

48V 105Ah Lithium Battery — Owner's Guide

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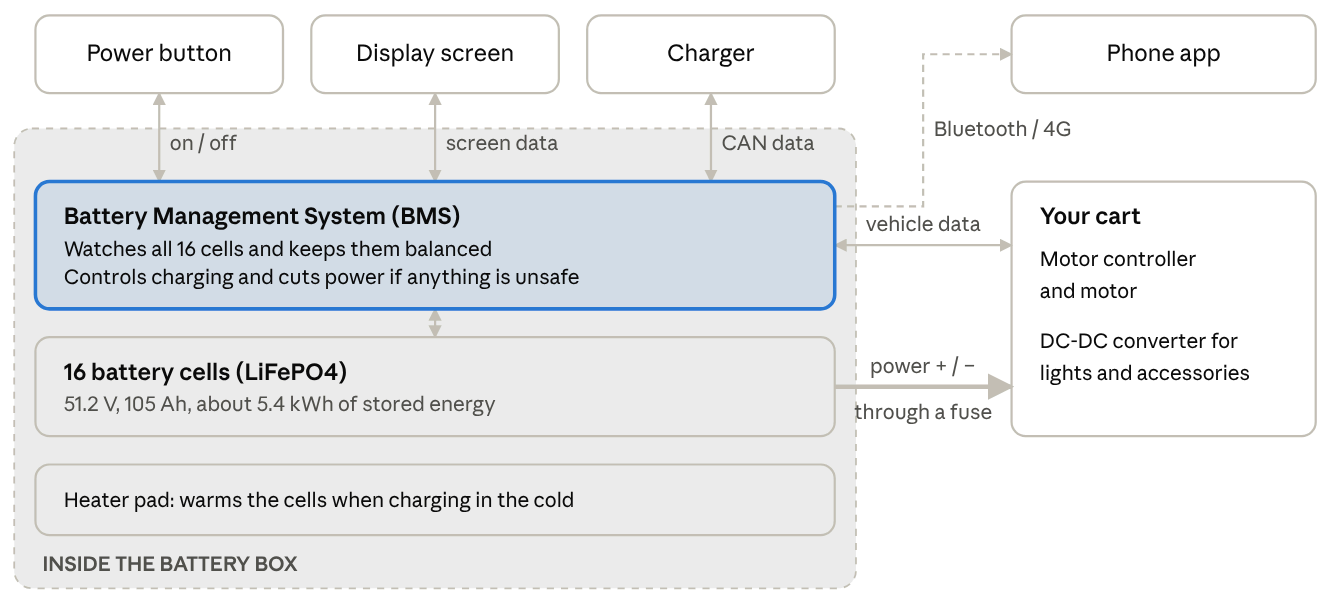
At a glance

This is a 48-volt lithium battery (LiFePO₄, lithium iron phosphate) that replaces the lead-acid batteries in an electric golf cart or low-speed vehicle. One sealed, waterproof box replaces a whole bank of heavy, watered batteries.

What you get	Number	What it means for you
Voltage	51.2 V (sold as "48 V")	Works with 48 V cart systems
Capacity	105 Ah (about 5.4 kWh)	The size of the "fuel tank"
Lifespan	4,000 full charges	Still holds 80% of its capacity after that, at normal temperatures
Weight	49 kg (108 lb)	Roughly half to a third of a lead-acid set
Size	490 × 345 × 247 mm (19.3 × 13.6 × 9.7 in)	See the drawings under Installation
Water protection	IP67	Dust-tight; survives a short dunk in water
Charge time	About 4–5 hours (empty to full, standard charger)	Plug in overnight and you are set

Inside the box are 16 battery cells and a built-in computer called the **BMS** (Battery Management System). The BMS watches every cell, balances them, and shuts the battery off before anything can be damaged. A color touch screen shows the charge level, and a phone app shows the same information over Bluetooth or cellular.

The BMS sits between the cells and everything else



System overview · redrawn from the factory diagram

Everything goes through the BMS: the charger, screen and power button all talk to it, and it decides when power can flow to your cart.

Full specifications

Every number from the factory sheet, with a plain-English note.

