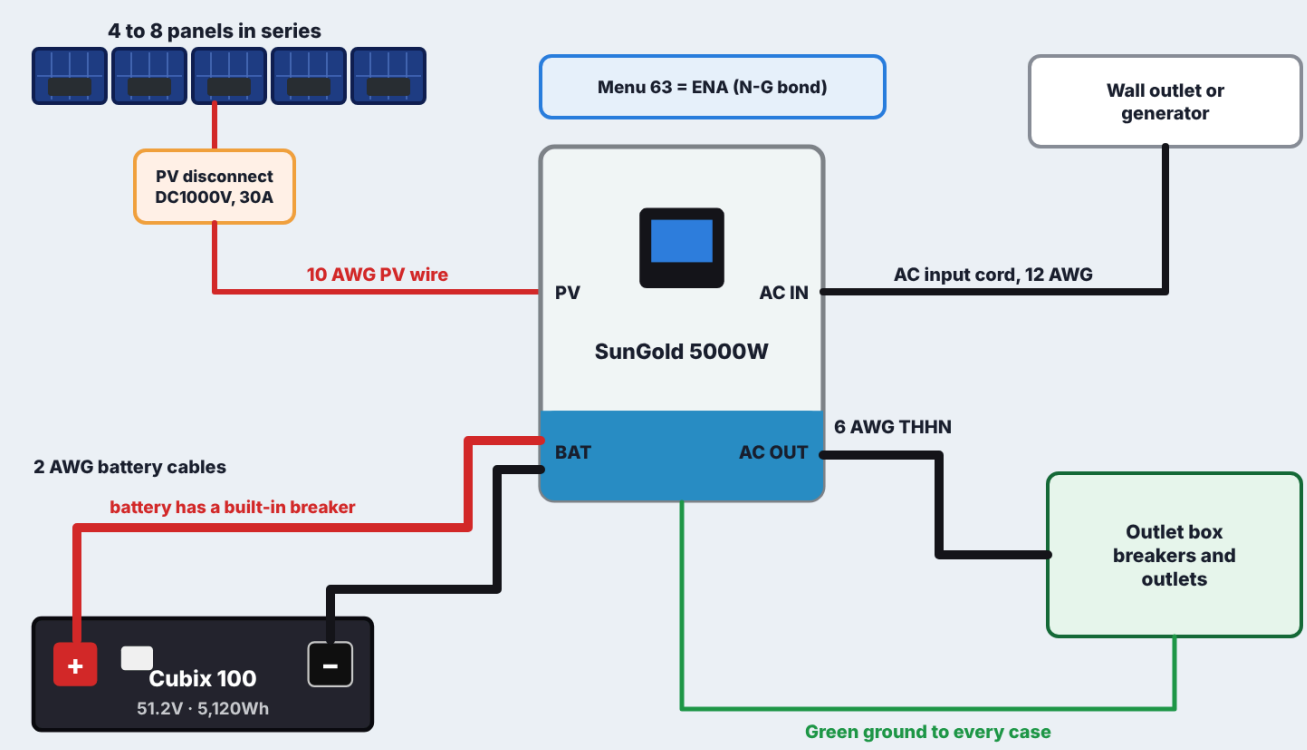
Hand-Truck 48V Build Sheet

WILL PROWSE BUILD SHEET

Built by: Date built: Inverter serial: Battery serial:

5,120Wh	5,000W	5,500W	120V	~$2,020
ECO-WORTHY Cubix 100, 51.2V 100Ah	continuous AC, SunGold inverter rating	max solar, 120–450V, 500V max	single phase, 10,000VA peak	parts, Nov 13, 2026, before tools and panels

Wiring diagram



Battery off and every breaker off while you wire. Check polarity and voltage with a meter before startup.

Wire, lugs and protection

Run	Wire	Protection / ends
Battery to inverter	2 AWG copper: red 2 ft, black 2 ft	Breaker is built into the Cubix 100. 5/16 in (M8) lug at battery, 1/4 in (M6) at inverter
Solar to inverter	10 AWG PV wire, MC4	PV disconnect DC1000V 30A. Ferrules at PV terminals
Wall or generator to AC IN	12 AWG 3-prong cord	Ferrules. Black L, white N, green G
AC OUT to outlet box	6 AWG THHN	Outlet box breakers. Ferrules

No separate DC breaker: the Cubix 100 has one built in. Turn it off before you touch the battery cables.

What it can run

Load	Runtime
200W	21.8 h
500W	8.7 h
1,000W	4.4 h
2,000W	2.2 h
4,000W	1.1 h
5,000W	0.9 h

Runtime = 5,120Wh × 0.85 ÷ load W. The 0.85 allows for inverter losses.

