



# **BYCAN SYSTEMS**

*Proudly Introduces*

## **THE BLUE ANGEL**

### **AIRCRAFT POWER SUPPLY & CHARGER**

**DUAL VOLTAGE AIRCRAFT GROUND POWER & BATTERY CHARGER UNIT  
PROVIDES 50AMPS AT 14 & 28 VOLTS DC**



The Bycan BA-14/2850 Aircraft Ramp Power Supply and Battery Charger is a multi- purpose aircraft flight line service and maintenance tool. The unit has a filtered 14 & 28 volt DC power supply with up to 50 amperes capability for tests of aircraft electrical systems and a secondary mode for recharging run-down batteries.

This ramp or hangar accessory is an absolute must for avionics service, gear and flap actuator exercising and other electrical system service.

The BA-14/2850 plugs directly into the aircraft APU connector and is tied to the electrical system when the master switch is activated. Selection of output voltage is by a front panel switch which is protected by a switch guard. Closing the guard forces the switch to the 14 volt position.

The battery charging mode is selectable by a front panel switch. The charging process is fully automatic. When the charge is in progress a red LED is illuminated. This is replaced by a green LED when the aircraft battery is fully charged. The on/off switch on the unit also resets the unit.

### FEATURES

- 50 amperes filtered 14 & 28 volt supply
- Dual charging capability from 14 to 28 volts
- Aircraft APU connectors furnished
- Operates from 115 VAC, 60 Hz
- AC circuit breaker included
- 8 foot DC cable furnished
- Weighs only 46 pounds. "Portable"
- Ferro-resonant regulated supply
- One year warranty
- Extensive testing by FBO's

**ENDORSED BY PROFESSIONAL**

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**Proudly Made In the USA**

## **GENERAL DESCRIPTION**

THE BYCAN AIRCRAFT POWER SUPPLY AND BATTERY CHARGER "APU" SERIES OFFERS A SELECTABLE POWER SUPPLY OR BATTERY CHARGER MODE. YOU CAN SELECT THE OUTPUT VOLTAGE WITH THE FLIP OF A SWITCH ON THE FRONT PANEL TO EITHER 14 OR 28 VDC. YOU CAN ALSO SELECT WHAT YOU WANT TO USE THE UNIT FOR, CHARGING THE BATTERIES OR A POWER SUPPLY MODE BY THE FLIP OF A SWITCH.

ON THE CHARGING FEATURE, THE OUTPUT CURRENT THAT IS OPTIMUM SHOULD BE EQUAL TO **10%** OF THE BATTERY AMPERE HOUR RATING.

THE AC CURRENT DRAIN DURING MAXIMUM CURRENT (FULLY DISCHARGED BATTERY) CAN BE COMPUTED USING THE FOLLOWING FORMULA:

$$I_{ac} = \frac{V_{battery} \times I_{dc} \text{ current} \times 1.5}{V_{ac}}$$

THIS SHOWS THAT BATTERIES THAT REQUIRE A HIGH CHARGING CURRENT SHOULD BE CHARGED WITH 208/220 OR 240 VAC INPUT TO THE CHARGER RATHER THAN 115 VAC.

## **CHARGING ALGORITHM:**

THE CROWN ROYAL CHARGERS USE AN EQUALIZING TIMER ALGORITHM. THIS MEANS THAT THE BATTERY VOLTAGE SENSOR TURNS ON A TIMER WHEN A SPECIFIC VALUE IS REACHED REPRESENTATIVE OF **80%** CHARGE (WHEN THE ELECTROLYTE STARTS TO OUT-GAS). THIS TIMER HAS A DURATION OF **2** HOURS. THE POINT (VOLTAGE) AT WHICH THIS STARTS IS **2.46** VOLTS/CELL. IN THE **14V** POSITION THIS WOULD BE AT **14.7** VDC AND IN THE **28V** POSITION THIS WOULD BE AT **29.5** VDC. WHEN THE TIME HAS ELAPSED THE CHARGER SHUTS OFF.

THE CHARGER WILL AUTOMATICALLY COME BACK ON AND REPEAT THE CYCLE IF THE BATTERY VOLTAGE DROPS TO **2.0** VOLTS/CELL. THE LATTER IS AN APPROXIMATE VALUE.

## **BASIC OPERATION:**

THE CHARGER USES A FERRO-RESONANT TRANSFORMER AND FULL-WAVE SILICON RECTIFIERS TO PROVIDE THE BEST CHARGING VOLTAGE SOURCE FOR LEAD-ACID BATTERIES. THE BATTERY CHARGER IS PROTECTED WITH AN INTERNAL FUSE TO GUARD AGAINST DAMAGE DUE TO BATTERY MISCONNECTION. THE AC POWER LINE IS PROTECTED BY A FRONT PANEL CIRCUIT BREAKER (USUALLY 20 AMPS DEPENDING ON THE DC CURRENT). THE CHARGING CURRENT AMOUNT IS SHOWN ON AN AMMETER.