Battery basics

Spec	Value	In plain English
Model	4232T-48V105Ah	Use this number when ordering parts or asking for support
Cell type	LiFePO4, 3.2 V / 105 Ah cells (EVE brand)	The safest, longest-lasting lithium chemistry
Cell layout	16 cells in a row (16S1P)	$16 \times 3.2 \text{ V} = 51.2 \text{ V}$
Nominal voltage	51.2 V	Its "resting" voltage
Capacity	105 Ah	How much energy it stores

Spec	Value	In plain English
Full-charge voltage	58.4 V	The battery stops charging here
Empty voltage	40.0 V	The battery cuts power here to protect itself
Best charge range to use	5% - 95%	Avoid running it to 0%
Cycle life	4,000 cycles at 77°F (25°C); 2,000 cycles at 113°F (45°C)	Heat shortens battery life
Internal resistance	1.8 mΩ or less	Low = less wasted heat, more punch

Power limits

Spec	Value	In plain English
Normal charging current	25 A	What the standard charger delivers
Maximum charging current	50 A	Never use a charger above this
Regenerative braking current	Up to 100 A	Energy put back in when braking or going downhill
Normal driving current	50 A	Cruising on flat ground
Maximum continuous driving current	100 A	Steady hard driving
Peak driving current	300 A for 10 seconds	Hill climbs and fast starts (needs at least 30% charge)
Short-circuit cut-off	880 A	Emergency shut-off

Physical

Spec	Value	In plain English
Size (L × W × H)	490 × 345 × 246.5 mm	19.3 × 13.6 × 9.7 inches
Weight	49 kg	108 lb — a two-person lift

Spec	Value	In plain English
Case finish	Matte black textured plastic coating	
Water/dust rating	IP67	Sealed against dust; survives brief submersion
Power switch	Lighted push button	Press to turn on and off
Cell balancing	Passive, starts at 3.40 V per cell, 120 mA	Keeps all 16 cells evenly charged on its own
Cold-weather heater	Heats the cells while charging	Lets it charge safely in the cold

Temperature and storage

All charging, driving and storage temperature limits are in the chart under Temperature limits below.

Everyday use: on, off, charging and driving

Turning the battery on

1. Make sure the cart's key is off and your foot is off the brake and pedal.
2. Press and hold the lighted power button on the battery (or the button on the display) for **1 second**, then let go.
3. Wait for the screen to come on, then turn the cart key on.

If you press the brake or turn the key while the battery is starting up, the battery may refuse to start. Turn everything off and try again.

Turning the battery off

1. Turn the cart key off.
2. Press and hold the power button for **3 seconds**, then let go.

The battery also turns itself off when it sits unused: after **15 days** if it is above 20% charge, or after **3 days** if it is below 20%. Charge it soon after each use so it never sits nearly empty.

Charging

1. Park the cart somewhere dry, between 14°F and 131°F (−10°C and 55°C).

2. Turn the battery **on**. It will not charge while it is off, because the charger has to "talk" to the battery first.
3. Plug in the matching charger. The battery tells the charger how much power to send.
4. Charging stops on its own when the battery is full. Unplug within 12 hours.

Only use the charger that came with the cart or one the dealer recommends. The standard setup charges at 25 A; never exceed 50 A or 58.4 V.

A full charge from empty takes about 4 to 5 hours on the standard 25 A charger. Topping up from half takes about 2 to 3 hours.

