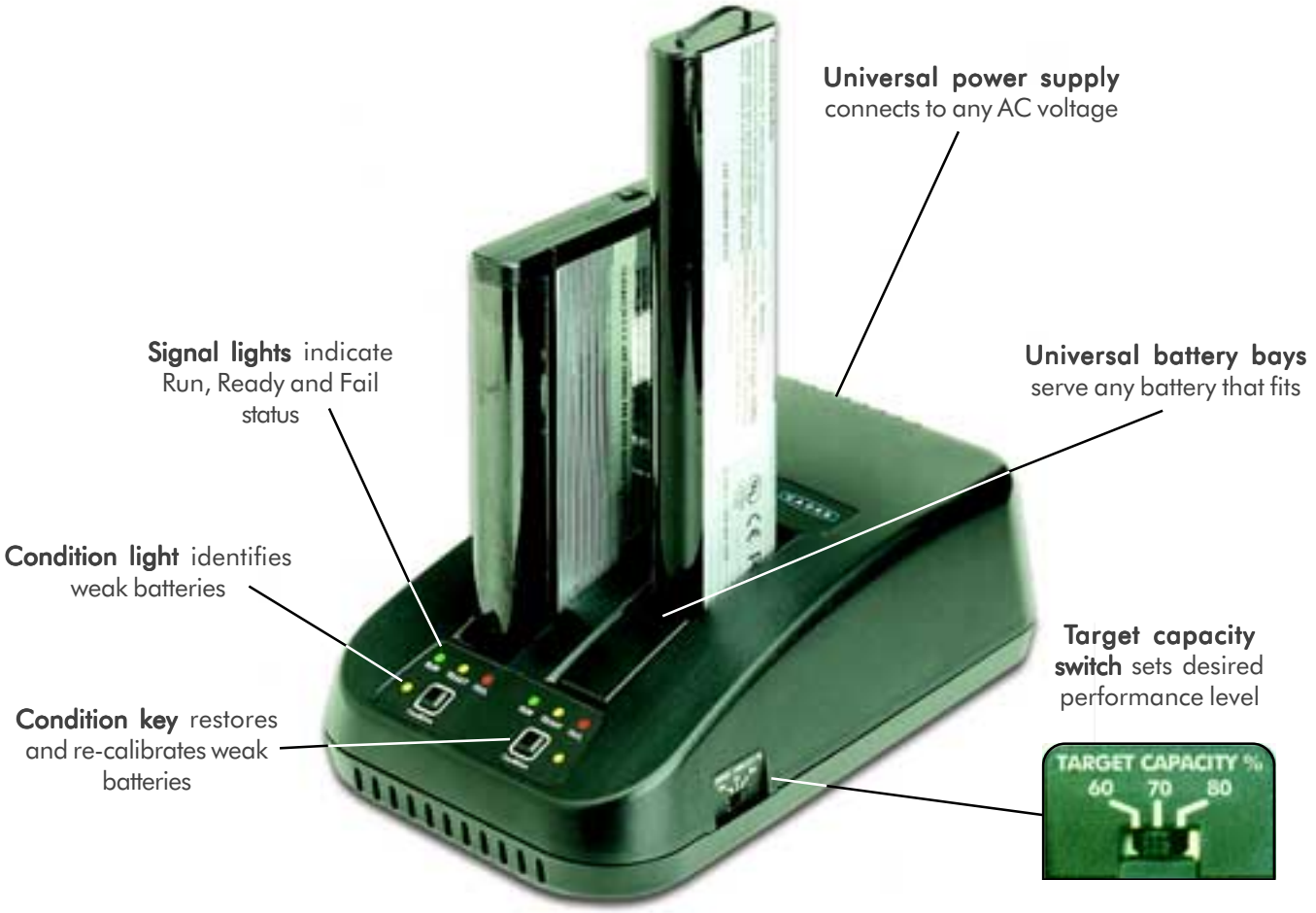
SMart Two+™

CHARGER - CONDITIONER

A charger-conditioner that checks battery health and restores performance



How does it work?

The SMart Two+™ reads the data stored in the SMBus battery, calculates the previous power delivered and compares it with the charger's *target capacity* setting. Adjustable to 60%, 70% or 80%, the *target capacity* acts as quality control system and identifies batteries that do not meet performance standards.

