

OPERATING INSTRUCTIONS

AND

REFERENCE MANUAL

ARES-C CHARGER

ARES-C POWER SUPPLY



(P/N manual 2019 001 170)



Users manual for NA-DCDC and NA-APA

NA-DCDC:

This is the charger for the ARES-C. The box is identical to a battery box for 4 dry cells and fits to the rear of the ARES-C in the same manner.

Possibilities:

Together with the NA-APA (AC power supply) and without having a NiCd battery stick inside, the ARES-C can be powered up.

If the NA-DCDC has a NiCd battery stick inside, without being connected to the ARES-C (or with the ARES-C connected and in the OFF position), and connected to the NA-APA will result in fast charge of the NiCd cells.

Connected to the ARES-C and to the NA-APA with a NiCd battery stick discharged, the ARES-C can be powered up and simultaneously a slow charge is engaged.

Connected to the ARES-C and to the NA-APA with a NiCd battery stick fully charged, the ARES-C can be powered up but in this case the battery will be discharged until V_{min} , before slow charge starts automatically, this to prevent the "memory effect" building up in the NiCd.

Connected to the ARES-C without the NA-APA connected, will result in the same way as 4 cells battery box.

Type of cells:

One single NiCd battery. stick of 4Ah can fit inside the NA-DCDC, see NA-ACC or four separated NiCd cells (type "D"). Pay attention if separated cells are used that micro interruptions could occur when shaking the ARES-C (no separations for individual cells, see also inside battery box four cells).

Charging cells:

If a NiCd stick is fitted inside the NA-DCDC box connected to the NA-APA, the charge starts automatically (red and green led ON). If the ARES-C is switched OFF or if the NA-DCDC box is not fitted to the ARES-C, the batteries will be fast charged. If the ARES-C is switched ON, the charge rate will be slow.

In this case, charging also starts automatically when the NA-DCDC with its fully charged battery stick is used together with the ARES-C. The battery will be first discharged through the ARES-C until a minimum voltage detection and slow charge will start automatically. Forcing charge is also possible by pushing the white button next to the red led. In this case the battery will not be preciously discharged.

Charge time:

Fast charge; the NA-APA delivers approx. 1.3 A to the cells. In case of a 4 Ah stick, it will take approx. 3 hours. If separated cells of 4.9 Ah are used, it will take approx. 5 hours.

Slow charge; the NA-APA delivers approx. 0.3 A to the cells and 1 A to the ARES-C. In this case, the charge time for a 4 Ah stick would take approx. 13 hours.

The Fast or Slow charge stops at the moment that the temperature difference between the cells and the external temperature reaches 10°C.

Indicators:

Two led's are situated on the side of the box next to the LEMO connector. A green led and a red led. The green led indicates the presence of the external DC voltage delivered by the NA-APA. The red led together with the green led gives the status of the internal NiCd battery.

EXT. DC PRESENCE	NiCd BATT. PRESENCE	GREEN LED STATUS	RED LED STATUS	
Yes	Yes	ON	ON	Charging
Yes	Yes	ON	OFF	No charge
Yes	No	OFF	OFF	No charge
No	No	OFF	OFF	No charge
No	Yes	OFF	OFF	Fully charged
No	Yes	OFF	ON	Needs charge

The last case appears if a recently fully charged battery was removed and put back inside the NA-DCDC. In this situation the red led will stay on even if no external DC is supplied. If in this situation, the NA-APA is connected again to the NA-DCDC, the battery will complete his charge without being previously discharged (memory effect danger).

External DC voltage:

The NA-DCDC must be powered with an external DC voltage of 12 V (1A). This external supply must have min. 11V and max. 18V. It must also support a current of 3A during 50 ms without going below 11V during start up. Max. residual hum (50/60 Hz) of 1Vpp.

The pin close to the red dot on the LEMO connector is the positive connection.

Output voltage for the ARES-C:

The output voltage without a NiCd stick inside is approx. 9 Vdc.

The indicator on the ARES-C will show approx. 1.1V/cell for the voltage level as it will interpret this level as that which corresponds to an 8 cell batt. box.