Driving and braking

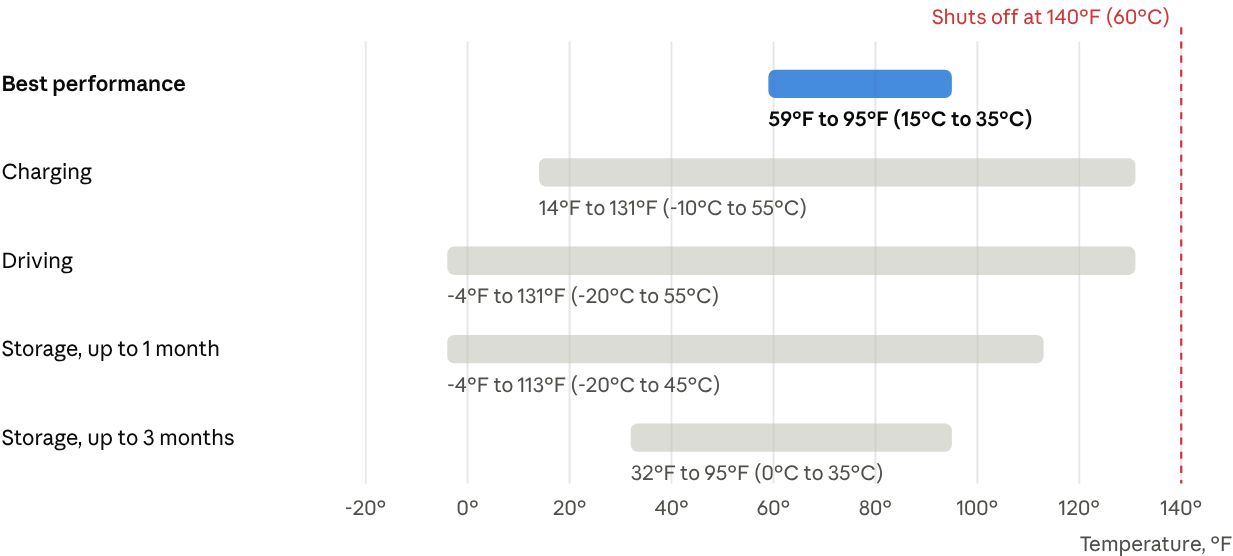
- Normal driving draws about 50 A. Hard climbs can briefly draw up to 300 A.
- If you pull more than 250 A for 30 seconds, or more than 300 A for 10 seconds, the battery pauses power to protect itself. It restarts on its own about 10 seconds later.
- When you brake or go downhill, the motor sends power back into the battery (regenerative braking). If the battery is already full, it cannot take that power back, so avoid long downhill runs right after a full charge.
- Recharge within **24 hours** of running the battery empty. A battery left completely dead can be ruined.

Temperature limits

Heat is the biggest enemy of battery life: at 113°F (45°C) the battery lasts about 2,000 charges instead of 4,000.

Charge between 14°F and 131°F; it works best from 59°F to 95°F

Safe temperature range for each activity, °F (°C)



Factory specification sheet, sections 2.1 and 2.2

Below freezing, the built-in heater warms the cells before charging, so charging may start slowly on cold mornings. Humidity should stay between 10% and 90%.

Built-in protection and warning beeps

The battery's BMS shuts power off automatically when something is unsafe, then turns it back on once the problem clears. You do not need to do anything except fix the cause.

Protection	Shuts off when...	Turns back on when...
Overcharge	Pack reaches 58.4 V, or any cell reaches 3.65 V (for 2 seconds)	Cell drops back to 3.45 V
Over-discharge (empty)	Pack falls to 40.0 V, or any cell to 2.5 V (for 10 seconds)	Cell recovers to 2.8 V — recharge it
Charging too fast	Charge current over 100 A for 10 seconds	Current drops
Drawing too much power, level 1	Over 250 A for 30 seconds	About 10 seconds later
Drawing too much power, level 2	Over 300 A for 10 seconds	About 10 seconds later

Protection	Shuts off when...	Turns back on when...
Short circuit	A short in the wiring	Fuse and protection circuit trip; have the wiring checked
Too hot	Battery reaches 140°F (60°C)	Cools to 131°F (55°C), plus 10 seconds
Too cold to charge	Below 14°F (–10°C)	Warms up (the heater helps)
Too cold to drive	Below –4°F (–20°C)	Warms up
Cells out of balance	Cells differ by more than 0.5 V	Needs service if it keeps happening

What the beeps mean

The battery beeps a pattern and shows a message on the screen. Use this table to look it up.

