# DC POWER UNIT
# INSTRUCTION MANUAL

# Cod. 201S.B

CONFORMITY

EMC

CE


**Rowan Elettronica**

*Motori, azionamenti, accessori e servizi per l'automazione*

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*iscritta al R.E.A di Vicenza al n.146091*
*C.F./P.IVA e Reg. Imprese VI n.00673770244*


UNI EN ISO 9001


REV. 0 - Data 21/05/10

## CONTENTS

**DC POWER UNIT\ BATTERY CHARGER COD.201S.B** page



### *Warning!*

- **Any use of this apparatus different from which is described in this manual is absolutely forbidden.**
- ROWN ELETTRONICA s.r.l. declines any responsibility for any errors that may be contained in this manual, caused by stamping error and/or copying/translation. ROWAN ELECTRONICA also reserves the right to change without prior warning any variation which is considered necessary for an improved operation of the product.
- all the data and characteristics given in this manual have a tolerance of ±10%, if not indicated differently.
- The product guarantee is ex-factory and is valid for 12 months from the date of leaving the ROWAN ELETTRONICA s.r.l. warehouse.
- The electronic equipment may cause situations of danger for the safety of people and objects; the user is responsible for the installation of the apparatus and the conformity of such installation to the regulations in force.
- The application diagrams given in this manual are only indications are must be epitomized by the client according to there needs.
- **The apparatus must only be installed by qualified personnel**, after reading and understanding of this manual, which must be always available for consultation on the apparatus. The supplier should be contacted, for the clarification of any doubts .

# DC POWER UNIT \ BATTERY CHARGER COD. 201S.B

**OVERVIEW:**

The unit comprises a phase partitioning voltage regulator acting on the primary winding of a transformer (connected externally) with the secondary winding connected to a rectifier bridge that supplies the batteries and/or load.
When used as a **battery charger**, it offers the possibility to set the voltage and maximum current externally or internally, while still powering the load. The precise control of the charging current shortens recharging times, safeguards the batteries and prolongs their life span.
When used as a **DC power unit** it can supply the load with a regulated stabilised voltage (with 10% max ripple in the case of DC power unit) with current limitation. The voltage and current can always be regulated internally (by trimmer) and externally (by potentiometer or 0 / 10V DC signal) and monitored by analog or digital voltmeters (e.g. Rowan 244A), connected to the specific outputs.

**TECHNICAL CHARACTERISTICS:**

- Single phase supply voltage: 220 Vac ± 10 % 50-60 Hz for 201S.B/1, /2, /3 and /4 models.
- Single phase supply voltage: 220/380 Vac (with voltage change) ± 10% 50-60 Hz for higher power models.
- Standard power unit/battery charger for 12Vdc / 24 Vdc voltages; other voltages on request (maximum 200 Vdc)
- 8 models available for the following maximum DC output currents (sum of load and battery charger currents):
  **10A 20A 30A 40A 50A 60A 80A 100A**
- 2% voltage and maximum current control error, referred to range limits
- Ambient air temperature limits: -5 °C to +40 °C.
- Storage temperature: -25°C to +70°C.
- Operating relative humidity: 5 to 95% (condensate free).
- Standard version without housing on aluminium base
- IP 20 Protection rating

**STANDARDS:**
**- The product, in combination with a mains filter connected according to diagrams below, conforms to the following standards.**
- General standard**: CEI EN 60204-1.**
- General standard for electromagnetic compatibility: **89\336\CEE.**
- Specific standards for electromagnetic compatibility:

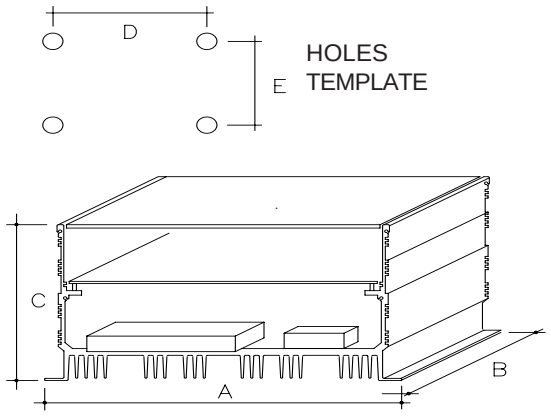
> 201S.B/1/2/3/4/5/6 regulators: **EN50081-1 and EN50082-2 .**
> 201S.B/8/10 regulators: **EN50081-2 and EN50082-2 .**

**201S.B SERIES POWER CHARACTERISTICS, TRANSFORMER COMBINATIONS AND FUSES**

| SIZES | Imax DC out 3 A | 12V TRASF.POWER VA | 24V TRASF.POWER VA | F1 FUSES GL type A | F2 FUSES GL type A |
|---|---|---|---|---|---|
| 201S.B/1 | 10 | 250 | 450 | 4 | 10 |
| 201S.B/2 | 20 | 450 | 800 | 4 | 20 |
| 201S.B/3 | 30 | 650 | 1200 | 6 | 32 |
| 201S.B/4 | 40 | 850 | 1500 | 10 | 40 |
| 201S.B/5 | 50 | 1000 | 1900 | 10 | 50 |
| 201S.B/6 | 60 | 1200 | 2200 | 10 | 63 |
| 201S.B/8 | 80 | 1600 | 3300 | 16 | 80 |
| 201S.B/10 | 100 | 2000 | 4000 | 20 | 100 |

**OVERALL DIMENSIONS:**
measurements in mm

| SIZES | A | B | C | D | E |
|---|---|---|---|---|---|
| 201S.B/1 | 260 | 195 | 150 | 250 | 160 |
| 201S.B/2 | 260 | 195 | 150 | 250 | 160 |
| 201S.B/3 | 260 | 280 | 150 | 250 | 200 |
| 201S.B/4 | 260 | 280 | 150 | 250 | 200 |
| 201S.B/5 | 260 | 350 | 150 | 250 | 200 |
| 201S.B/6 | 260 | 350 | 150 | 250 | 200 |
| 201S.B/8 | 260 | 350 | 150 | 250 | 200 |
| 201S.B/10 | 490 | 710 | 150 | 470 | 690 |




**NB : The power unit installation must guarantee an air change.**

**DESCRIPTION OF BUILT-IN TRIMMER FUNCTIONS:**

**P1** = Factory calibrated automatic charging voltage for 12Vdc batteries (active with open contact at terminals 11 - 12).
**P2** = Factory calibrated automatic charging voltage for 24Vdc batteries (active with open contact at terminals 11 - 12).
**P3** = Maximum regulation range of voltage on the load\battery.
**P4** = Built-in automatic charging current regulation (active with micro S4 closed).
**P5** = Anti-oscillation feedback control of voltage on load (clockwise adjustment dampens the oscillations).
**P6** = Anti-oscillation feedback control of load current (clockwise adjustment dampens the oscillations).
**P7** = Offset on input 2 dedicated for absorbed current measurement by SHUNT/CT (only for authorised personnel).
**P8** = SHUNT 60mVdc signal trimmer adjustment on input 2 (only for authorised personnel).
**P9** = Maximum range of load\battery current regulation.
**P10** = Minimum range of load\battery voltage regulation.
**P11** = Minimum or maximum voltage trip regulation on LOAD / BATTERY output.
**PRAMPA** = ACC/DEC ramp adjustment (min 50msec, max 6sec)

**DESCRIPTION OF LED's:**

**L1 =** ON indicates the circuit board is powered.
**L2** = ON indicates there is a voltage on the load\battery.
**L3** = ON indicates that relay R0 has tripped (i.e. minimum or maximum voltage threshold).
**L4** = ON indicates RUN ON.