Important notes:

Basically, the charger starts charging the battery when a low voltage is detected and stops charging when the temperature difference between the ambient temperature and the NiCd temperature becomes +10°C.

If a NiCd battery just fully charged is taken out of the NA-DCDC box., wait a few minutes before fitting an other stick to charge, this to give the internal temperature detector the time to cool.

If a NiCd battery just fully charged is taken out of the NA-DCDC box and the empty NA-DCDC is directly used for powering the ARES-C, wait a few minutes before switching on the ARES-C, this to give the internal temperature detector the time to cool.

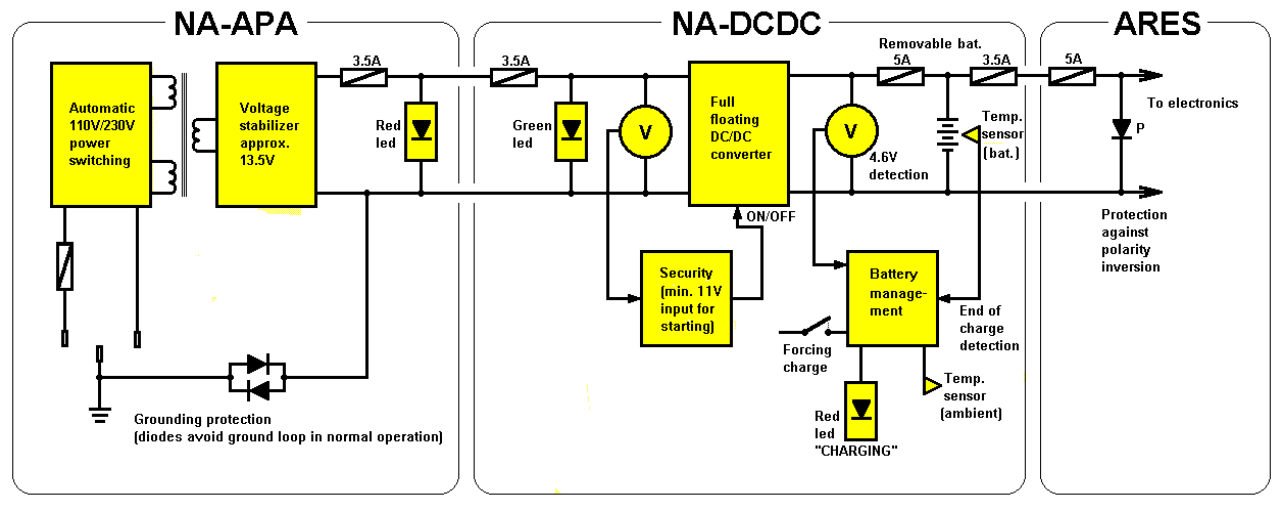
If a fully discharged NiCd stick is fitted in the NA-DCDC for charging and if the NA-DCDC is also used simultaneously to power the ARES-C, wait a few minutes before switching on the ARES-C because the output voltage of the NA-DCDC must be 4V minimum. Remember that a NiCd stick of 4 cells may not drop below 4Vdc, this to guarantee a longer life.

Protection:

A fuse for the protection of the DC input is soldered on the pcb 9119 360 000 (F1 = 3.5 A)

A fuse for the protection of the DC output is soldered on the pcb 9119 360 000 (F2 = 5 A).

Block schematic of a complete setup.



NA-APA

This item is the AC power supply for the NA-DCDC. The input voltage may be 110 Vac or 230 Vac. Switching between 110 and 230 is automatic. The voltage range for 110 goes from min. 95 Vac to max. 145V ac. The voltage range for 230 goes from min. 190 Vac to max. 260 Vac. The output voltage is 12 Vdc. A led indicates the presence of dc output voltage.

Protection:

A fuse for the protection of the AC input is fitted inside the NA-APA on the rear side of the AC input connector. (1.6 A 5x20 T).

A pico fuse for the protection of the output is soldered on the pcb 9119 366 000 (F1 = 3.5 A).

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