Beep pattern	Problem	What to do
Short beeps, fast and steady (beep-beep-beep)	Overcharged	Unplug the charger; check you are using the correct one
One long continuous beep	Too much current	Ease off the pedal; let it reset
1 short beep every 2 seconds	Charge is low or empty	Charge now (also beeps for 10 seconds when charge drops below 20%)
2 short beeps, then a 2-second pause	Short circuit	Turn off and have the wiring inspected
3 short beeps, then a 2-second pause	Insulation fault (electrical leak)	Turn off and have it inspected
1 long + 1 short	Too hot	Stop, let it cool in the shade
1 long + 2 short	Current too high	Ease off; avoid steep climbs at low charge
1 long + 3 short	Cells out of balance	Fully charge it; call your dealer if it repeats

Beep pattern	Problem	What to do
1 long + 4 short	Too much moisture inside	Dry it off; call your dealer

A "long" beep lasts about half a second; a "short" beep lasts about a fifth of a second.

Installation, size and wiring

Have a qualified technician install the battery. The most important rule: **the battery must be OFF while you connect or disconnect the main cables.** Connecting it while on can cause sparks that damage the battery and the cart.

Installing

1. Turn the cart key off and make sure the battery is off.
2. Set the battery in the tray on a flat surface and secure it so it cannot slide.
3. Connect the main cables: positive (P+) to port 5 and negative (P-) to port 1, following the cart maker's wiring order.
4. Plug in the vehicle data cable (port 4) and, if used, the external power switch (port 2 or 6).
5. Turn the battery on, then the key.

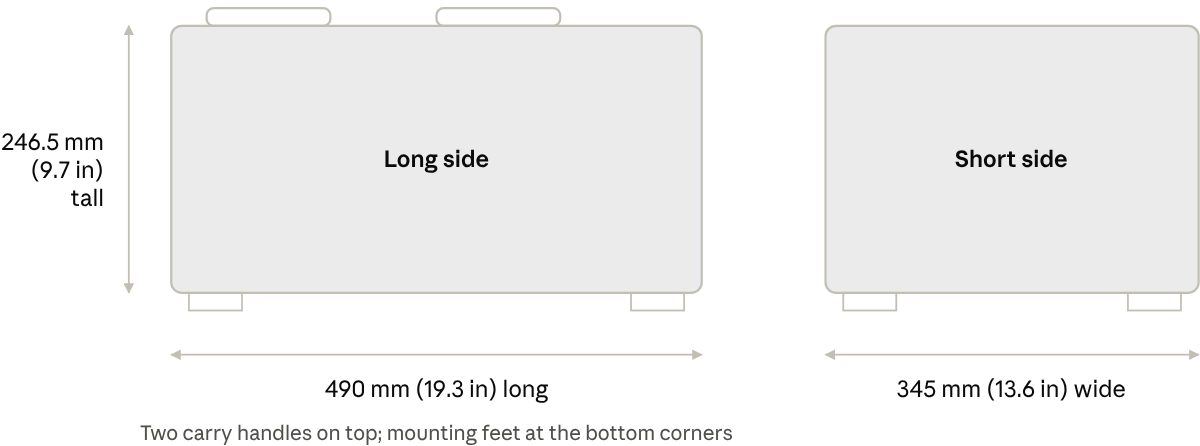
Removing

Turn the key off, but leave the battery on for a moment so leftover power in the cart can drain back into it. Then turn the battery off and disconnect the cables.

Battery size

19.3 × 13.6 × 9.7 inches, 108 lb: a two-person lift

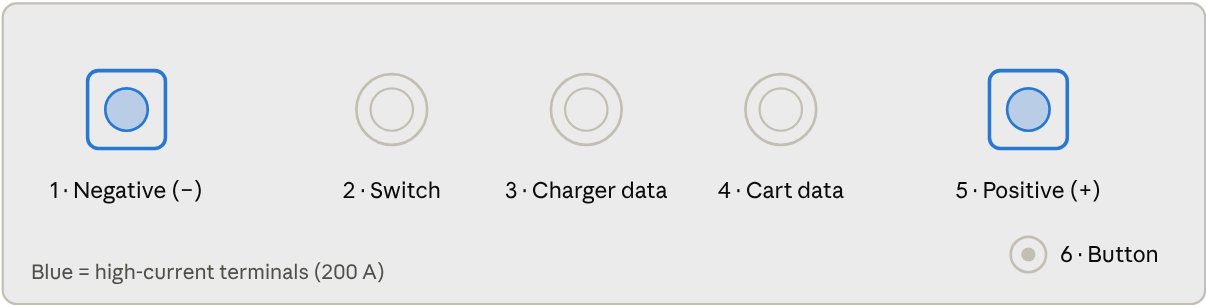
Outside dimensions of the battery box, drawn to scale