**DESCRIPTION OF MICRO-SWITCH FUNCTIONS:**

**1 = OPEN** activates the external regulation of voltage on load\battery by power connected to terminals 5-6-9
**1 = CLOSED** activates the built-in regulation of the voltage on the load\battery by P1 trimmer (factory set for 12Vdc batteries) and P2 (factory set for 24Vdc batteries).
**2 = OPEN** if the signal on terminal 3 referred to the voltage on the load is over 24V ( MAX 250V)
**2 = CLOSED** if the signal on terminal 3 referred to the voltage on the load is under 24V

**3 = OPEN** if the signal on terminal 3 referred to the voltage on the load is in direct current (Vdc).
**3 = CLOSED** if the signal on terminal 3 referred to the voltage on the load is in alternating current (Vac).

**4 = OPEN** activates the external current regulation of the load\battery by potentiometer connected to terminals 7-8-9.
**4 = CLOSED** activates the built-in current regulation of the load\battery by P4 trimmer.

**5 = OPEN** circuit board configuration as a closed ring feedback voltage regulator with the voltage signal on terminal 3.
**5 = CLOSED** circuit board configuration as an open ring voltage regulator.

**6 - 7 - 8 - 9 = OPEN** if the signal on terminal2 referred to the load\battery direct current from a 60mV f.s. shunt
**6 - 7 - 8 - 9 = CLOSED** if the signal on terminal2 referred to the load alternating current from a 4Vac\0.2A f.s type current transformer (TA).

