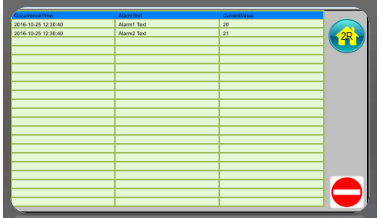

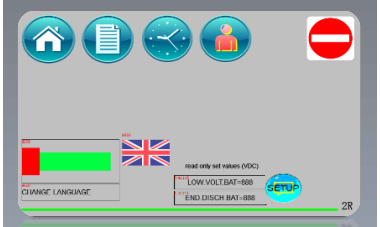

Tab.1 **Standard set**	1R	2R	2R1T	2RP	2RP1T	CB
MCB on AC input	x	-	-	-	-	x
Disconnector and fuses on AC input	-	x	-	x	-	-
Disconnector on DC output	x	x	x	x	x	x
MCB and fuses on AC input	-	-	x	-	x	-
Batteries fuses	x	x	x	x	x	-
Floating charge	x	x	x	x	x	x
Probe of DC polarity to ground	x	x	x	x	x	x
Temperature compensation	x	x	x	x	x	x
Automatic/Manual Test	x	x	x	x	x	-
Relay alarms	x	x	x	x	x	x
Colour 4.3" Touch HMI	x	x	x	x	x	x
MODBUS RS485 RTU	x	x	x	x	x	x
Alarms log	x	x	x	x	x	x
Configuration menu protected by password	x	x	x	x	x	x
System software updates from remote	x	x	x	x	x	x
Multiple languages HMI (ITA / ENG / FRA)	x	x	x	x	x	x
Frequency and duration of Automatic batteries test configurable from HMI	x	x	x	x	x	-
Correction factor K/°C/el for batteries temperature compensation configurable from HMI	x	x	x	x	x	x
Measure and alarms on HMI						
DC output voltage – Load	x	x	x	x	x	-
DC output current – Load	x	x	x	x	x	-
DC voltage – Batteries	x	x	x	x	x	x
DC current- Batteries	x	x	x	x	x	x
Temperature - Batteries	x	x	x	x	x	x
Reporting on HMI						
AC input line ON/OFF	x	x	x	x	x	x
AC/DC – RS/RD1- ON/OFF		x	x	x	x	
AC/DC – RCB/RD2- ON/OFF	x	x	x	x	x	x
RS/RD1- High output voltage	-	x	x	x	x	-
RS/RD1- Low output voltage	-	x	x	x	x	-
RCB/RD2- High output voltage	x	x	x	x	x	x
RCB/RD2- Low output voltage	x	x	x	x	x	x
RCB/RD2- Floating Charge	x	x	x	x	x	x
RCB/RD2- Boost Charge	x	x	x	x	x	x
RCB/RD2- Manual Charge	x	x	x	x	x	x
Recharge current limitation ongoing	x	x	x	x	x	x
Temperature compensation ongoing	x	x	x	x	x	x
Batteries maximum temperature	x	x	x	x	x	x
Positive DC pole to ground	x	x	x	x	x	x
Negative DC pole to ground	x	x	x	x	x	x
Overload at the output	x	x	x	x	x	-
Batteries test ongoing	x	x	x	x	x	-
Batteries test failed	x	x	x	x	x	-
System operating from batteries	x	x	x	x	x	-
Low batteries voltage	x	x	x	x	x	-
Batteries end of discharge	x	x	x	x	x	-
Normally operating system	x	x	x	x	x	-
System general fault	x	x	x	x	x	-
DC output MCB status	x	x	x	x	x	-
Relay alarms						
Mains ac input	x	x	x	x	x	x
General fault (cumulative of states)	x	x	x	x	x	x
Low voltage battery	x	x	x	x	x	-
DC to earth (cumulative)	x	x	x	x	x	-

Cod.	Description – OPTION AVAILABLE	1R	2R	2RT1	2RP	2RT1	CB
20.100E+	Circuit breaker on batteries	x	x	x	x	x	x
20.101E+	Output circuit breaker	x	x	x	x	x	x
20.102E+	Battery discharge complete contactor — LVBD	x	x	x	x	x	-
20.103E+	Timed charge reserve — CEI 0-16	x	x	x	x	x	-
20.104E+	Battery reverse polarity control BRPCU	x	x	x	x	x	x
20.105E+	Blocking diode on DC output	x	-	-	-	-	x
20.106E+	Output distribution (Note 5) (Note 6)	x	x	x	x	x	-
20.107E+	Boost charge function	x	x	x	x	x	x
20.108E+	Manual charge function	x	x	x	x	x	x
20.109E+	Temperature compensation	x	x	x	x	x	x

X = optional
X = standard
- = not present

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