Battery dimensions · redrawn from the factory drawing

Connection panel

Main cables on the outer terminals, data plugs in the middle



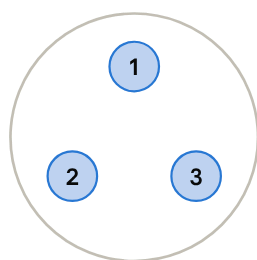
Connection panel · 6 ports

Port	What it is	Connector
1	Main negative (P-)	200 A terminal, 35 mm ² (2 AWG) cable
2	Power switch	3-pin round plug (WS16-3)
3	Charger data (talks to the charger)	4-pin round plug (WS16-4)
4	Vehicle data (talks to the cart)	4-pin round plug (WS16-4)
5	Main positive (P+)	200 A terminal, 35 mm ² (2 AWG) cable
6	Lighted power button	16 mm button, 4 wires

Plug pin layouts (for technicians)

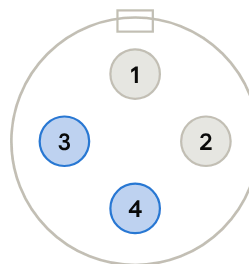
Data plugs use pins 3 and 4; pins 1 and 2 are empty

Looking straight at the face of each plug



- 1 Switch +
- 2 Switch -
- 3 Light +

Switch plug, 3-pin
port 2



- 1 Not used
- 2 Not used
- 3 CAN-L (low)
- 4 CAN-H (high)

Data plug, 4-pin
ports 3 (charger) and 4 (cart), same layout

Plug pin layouts · 3-pin switch plug and 4-pin data plugs

The lighted power button (port 6) has four wires: switch +, switch -, light - and light +.

Data lines use shielded twisted-pair cable at 250 kbps with a 120 Ω terminating resistor. Small signal wires are 22 AWG.

Storage, care and safety

Store the battery at **30–70% charge** in a cool, dry place, and check it every 3 months. That one habit does more for its lifespan than anything else.

Do

- Store it flat, in a ventilated, dry spot, out of the rain.
- Keep it between 30% and 70% charge for long storage.
- Check the charge every 3 months and top it up if needed.
- Charge soon after every use, and always within 24 hours of running it empty.
- Use only the matching or dealer-approved charger.

Don't

- Don't store it above 104°F (40°C), like a closed shed in summer — it permanently loses capacity.
- Don't leave it for long periods below 10% or above 90% charge.
- Don't leave it on the charger longer than 12 hours.
- Don't charge or drive outside the temperature ranges in this guide.

- Don't connect or disconnect cables while the battery is on.

Shipping or hauling the battery

- Turn the battery off and unplug the service switch.
- Strap it firmly to a pallet or in a wooden crate, separate from other cargo.

Factory safety testing

The manufacturer tests this battery design to make sure it does not catch fire or explode under abuse. All tests start from a full charge.

Test	What they did	Result required
Short circuit	Shorted the terminals for 10 minutes	No fire, explosion or leak
Overcharge	Kept charging at 25 A past full, up to 4 V per cell or 60 minutes	No fire or explosion
Over-discharge	Drained it all the way to 0 V	No fire or explosion
Heat	Heated to 266°F (130°C) and held 30 minutes	No fire or explosion
Crush	Crushed until 30% deformed, or to 200 kN of force	No fire or explosion
Drop	Dropped 1.5 m (5 ft) onto concrete, terminals down	No fire, explosion or leak
Hot-cold cycling	Cycled 5 times between –40°F and 185°F (–40°C and 85°C)	No fire, explosion or leak

