

Revolutionary OptiMate PRO 4

4-battery diagnostic charger and desulphater, correctly
and precisely charges ALL TYPES of 12 Volt batteries.



Model PRO 4x4A :

4 Amps constant current for each of the 4 batteries.

Model PRO 4-S :

Select 1,2 or 3 or 5 Amps constant current per battery.

OptiMate PRO 4

Unique features :

- Automatically delivers the correct first (activation) charge, vital to ensure the adequate service life of new dry-shipped AGM* MF batteries.
- Deep discharged batteries are automatically identified & recovered from sulphation.
- Each individual AGM* battery is automatically charged to a terminating charge voltage that is appropriate for its particular technical characteristics.
- **6-step-Program :**
 1. Prequalification.
 2. Sulphation diagnosis and recovery.
 3. Bulk Charge.
 4. Absorption (full charge assurance).
 5. Pause for self-discharge check.
 6. Float charge.
- 3 selectable Programs for MF - Maintenance-Free AGM*
STD - Standard (filler cap)
DC - GEL & Deep Cycle
- Automatic thermal adjustment of the voltage settings.
- Separate battery leads sense the voltage & deliver charge current for optimum precision.
- Optional wall bracket.
- Detachable, easily replaceable battery clips with silicone leads.



* AGM = Powersports vehicle batteries constructed with Absorbent Glass Mat plate separators.

OptiMate PRO 4

Specifications

The **OptiMate PRO 4** is an unique automatic 6-stage charger incorporating diagnostic checks and an automatic special recovery mode for deep-discharged (sulphated) batteries. Simultaneously and independently, up to 4 different 12 Volt batteries are perfectly charged and assessed by way of 3 selectable programs :

1 STD for motorcycle batteries with filler caps as well as automobile batteries whether sealed or with filler caps. STD is the automatic (default) selection.

2 MF, for sealed (maintenance free) powersports batteries constructed with Absorbent Glass Mat ("AGM") plate separators, whether 'dry-delivered' (with separate acid pack) or "WET" (factory-filled), of the types made by Yuasa, GS Battery, their after-market equivalents, & by East Penn Mfg (Deka & H-D). The MF programme ensures a fast activation (or 'commissioning') charge of all popular dry-delivered AGM 'MF' batteries such as Yuasa's YTX types using the essential specifically correct algorithm, or a fast recharge of these, as well as newer models such as the GT12B-4 and YTX series and similar. It is **ESSENTIAL** to ensure that AGM MF batteries are fully charged before installation.

3 DC for starter batteries with gel electrolyte (e.g. from

Exide-BMW, Panasonic and others), Hawker's Odyssey and Genesis (actually AGM), and deep cycle batteries used for standby or motive power (trolling motors, golf trolleys, etc.).

Charging voltage settings are automatically adjusted through a built-in ambient temperature sensor.

A built-in cooling fan keeps the device cool, thereby also avoiding unwanted influence on the built-in thermal ambient sensor. This also helps to avoid condensation of acidic vapours within the device.

On 2 charging stations of the **OptiMate PRO 4-S**, batteries can be charged (by selection) with 1,2A or 3A or 5A during

the main constant current bulk charge stage, while those connected to the other two charging stations can be charged with 1,2A or 3A.

The **PRO 4x4A** model delivers a constant current 4 Amps charge to each connected battery.

The three selectable programs ensure the optimal algorithm for all of today's many different types of power sports vehicle battery, from scooters to heavy motorcycles, while the PRO 4 is perfect also for the batteries of light 4-wheel vehicles and those typically used for electric trolling motors, golf trolleys & battery-powered industrial machinery.

