

# SCHUMACHER CDA

## **INSTRUCTIONS - CDA with Yellow, Pink, Orange label.**

Congratulations on the purchase of your Schumacher CDA (Charge, Discharge, Auto Test) NiCad management system. The CDA uses the latest technology to achieve a system with all the features needed to keep your NiCad packs in top condition. CDA has been developed over a long period and is manufactured using the highest possible standards. To achieve maximum benefit from your CDA please read the full instructions carefully before use.

## **FAST INSTRUCTIONS - EASY AS 1-2-3**

Connect power supply  
Push to select C, d or A  
Connect NiCad

## **SPECIFICATIONS**

Nicad pack: - 5 to 7 cells (6V to 8.4V)  
Charge current: - 6 Amps soft pulse, 4.5 Amps average.  
Discharge current: - 6 Amps pulsed, 4.5 Amps average (heatsink is temperature controlled for safety)

## **POWER SUPPLY**

The Schumacher CDA is designed to work on a 12 Volt power supply. This can be an automobile type battery or a stabilised mains power supply that meets the following requirements: -

The voltage must be well smoothed and between 12 an 15 Volts.  
The continuous current rating **MUST** be at least 6 Amps.

## **POWER ON**

Connect Red and Black to the 12 Volt power source.  
RED to POSITIVE (+), BLACK to NEGATIVE (-).

Display will show **8.** for approx. one second.

CDA then tests: -

If a NiCad has been connected without the 12 Volt supply. Test failure displays a flashing **P** for Power. Disconnect the NiCad and connect the 12 Volt supply.

The charge FET and fuse. Test failure displays **F 1**. Replace F 1 (see fuse replacement). If the test still fails, return for repair.

The discharge FET and fuse. Test failure displays **F 2**. Replace F 2 (see fuse replacement). If the test still fails, return for repair.

If all the tests are passed the display will show **C**.

### **MODE SELECTION**

Press the button to step through **C**. for charge, **d** for discharge and **A** for test. When the required mode has been selected connecting a NiCad will start the operation.

### **CHARGE**

#### **CHARGE START**

When a NiCad is connected the **C** will slow flash. This is the soft start period, 1.5 Amps average charge current (6 Amps pulses). After 10 seconds the NiCad voltage is checked and if it is above 6 Volts the **C** will fast flash and the average charge current will increase to 4.5 Amps. If not, the charge will stop and **F** (fault) will flash until the NiCad is disconnected. If the NiCad is removed before the end of a charge **E** (error) will flash 3 times, then return to **C** mode. After a 90 second lockout period the NiCad is checked continuously for a delta peak (-60mV for 20 seconds). If detected, charge over.

The CDA is not suitable for charging NiMh batteries as they will get too hot.

If the button is pressed during charge the display will show the current state of the charge, then return to charging: -

(Example) **C t = 20 A H = 1.25 P U = 10.5**

Where Ct is the approx. charge time in minutes, AH is the amp hours put into the nicad, PU is the on charge, nicad peak voltage measured since the last button press.

N.B. Display shows **NO dAtA** if the time or Amp hours values are zero.

#### **CHARGE OVER**

The data will be continually displayed as above. At the end of every display cycle the NiCad is charged at 6 Amps for 0.1 secs. This gives a safe trickle charge of approx. 60mA. After one complete display you may remove the NiCad to return to C mode or press the button to boost charge.

#### **BOOST CHARGE**

There is no soft start and the display fast flashes **b**. The charge time and amp hour totals continue but the peak voltage value may be changed.

## DISCHARGE

### DISCHARGE START

When a NiCad is connected the display will flash **d** and the NiCad will be discharged by 6 Amp pulses (4.5 Amps average). This will continue until the NiCad voltage drops below 5.1 Volts on load. If during the discharge period the heat sink temperature exceeds 70°C the discharge rate is reduced until the temperature drops below 70°C again. If the NiCad is removed before the end of the discharge **E** (error) will flash 3 times, then return to **d** mode.

### DISCHARGE OVER

The display shows: (example) **t = 340 A H = 1.89 P F = 84.2**

N.B. Display shows **NO dAtA** if the time or Amp hours values are zero.

Where t is the 20 Amp equivalent discharge time in seconds, AH is the NiCad in Amp hours, PF is the "Punch Factor" as a percentage. This is calculated from the off load and average discharge voltages and is an indication of the Nicad impedance and condition. Remove the NiCad to return to **d** discharge mode or press the button to **CHARGE**.

### **DISCHARGE - continued.**

The standard discharge mode cuts off at an on load voltage of 5.1 and then puts a little power back into the cells so they are not stored flat. This is safe for NiCad and NiMh batteries. Holding the button down while applying the 12 volt supply will cause the cells to discharge down to 0.5 volts and stop. The decimal point after the **C** will not show. This is recommended for nicads.

## **AUTOMATIC**

When a NiCad is connected it is **charged** then automatically **discharged**. The charge data is displayed for approx. 5 minutes. If there is no data the display shows **NO dAtA** once. At the end of the discharge the data is displayed until the NiCad is removed. If the NiCad is removed before the end of automatic **E** (error) will flash 3 times, then return to **A** mode. Remove the NiCad at the end of an automatic discharge to return to **A** mode.

## FUSE REPLACEMENT

Possible causes of fuse failure are: -

F1 or F2 will fail if the 12 Volt Supply is reverse connected.

F1 will fail if a NiCad is connected and the power leads are touched together.

F2 will fail if a NiCad is reverse connected.

To replace a fuse: -

Disconnect CDA from the 12 Volt supply and NiCad.

Carefully remove the four screws on the underside of the CDA.

Slide off the black metal cover.

Replace the fuse with Schumacher part no. G647D (see below for fuse positions).

Looking into the bottom of the charger with the fuses at the top, F1 is on the left, F2 is on the right.

Replace the cover and screws. DO NOT over tighten the screws.

Connect the 12 Volt supply.

Continuous fuse failure will need the CDA to be returned for repair.

### **HINTS AND TIPS**

DO NOT connect CDA to the 240 or 120 volt mains sockets.

DO NOT use CDA on a heat sensitive surface.

DO NOT get CDA wet. Clean with a soft damp cloth.

DO keep your NiCad packs, insulation and connectors in perfect condition as this will reduce the risk of accidents and improve performance.

### **GUARANTEE AND SERVICE**

Always test your CDA on a FULLY CHARGED 12 Volt automobile type battery before returning for service. This will eliminate any possible power supply problems.

Please return your CDA direct to Schumacher Ltd for repair. You should allow up to 14 days for repair. Please give as much information as possible about the suspected cause of failure and the fault symptoms as this can lead to a quicker and cheaper repair.

NO REPAIR WORK WILL BE STARTED unless CDA is accompanied by a cheque or postal order to cover the service cost of £15 or \$25. A full refund will only be given when a repair is carried out under guarantee due to faulty components or workmanship within 90 days of purchase. Visa or Mastercard Access number, name, card address and expiry date is also ideal. Please include a contact telephone number if possible.

**PROOF OF PURCHASE IS REQUIRED FOR WARRANTY CLAIMS.**

**NO LIABILITY CAN BE ACCEPTED FOR CONSEQUENTIAL DAMAGE  
HOWSOEVER CAUSED.**