**DESCRIPTION OF TERMINAL BLOCKS**

**TERMINAL BLOCK ON COOLING BASE**

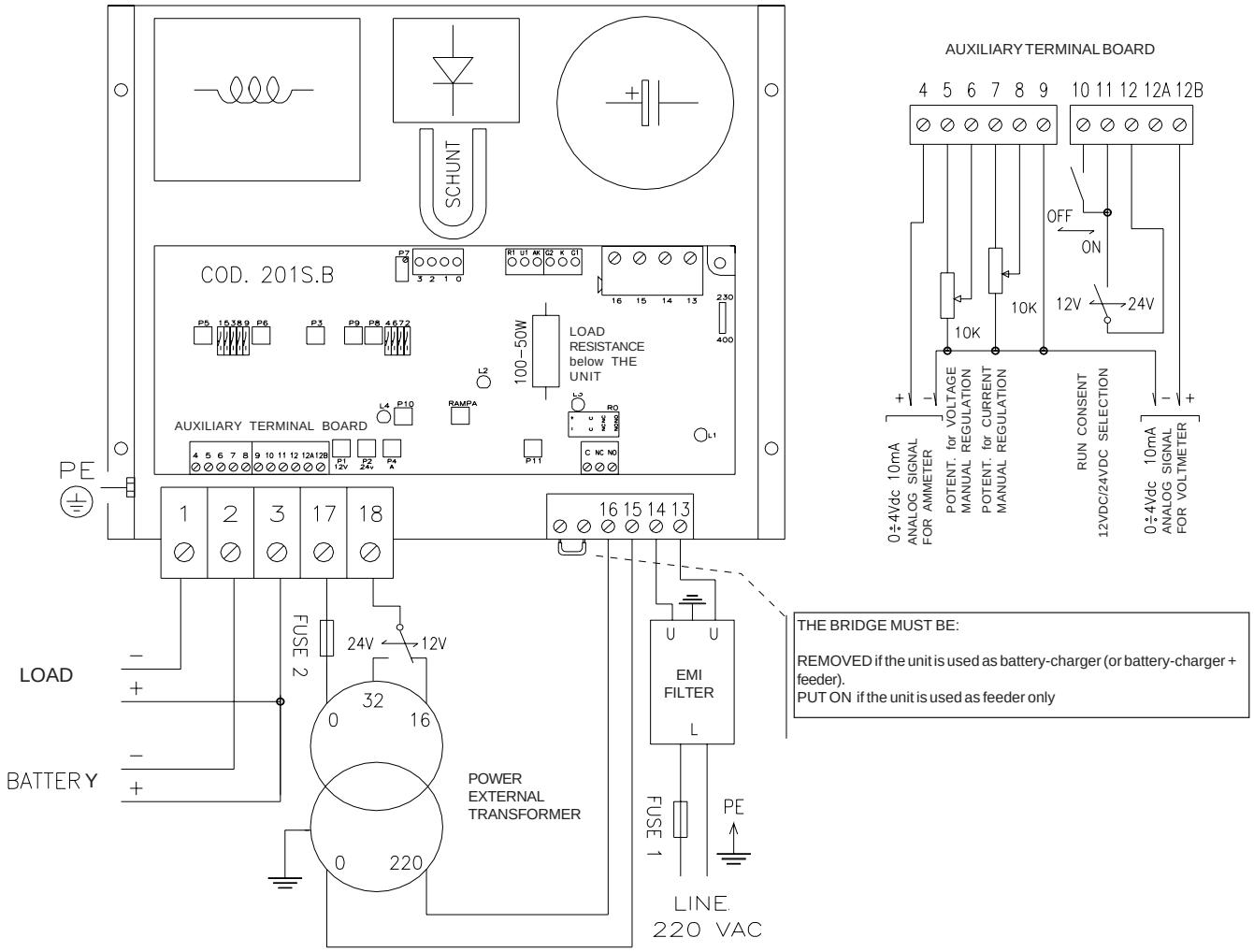
**1(-) 3(+)** = Load connection without current detection by shunt (without max current limitation).
**2(-) 3(+)** = Battery or load connection with current detection by shunt (with max current limitation).
**N.B.: The current on the load plus the battery charger currents must not exceed the maximum current of the power unit indicated in the table on page three (direct current measured at terminal 3 output).**
**13 - 14** = 220(380)Vac 50-60Hz power supply. To know the F1 fuse size, consult the table on page three. the choice of mains filter needed to limit the emissions conducted on the supply line to meet standards depends on the current of the 201S.B used:
- FM.ROW6A.400 mains filter for 201S .B/1/2/3 models.
- FM.ROW14A.400 mains filter for 201S.B 4/5/6 models.
- FM.ROW30A.400 mains filter for 201S.B 8/10 models

**15 - 16** = Power transformer secondary winding output regulated at 220 Vac.
**17 - 18** = Transformer secondary winding connection input. To know the F2 fuse size, consult the table on page three.

**AUXILIARY TERMINAL BLOCK ON CIRCUIT BOARD**

**4 - 9** = 0 - 4VDC load output with max. 10mA for external instrument (AMMETER).
**5 - 6** (cursor) **- 9** = External 10k potentiometer connection for manual regulation of voltage on the load/battery if connected open micro-switch S1.
**7 - 8** (cursor) **- 9** = External 10k potentiometer connection for manual regulation of load/battery current if connected open micro-switch S4.
**11 - 12** = External select command for automatic charging voltage of 12V - 24V batteries: CLOSED for 24V batteries, OPEN for 12V batteries
**NB. At the same time select the transformer secondary suited to the battery voltages as indicated in the diagram below ( 12V = 16VAC / 24V = 32VAC).**
**12B - 9** = 0 - 4VDC load output with max. 10mA for external instrument (VOLTMETER).
**Nc - No - C** R0 relay contacts (1A 24VAC/DC) .
**10 - 11** External command for run consensus (CLOSED = ON).