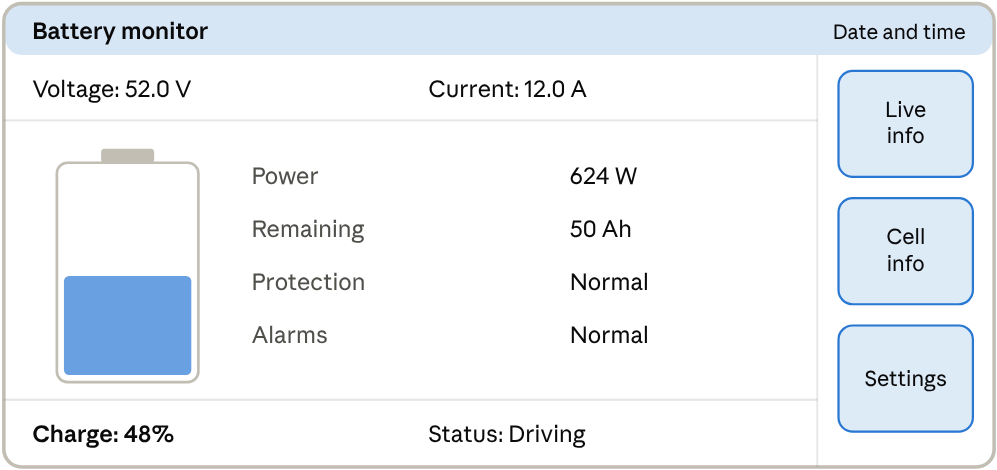
The display screen and phone app

The 4.5-inch color touch screen shows the charge level at a glance; tap the buttons on the right for more detail. The screen mounts in a cut-out about 130 × 59 mm (5.1 × 2.3 in); the full bezel is 140.5 × 69 mm and 30 mm deep.

Home screen

Home screen: charge, voltage and alarms on one page

Example readings shown



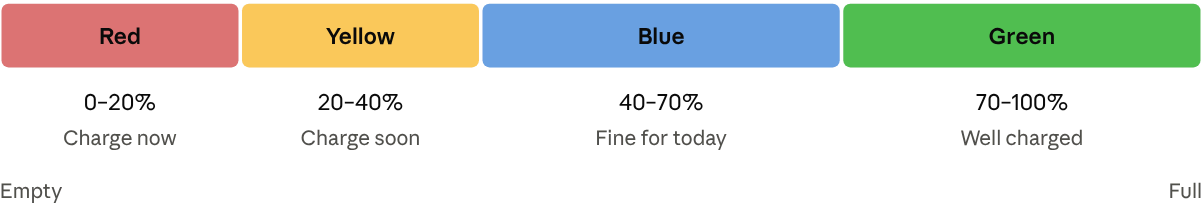
Display home screen · redrawn in English from the factory screen

Current shows how much power is flowing in while charging, or out while driving. Tap **Live info**, **Cell info** or **Settings** on the right to change pages.

Battery color = charge level

Charge when the icon turns yellow (below 40%)

Color of the battery icon on the screen, by charge level



Factory specification sheet · SOC display colors

Other screens

Screen	What it shows
Cell info	The voltage of each of the 16 cells. Healthy cells read within a few hundredths of a volt of each other.
Temperature	Readings from the sensors inside the pack.

Screen	What it shows
Alarms	A list of every warning with a light beside it: green = OK, red = active. Covers high/low temperature, too much current while driving or charging, overcharge, low or empty charge, high humidity, cells out of balance, short circuit and insulation faults.
Network	Cellular and GPS signal strength, the battery's GPS location, and a QR code to link the phone app.
Settings	Protection limits. For dealers and technicians only — do not change these.

Phone app

The battery has Bluetooth and a 4G cellular module, so you can check it from your phone on Android or iPhone.

1. Turn on your phone's Bluetooth, location, and Wi-Fi or mobile data.
2. Open the battery monitoring app and go to **Bluetooth Connection**.
3. Scan the QR code on the battery's Network screen to pair.
4. To connect over cellular instead, go to **Network Connection**, type the battery's ID number and tap search.

The app shows the same information as the screen: charge, voltage, current, each cell's voltage, temperatures, alarms and history. Ask your dealer for the current app download link.

Computer software (technicians)

A PC program connects through an RS-232-to-USB cable at 57,600 baud. It can log, save and replay battery data and adjust settings.

Need help?

For anything not covered here, contact your dealer with the battery model number (4232T-48V105Ah) and, if the screen shows one, the alarm message.