When a battery gets weak and falls below target, the SMart Two+ triggers the *condition* light after inserting the battery. The user is prompted to press the *condition* button to cycle the battery and calibrate the internal fuel gauge. If the battery does not recover, the *Fail* light illuminates.

A battery with sufficient capacity is fast-charged with the *Reverse Load Charge* method. Full-charge is indicated with a solid *Ready* light, indicating the battery is certified to perform and ready for use.

SPECIFICATIONS

DESCRIPTION

Two-bay fast charger for simultaneous service of two batteries; supports SMBus Level 3 and non-intelligent (dumb) batteries; evaluates battery state-of-health by comparing performance with the target capacity setting which can be set to 60%, 70% and 80% with a slide-switch. Failing to meet target, the user is prompted to condition the battery by pressing the *condition* button. Condition consists of charge/discharge/charge and is most effective on NiCd and NiMH batteries. If the battery does not recover, a fail light illuminates.

Battery state-of-health applies only to batteries with SMBus. Dumb batteries can also be charged but no state-of-health status is provided and full-charge is indicated with a flashing *Ready* light. The charger accommodates any battery that fits the connector.

BATTERIES SUPPORTED

210, 202, 201, 36, 35, 30, 17, 15 or equivalent

Smart Battery	Li-ion (14.4V max. nominal); NiCd/NiMH (12V max.)
Dumb Battery	NiCd/NiMH (7.2V- 12V)

CHARGING

Automatic battery recognition; applies *Reverse Load Charge*, a brief discharge pulse between the charge pulses to prolong battery life and improve performance (NiCd and NiMH only)

Charge rate	*Smart Battery*	controlled by battery, up to 2.5A;
	Dumb Battery	1.8A fixed
Charge termination	*Smart Battery*	controlled by battery or time-out timer
	Dumb Battery	dT/dt; 1 ° C min. rise or neg. slope
Charge time	2.5 - 4h for two batteries (depending on battery type)	

DISCHARGING

If target capacity is not met, charger applies charge/discharge/charge cycle to restore nickel-based batteries and re-calibrate fuel gauge.

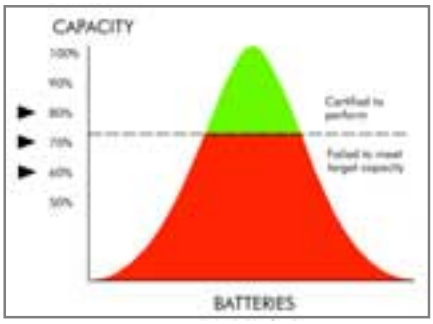
TARGET CAPACITY SELECTOR

User-selectable to 60%, 70% and 80% with slide-switch

POWER SUPPLY

60 watts continuous, intelligent power management adjusts current demand to prevent overload.
Charge time may be longer with two large batteries

Target Capacity Bell-Curve



*The **Target Capacity Selector** passes batteries based on performance. A high target setting yields better performing batteries; a low setting accepts a larger volume at the expense of wider performance variations.*

SIGNAL INDICATORS

Yellow RUN	Flashing	Initializing battery (only with SMBus batteries)
	ON	Charging
Amber CONDITION	Flashing	Conditioning required (manually activated)
	ON	Discharging to condition and re-calibrate battery
Green READY	Flashing	Charge completed (no performance check taken)
	ON	Capacity meets target (performance check passed)
Red FAIL	Flashing	Charger fault or over-temperature
	ON	Capacity below target after condition, or other faults

ELECTRICAL

Power requirements	90-250 VAC, 47-63 Hz, 65 watts maximum
Operating temperature	Recommended +5 to +30 ° C; 40 ° maximum
Temperature Protection	Over-temperature control on battery and circuit; halts service if hot
Power Supply	Built-in; detachable North American AC cord included; other AC cords available on request

PHYSICAL

W-D-H 140 mm, 224 mm, 65 mm [5.5”, 8.8”, 2.5”]

APPROVALS

Products tested and approved by ITS to comply with CSA\UL\CE standards.

Cadex Electronics Inc. has, to the best of its ability, verified the proper operation of the charger with regards to the above stated battery(ies). Cadex Electronics Inc. is not responsible in any way for changes, additions or revisions which the battery manufactures may make to their products subsequent to the testing and approval of the battery pack at time of manufacturing of the charging device.

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