**BATTERY CHARGER\DC POWER UNIT WIRING DIAGRAM**




**EXTERNAL POWER TRANSFORMER**:

This can be supplied separately on request. For the powers consult the table on page three, for the battery charger function, the transformer must have the following construction:

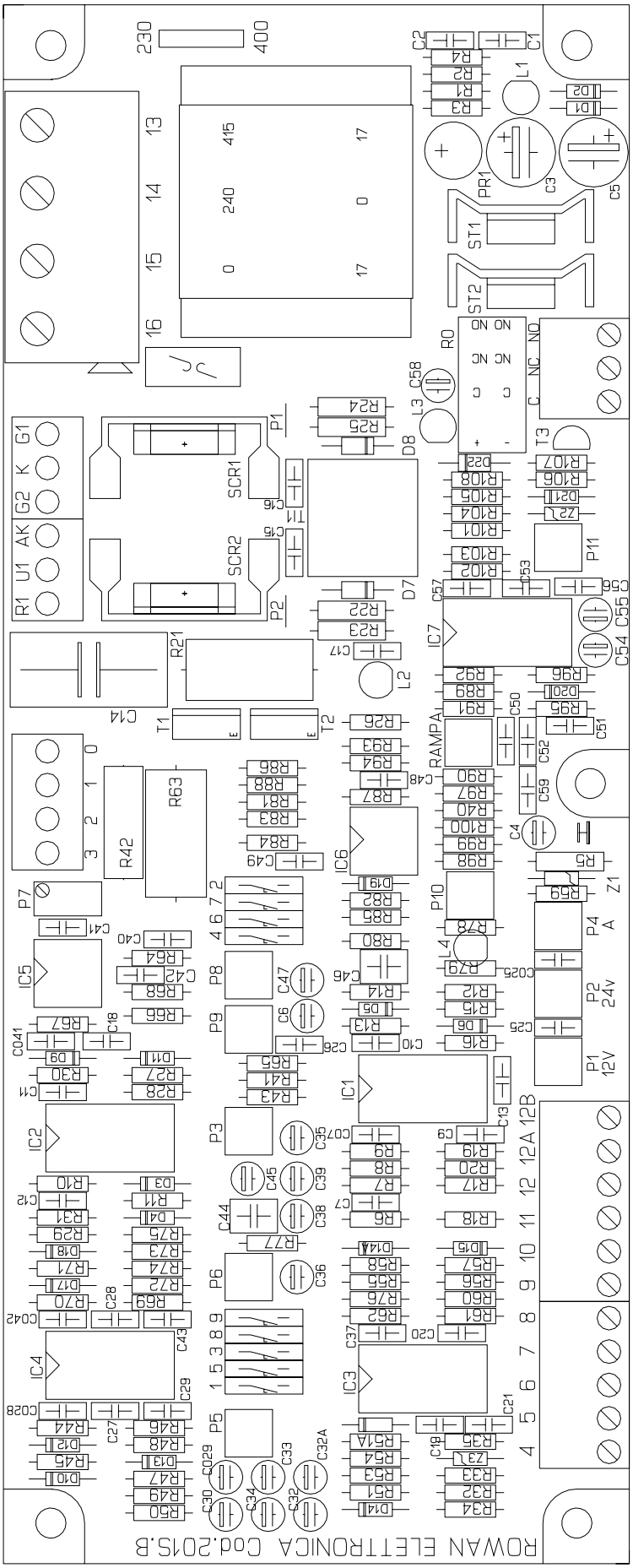
**12VDC BATTERIES** - primary 220V /secondary 16÷19 VDC