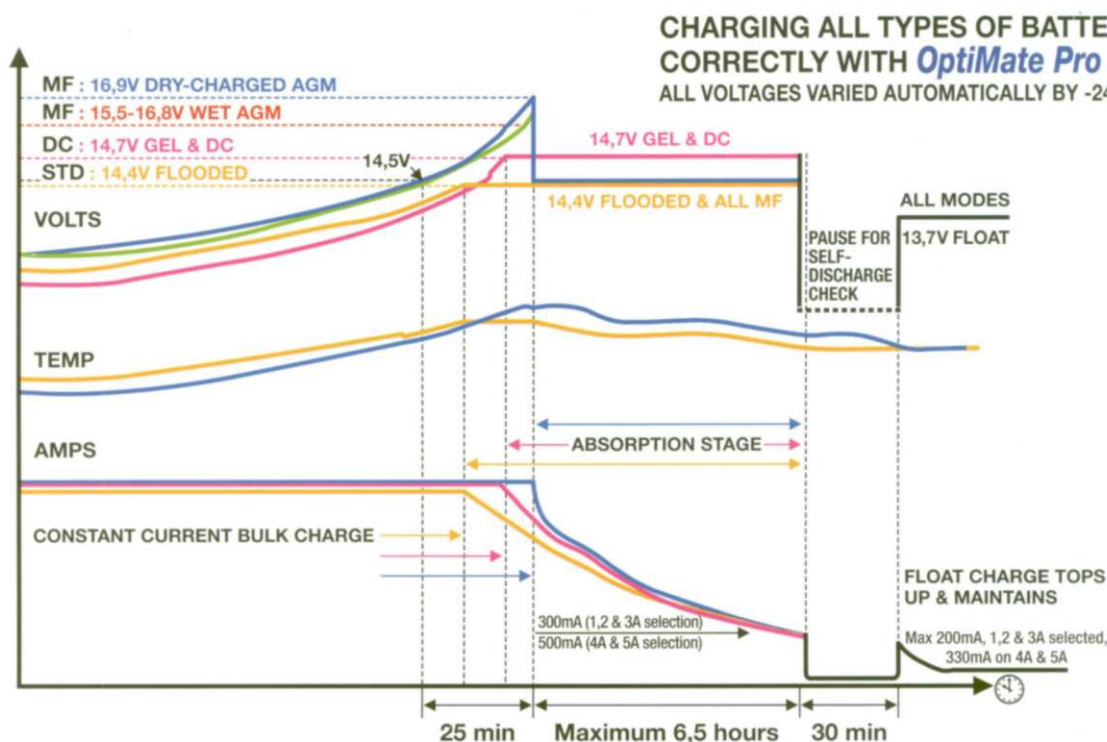


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charging algorithms

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1 The first stage (not shown above) is the identification of and recovery of deep-discharged (sulphated) batteries using high voltage (22V max) & current of up to 200 mA (1,2A & 3A charge current selections) or up to 330 mA (5A current selection & PRO 4x4A). This period is limited to 4 hours.

2 At some stage within 4 hours (if recovery is successful), or immediately for batteries not requiring desulphation, the circuit delivers the selected constant current until the battery voltage, monitored by a dedicated sensing cable independent of the current-carrying cable, has risen to 14,4V (STD), or 14,7V (DC selection) or, on MF selection, to a voltage determined by the individual battery parameters, between ± 15 and 16,9V.

3 The absorption stage follows, the voltage being held at 14,4V (STD & MF) or 14,7V (DC) until the current drawn by the battery has fallen to 300mA (1,2A & 3A charge current selections) or 500mA (5A current selection & PRO 4x4A), at which stage the battery will be close to full charge. The duration of the absorption stage is limited by an automatic timer to about 6,5 hours.