THERE ARE THREE LED INDICATORS: THE RED LED SHOWS THAT THE CHARGER IS ACTIVE; THE YELLOW LED BLINKS TO SHOW THAT THE EQUALIZING TIMER HAS BEEN TRIGGERED AND A GREEN LED TO SHOW THAT THE BATTERY IS FULLY CHARGED AND THE UNIT HAS TURNED ITSELF OFF.

WHEN THE CHARGER IS FIRST TURNED ON (THE BATTERY MUST BE CONNECTED) THE RED LED WILL COME ON AND THE AMMETER WILL SHOW A HIGH CHARGING CURRENT. THIS WILL TAPER DOWN AS THE BATTERY TAKES ON A CHARGE AND ITS VOLTAGE RISES. WHEN IT REACHES THE TRIGGER VOLTAGE FOR THE EQUALIZING TIMER, THE YELLOW LED WILL BLINK. AFTER **2** HOURS THE CHARGER WILL TURN OFF AND ONLY THE GREEN LED WILL BE ON.

IF THE AC POWER IS DISCONNECTED AND THEN RECONNECTED THE CYCLE WILL REPEAT AND THE YELLOW LED WILL COME BACK ON ALMOST IMMEDIATELY. IF THE BATTERY VOLTAGE DROPS TO CLOSE TO **2.0** VOLTS/CELL THE CHARGER WILL COME BACK ON AND THE YELLOW LED WILL START AS SOON AS THE BATTERY VOLTAGE GETS UP TO THE **2.46** VOLTS/CELL VALUE. THE CHARGER WILL NOT SHUT DOWN FOR ANOTHER **2** HOURS, BUT THE CURRENT IS QUITE LOW AND NO EXCESSIVE OUT-GASSING SHOULD BE TAKING PLACE.

### **WARRANTY AND SERVICE:**

IF YOU EXPERIENCE TROUBLE WITH YOUR CHARGER CALL THE FACTORY AT (818) 886-2273. THE UNIT IS IN WARRANTY FOR ONE YEAR. YOU MUST PAY THE SHIPPING BOTH WAYS. READ THE BYCAN WARRANTY DOCUMENT CAREFULLY. DO NOT TRY TO DO ANY TROUBLE SHOOTING. CALL FIRST.

### **BATTERY PROBLEMS:**

IF YOU HAVE A SULFATED BATTERY THE CHARGER WILL SHOW ONLY A LOW CHARGING CURRENT AND THE VOLTAGE TO TRIGGER THE EQUALIZING TIMER WILL BE REACHED QUICKLY. WHEN YOU SEE THIS, RESET THE FRONT PANEL SWITCH AGAIN AND TURN IT BACK ON. IT MAY TAKE A FEW CYCLES TO GET THE BATTERY TO START OPERATING PROPERLY.

IF YOU HAVE A BATTERY WITH A SHORTED CELL (NEAR ITS END OF LIFE) YOU WILL FIND THAT THE CHARGER IS UNABLE TO BRING THE VOLTAGE UP TO THE TRIGGER POINT FOR THE EQUALIZING TIMER AND START THE YELLOW LED. WHEN THIS HAPPENS THERE IS ANOTHER TIMER IN THE CHARGER THAT SHUTS IT OFF AFTER IT HAS BEEN ON FOR 16 HOURS. THIS IS TO PROTECT THE OTHER BATTERY CELLS. THE SIGN THAT THIS HAS HAPPENED IS TO FIND THE CHARGER SHUT DOWN AND ONLY THE YELLOW LED IS BLINKING. IN NORMAL OPERATIONS YOU FIND A GREEN LED WHEN IT HAS SHUT DOWN.

## WARRANTY

BYCAN warrants each new battery charger and APU for defects in material and workmanship for a period of one year from the date of shipment to the customer.

Repairs are to be made at BYCAN only. The defective unit is to be returned to BYCAN with shipping charges prepaid. If the product is returned freight collect, the delivery will be refused.

If the product is found to be defective in material or workmanship, the repair or replacement will be made by BYCAN with no charge for materials or labor. Repair or replacement will be at the discretion of BYCAN, with replacement parts characteristics equal or equivalent to the original. Labor charges other than those incurred by BYCAN are not covered by this WARRANTY. All expenses in trouble-shooting and delivering defective items to BYCAN, including shipping charges, are to be paid by the customer.

This WARRANTY does not cover rectifier diodes, which can be damaged by overloads such as reverse battery connections, which are beyond BYCAN control.

This WARRANTY does not cover any product that has been subjected to misuse, neglect or accident or operated in any way contrary to instructions. No claim of breach of WARRANTY shall be cause for cancellation of the contract or sale of the product. BYCAN assumes no responsibility for loss of time, inconvenience or other damage, consequential or otherwise, resulting from a defective product. All implied warranties are limited in duration to the one-year WARRANTY period. (Excluding the RED BARON APU which is warranted for 2 years)

BYCAN'S obligation under this WARRANTY is strictly and exclusively limited to the repair or replacement of defective parts.