**24VDC BATTERIES** - primary 220V/ secondary 32÷34VDC

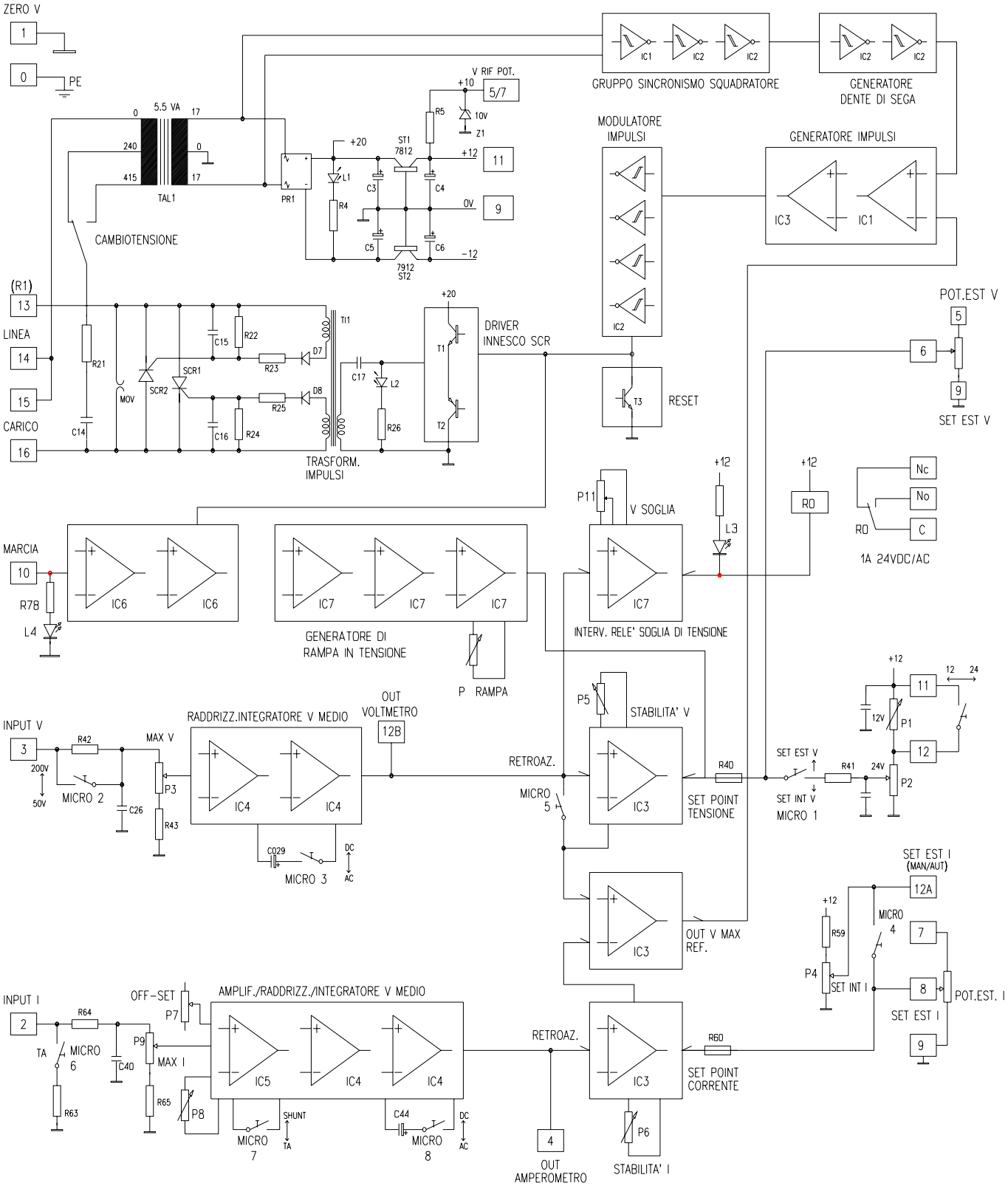
**STANDARD CONFIGURATION:**

- Automatic charging voltage for 24VDC batteries (terminals 11-12 jumpered).
- Maximum current for automatic battery charging at 15% of rated current of the power unit.
- Micro-switches closed: S1 S2 S4
- Micro-switches open: S3 S5 S6 S7 S8 S9

**CIRCUIT BOARD COMPONENTS SERIGRAPHY**



## CIRCUIT BOARD COMPONENTS BLOCK DIAGRAM



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