

User Manual

1. Safety Precautions

CAUTION: Shortening a rechargeable battery or watt meter connected to a rechargeable battery can supply huge currents, causing fire explosions, personal injury, and damage to equipment. Ensure that all wiring and connection are rated to handle the input or output current, and are properly assembled for each application.

1.1 Input Voltage & Current Handling Limitations

The watt meter is designed to be safe in systems using less than 60V and carrying currents up to 200A.

CAUTION: Exceeding these limits will damage the watt meter and may cause personal injury.

2. Wiring, Connections & Applying Power

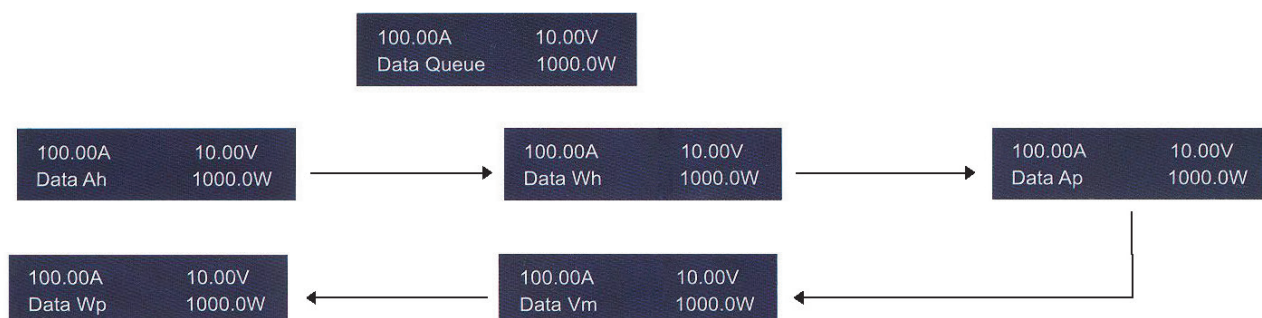
WARNING: Loose connections can cause component damage between meter and load. The red source wire goes to positive (+) battery or other device terminals, and black to negativ (-).

- User is responsible for attaching connectors rated to handle the voltage and current expected in user's application.
- Qualified individuals should make sure any high current connections do not have exposed wires or connectors that may short circuit before connecting a battery or power source to the watt meter.
- Only use female connectors on batteries.
- By connecting an auxiliary battery (e.g. a receiver battery) of 4.8-60V to the source 3-pin connector, the watt mater can measure down to 0V.

3. Display Screen

3.1 Startup Screen

Each time power is applied across the watt meter using leads (or auxiliary power connector) a startup screen with logo is briefly displayed showing the peaks at minimum, Ah & Wh are reset to 0, then the display changes to the measurement screen.





3.2 Measurement Screen

The measurement screen continuously displays amps, volts and watts. All other measured values are presented sequentially, every two seconds, in the data-queue position of the display. Date values are identified by their units (Ah, Wh, Ap.Vm, Wp). All measurement screen values are updated every 0.4 seconds.

The measurement screen layout: amps, volts, and watts and data-queue.
The data-queue shows: Ah, Wh, Ap.Vm, Wp in sequence.

3.2.1 (Current) Amps & Amps A, Ap

Only current from source to load is measured. Amps value displayed is the average current over the last screen update interval. Peak Amps value (AP) display is the maximum current drawn from the load side, since the meter's startup. Peaks lasting only a fraction of a second, can be captured. Supplying the auxiliary power with a voltage greater than the meter is measuring removes the meter's operation current from measurements. To reduce meter heating, measure currents over 65 Amps at a reduced time and consider using a connector which can handle a large current.

3.2.2 (Voltage) Voltage & Minimum Volts, V, Vm

The display volts value is the average voltage over the last screen update interval. The displayed minimum volts value (Vm) is the minimum voltage (or "sag") measured on the source side, since the startup screen ended. The volts value is measured on the source side.

3.2.3 (Energy) Watt-hours Wh

The displayed value is the total energy delivered in Watt-hours since the startup screen ended. It is measured on the load side, for accurate results be careful not to interrupt the source connection to the watt meter during an energy measurement.

3.2.4 (Charge) Amp-hours Ah

The displayed value is the total charge in Amp-hours (x1000=mAh) delivered since the startup screen ended. It is measured on the load side. For accurate results, be careful not to interrupt the source connection to the watt meter during a charge measurement.

