Quick User Guide — Auto Master BMS Monitor

One-page quick start for the assembled PCB

What it does
Shows per-cell voltages, pack voltage, temperature and pack current on a local web dashboard. Reads the BMS via CAN (MCP2515). If CAN is not detected the page shows simulated values and a clear notice.

No wiring needed
Your PCB is assembled — no user wiring required.

How to use (2 minutes)

1. Power on the PCB (use the supply specified for the product).
2. On your phone or laptop, join the Wi-Fi network:
   `AutoMaster_AP` Password: `12345678`
3. Open a web browser and go to:
   `http://192.168.4.1`
4. The dashboard appears. You can:
   - View each cell voltage, total/average, maxmin spread, and temperature.
   - Adjust the number of cells shown (for 8, 10, 16, 24, etc.).
   - Set the pack current (amps) from the UI — the value is saved and sent to the BMS when supported.

Programming the PCB (FTDI / UART)
Your board includes a UART header and RESET / BOOT buttons to program the ESP8266 using a standard FTDI/USB-serial adapter. Follow these simple steps.

1. Use a **3.3V FTDI adapter** (NOT 5V). Typical adapters are labeled 3V3 or 3.3V.
2. Connect the FTDI to the PCB UART header:
   - FTDI `TX` → PCB `RX`
   - FTDI `RX` → PCB `TX`
   - FTDI `GND` → PCB `GND`
   - FTDI `3V3` → PCB `VCC` (only if you want FTDI to power the board)

   Tip: If you power the board from an external supply, do NOT connect FTDI 3V3 to VCC — just connect TX/RX/GND.
3. Open Arduino IDE (or your flashing tool):

- Board: choose the ESP8266 board you use (e.g., ”Generic ESP8266 Module” or your board definition).
- Port: select the COM/tty port of the FTDI adapter.
- Baud for upload: usually **115200** (IDE handles this automatically).

4. Enter bootloader (programming) mode using the buttons on the PCB:
   a. Press and **hold** the **BOOT (GPIO0)** button.
   b. While holding BOOT, press and release the **RESET** button.
   c. Release BOOT only after you pressed RESET.
   d. Now the board is in programming mode — click **Upload** in the IDE.

   (If your FTDI supports DTR/RTS auto-reset, you can use automatic reset; manual buttons always work.)

5. After upload completes, press RESET to restart the firmware normally.

Visual cues on the board and software

- **Red banner** on web UI: “Original CAN hardware not detected — showing simulated values.” → means BMS CAN frames not arriving.
- Status text on the dashboard: `CAN` = live data, `sim` = simulated data.

Basic troubleshooting (non-technical)

- **No Wi-Fi network visible**: Reboot the PCB (power off → on). Wait 20 seconds and look for `AutoMaster_AP`.
- **Webpage won’t load**: Ensure you are connected to `AutoMaster_AP` and open `http://192.168.4.1`
- **Always shows simulated values**: The board is running but not receiving CAN from the BMS. Contact support and report: “Dashboard shows simulated values (red banner).”
- **Programming fails to connect**: Verify FTDI wiring (TXRX, GND common). Ensure FTDI is set to 3.3V. Use BOOT + RESET sequence described above.