Load limit. The system runs up to 5,000W continuous, the inverter's rating. The Cubix 100 recommends 50A, about 2,200W, so for long battery life keep steady loads under about 2,200W and start big motors one at a time.

Parts and Tools

WILL PROWSE BUILD SHEET

Order list (prices checked November 13, 2026)

	Part	Where	Amazon ASIN / item	Qty	Price
☐	SunGold Power (SGPWOSAY) 5000W 48V all-in-one, SPH5048P	Amazon	B0B7WD7HZZ	1	$767.79
☐	ECO-WORTHY Cubix 100, 48V 100Ah server rack battery	Amazon	B0DP4LTRMG	1	$889.99
☐	800 lb capacity hand truck	Harbor Freight	Item 58294	1	$69 sale ($79)
☐	Custom 2 AWG battery cables: red 2 ft, black 2 ft	Current Connected	Custom builder	2	about $97
☐	AC input cord, 12 AWG, 3 ft, 3-prong	Amazon	B0D9GGWW7B	1	$12.99
☐	Outlet box (power distribution box, NEMA 5-20)	Amazon	B0CHRQM8PZ	1	$89.99
☐	6 AWG THHN, black, white, red + 10 AWG green, 5 ft each	Amazon	B0D79YZ8D6	1	$35.99
☐	10 AWG MC4 solar extension cable, 20 ft	Amazon	B075424L8R	1	$31.99
☐	PV disconnect, pick the DC1000V 30A option	Amazon	B0CFCZX9N4	1	$27.88
	Total for parts				**about $2,023**

Option: skip the outlet box and THHN and use the 15 ft power-strip cord (B08CV4GDVQ, $25.99) on AC OUT. Prices change; the page buttons show current prices.

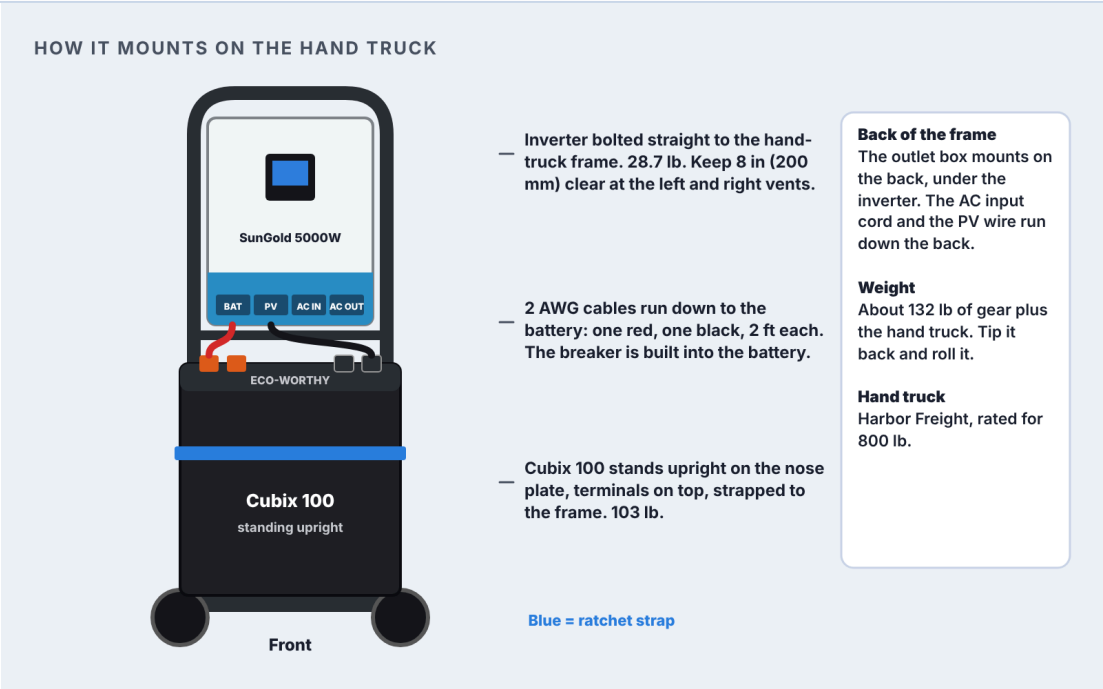
Tools

	Tool	ASIN	Price
☐	Cable cutter	B09BTWLXLG	$9.89
☐	Wire stripper, 10–24 AWG	B000OQ21CA	$21.99
☐	Ferrule kit, hex ratchet, 28–5 AWG	B0CRR7LWG5	$41.99
☐	Multimeter or clamp meter	any	
☐	Outlet tester (3-light)	hardware store	

Hardware store

	Item
☐	Bolts, washers and nuts to fix the inverter bracket to the frame
☐	Cable clamps or zip ties to hold the battery cables to the frame
☐	Two ratchet straps for the battery
☐	Screws for the outlet box and PV disconnect
☐	Zip ties and cable clamps