3.2.5 (Power) Watts & Peak Watts, W, Wp

The displayed value is the average power delivered in watts (=Volts x Amps) over the last screen update interval. The displayed peak watts value (Wp) is the maximum power drawn on the load side, since the startup screen ended. Watt value is measured on the load side.

4. Busing Watt Meter

You can think of the Watt Meter as a set of jumper wires, connect it in the same way and you can assure what jumper wires are connected to. Like jumper wires, the watt meter is essentially a direct connection between same coloured source and load wires, i.e. both the source and load leads are electrically "hot" when a battery is connected to either side, current flows from source to load. Make sure connections are secure to prevent component damage!

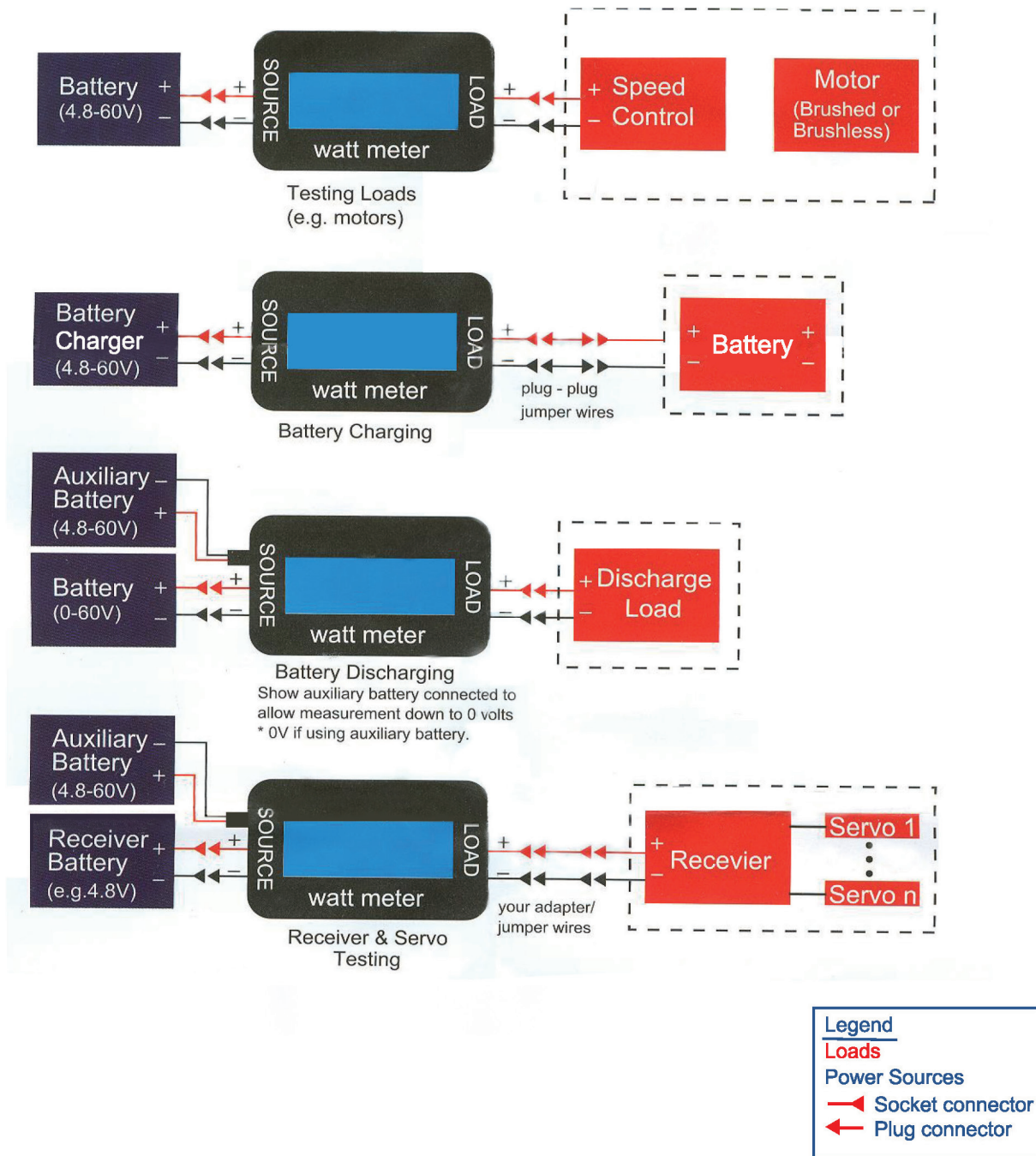
Example Use #1: Battery on source side, motor speed controller (ESC) and motor on load side. With the ESC on, the watt meter shows the current into the motor, voltage and power at the battery and accumulates the Ah and Wh while the motor is running.