4 Delivery of current is arrested for about 30 minutes to allow the circuit to check for self-discharge tendencies symptomatic of an internal short in one or more battery cells. Should the battery voltage during this period indicate an inability to retain a workable percentage of full power, the red LED (weak battery) will indicate on the control panel for that

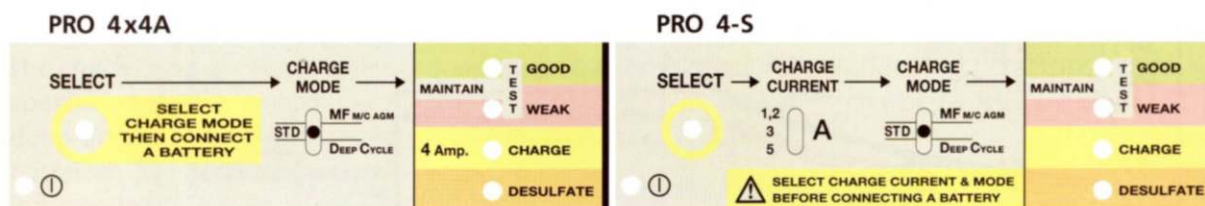
charging station. If the battery seems to retain adequate voltage, the green LED (O.K. battery) will indicate. The threshold voltage levels for each mode selection are 12,2V (for STD & DC) and 12,6V (for MF).

5 The circuit recommences now in float charge mode, offering the battery current of up to 200 mA (1,2A & 3A charge current selections) or up to 330 mA (5A current selection & PRO 4x4A), as needed to sustain it against any imposed load, but at a voltage limited to 13,7V (for all modes, STD, DC & MF).

6 All the above-mentioned voltage settings are the values at 20°C . The settings are automatically adjusted by means of a built-in thermal sensor by $-24\text{mV}/^{\circ}\text{C}$ deviation from 20°C .

OptiMate PRO 4

Controls, LED indications
and other technical data.



Physical controls :

One central power switch. Lever switches to select the charge current & charge mode.

Thermal controls :

Output voltage settings are automatically varied by -24mV /°C deviation from 20°C according to the sensed ambient temperature. Built-in cooling fan. Fan blockage will cause the control fuse to blow which annuls charging output.

Timer controls :

Built-in timer circuits limit the high voltage recovery stage to 4 hours and the absorption stage to about 6,5 hours.

Circuit initiation :

The charging circuit initiates automatically when correct battery connections are made to a battery retaining >2 Vdc, and annuls on disconnection from the battery.

LED indications for each output:

- 1) Power ON (LED at left corner of each side).
- 2) A "SELECT" LED flashes to draw the user's attention to the need to select correct charge current and mode before connecting the battery to the charging circuit.
- 3) Charging status (Recovery,

Charging, Battery Good, Battery Weak).

Protections :

- 1) Mains input fused.
- 2) Thermally fused transformer.
- 3) Cooling fan blockage disables charging circuits.
- 4) The 2 PCBs bearing the 4 output circuits are each protected by a power fuse (16A automotive) and control fuse (2A) against catastrophic failure.
- 5) Fuseless protections against output short-circuit or wrong connections.
- 6) Output spark suppression.

Enclosure :

ABS rated 100°C.
Class II construction.

Output cables :

Dual core positive & negative 2,5mm² x SPT-2, 16 Awg (1,3mm²), per battery clamp. One core senses voltage, the other delivers current.

Output cable terminations :

Output cables terminate in APP (Anderson Power Products) 'Powerpole' red/black connectors, which besides ensuring excellent contact quality with the detachable & renewable battery clips sets (optional with the PRO 4x4A), also allow

direct connection to the many golf trolley batteries equipped with the corresponding APP connectors.

For automotive and bench charging applications, the battery clips sets are simply plugged into the APP terminations.

Transformer : Toroidal.

Cooling fan : Computer type with sealed ball-bearings. Fan operation automatically governed according to the total charge current load.

Input: Selectable for 100Vac, 110-120Vac or 220-240 Vac, (max. 500 watts).

Output : Maximum 22V temporarily, stage (1), otherwise 16A at 16,9V max.

Wall-mounting bracket :

Optional, nickel-plated steel.

Warranty : 2 years from date of sale to user, damaged or deteriorated connection components and/or user malfeasance excluded.