Mounting layout



Build, Start and Set Up

WILL PROWSE BUILD SHEET

Build steps

1. Bolt the inverter straight to the hand-truck frame, above the nose plate, with 8 in (200 mm) clear at the left and right vents.
2. Stand the Cubix 100 upright on the nose plate, terminals on top, and strap it to the frame. Battery off.
3. Battery breaker off. Red cable: Cubix + to BAT+. Black cable: Cubix − to BAT−. Washer, nut, tighten, tug test.
4. Crimp ferrules on every stranded wire that goes into a screw terminal.
5. AC input cord to AC IN: black L, white N, green ground.
6. Mount the outlet box on the back of the frame under the inverter. 6 AWG THHN from AC OUT to the outlet box: black L, white N, green ground.
7. PV disconnect off. MC4 cable from the disconnect to PV+ and PV−. Plug in panels at night or covered.
8. Run the green ground to every metal case.
9. Meter the battery (about 51–54V) and PV polarity (+ reads positive) before anything turns on.

Startup

1. Battery breaker on, then turn the Cubix 100 on.
2. Inverter rocker switch on.
3. Set the menu items in the table.
4. PV disconnect on.
5. Plug in AC input if using shore or generator power.
6. Loads on one at a time, smallest first.

Shutdown: loads off, AC input unplugged, PV off, inverter off, battery off, battery breaker off.

Inverter settings

#	Setting	Default	Set to	☐
08	Battery type	GEL	**USER**	☐
09	Boost (bulk) charge	57.6V	**56.0V**	☐
11	Float charge	55.2V	**54.0V**	☐
16	Equalization	ENA	**DIS**	☐
12	Low-voltage cutoff (output off)	42V	**48.0V**	☐
14	Low battery alarm	44V	**50.0V**	☐
15	Discharge limit	40V	**46.0V**	☐
35	Output back on after cutoff	52V	**52.0V**	☐
28	Charge current from AC	40A	**20A** on a household outlet	☐
63	Neutral-ground bond	DIS	**ENA**	☐

With the communication cable plugged in: 08 = LFP16, 32 = 485, 33 = PYL. Never equalize lithium.

Neutral-ground bond check

Running on battery, plug a 3-light outlet tester into the outlet box. It must read **correct**, not open ground. If it reads open ground, set menu 63 to ENA.

Charging times

Source	Rate	Empty to full
Generator, menu 28 = 40A	about 2,200W	about 2.3 h
Household outlet, menu 28 = 20A	about 1,100W, about 10A from the wall	about 4.7 h

5,120Wh ÷ charge watts. Solar time depends on sun and array size.

Solar, Troubleshooting and Log

WILL PROWSE BUILD SHEET

Panels per string

SunGold 590W	Array	Vmp	Voc 77°F	Voc −22°F	<500V
4	2,360W	178V	209V	242V	OK
5	2,950W	222V	262V	302V	OK
6	3,540W	266V	314V	362V	OK
7	4,130W	311V	366V	423V	OK
8	4,720W	355V	419V	483V	OK

One string only (one PV input, 22A). Must stay inside 120–450V to charge and under 500V on the coldest morning. 590W panel: Voc 52.35V, Vmp 44.4V, −0.28%/°C.

Check your own panels

Panel Voc × panels	
× 1.15 for a −22°F morning	must be under 500V
Panel Vmp × panels	must be 120–450V
Panel W × panels	up to 5,500W

Free exact check: diysolarforum.com/charged-system/ (search SPH5048P).

Troubleshooting

Code	Meaning	Fix
Blank	No power	Battery breaker on, battery on, rocker on, press a button
03	Battery not connected	Cables and the battery breaker
58	BMS communication	Cable, menus 32/33, or set 08 = USER
14	Inverter overload	Loads under the limit, restart
17	Output short circuit	Unplug loads, find the short
09	PV over-voltage	Open PV disconnect, remove a panel
01 / 04	Battery low	Charge from solar or AC
19 / 20	Over-temperature	Let it cool, give it more room

Before every trip

☐	Straps tight, battery cannot slide
☐	Battery and inverter lugs still tight (no turning on a tug)
☐	PV disconnect off before plugging in panels
☐	Outlet tester reads correct on battery power
☐	Vents clear, 8 in each side

Maintenance log

Date	Battery V	SOC %	Notes

Indoor-rated gear. Keep it dry. Do not tie the AC output into house wiring without a transfer switch installed by an electrician.

Sources: SunGold Power SPH5048P manual V2.7; ECO-WORTHY Cubix 100 listing and Current Connected spec page; NEC Table 310.16. Help: diysolarforum.com