Example Use #2: With a battery charger on the source side and battery pack on the load side. The watt meter shows the charging current into the battery. The voltage and charging power at the battery and accumulates the charge (Ah) and energy (Wh) into the battery.

Functions Watt Meter and Power Analyzer

Measures eight parameters key to electric power safety and performance. Use it to: Prevent peak currents damaging battery, motor control motors, wiring and connectors. Verify sufficient operation under load, set cut off voltage, check battery capacity and health, balance battery cells, confirm proper battery charger operation. Detect receivers and actual operating current so as to make sure whether an UBEC is needed.



Specifications

Reads: 6V - 60V (0V - 60V with optional auxiliary battery).

Measures:

Current - 0-200A @ 0.01A Resolution

Voltage - 0-60VDC @ 0.01V Resolution

Power - 0-6554W @ 0.1W Resolution

Watt Hours - 0-650kWh @ 0.1Wh Resolution

Ampere Hours - 0-6554Ah @ 0.01Ah Resolution

Cable: 8AWG

Display: 16 x 2 backlit LCD Display

Dimensions: 110(W) x 45(H) x 26(D)mm (Excluding Cables)

Net Weight: 150g

Operating Instructions

1. Connection - the watt meter must be connected in line between the supply and the load.
Ensure polarity is correct when connecting to your system.
2. Once connected your meter will light up and display information almost instantly. The meter resets once disconnected.
3. The meter can be connected in two ways see the diagram below showing connection of the meter to monitor charge and discharge of devices.

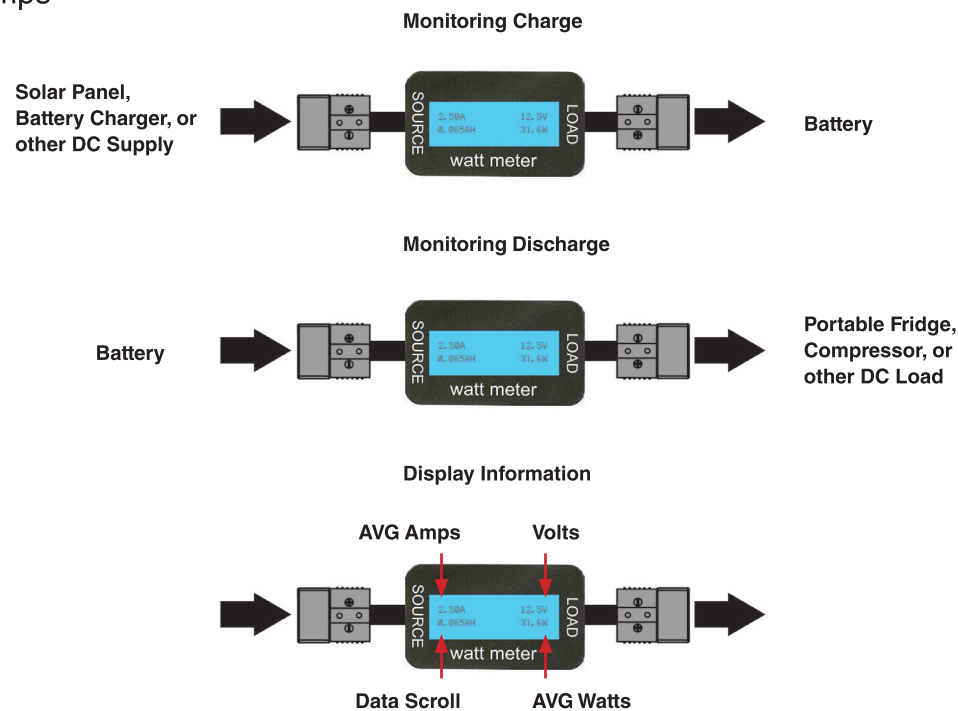
Ohms Law Calculations

The meter performs these calculations in real time display:

Watts = Amps x Volts

Amps = Watts / Volts

Volts = Watts / Amps



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