

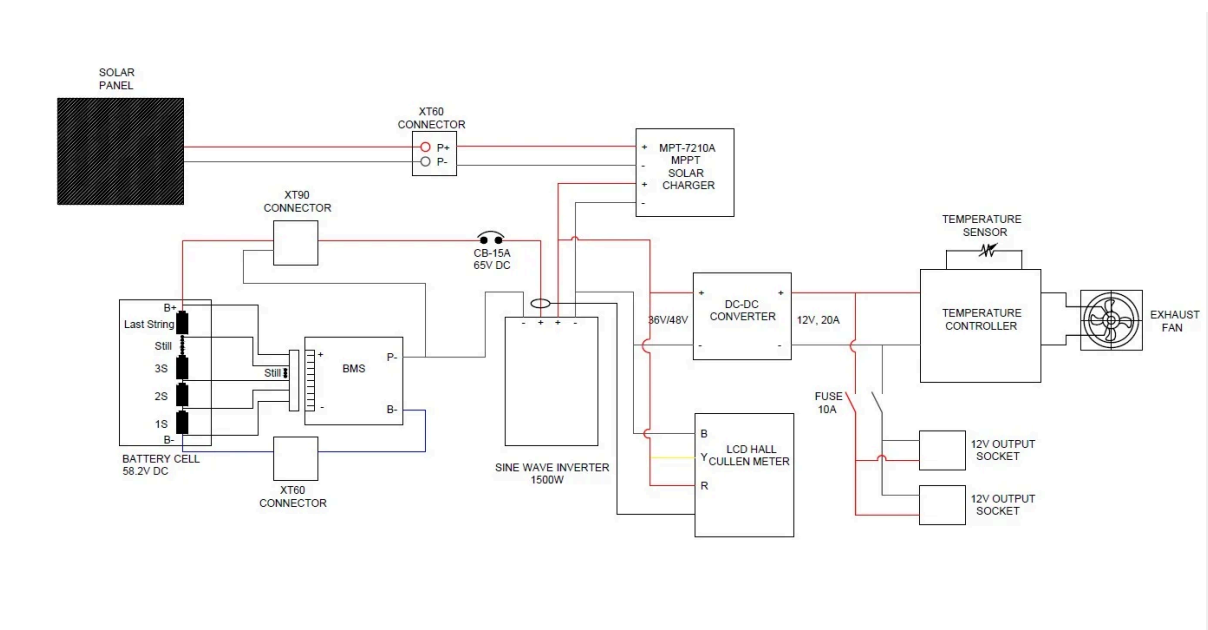


Schematic and Parts

Introduction

Take control of your power. This Power Station allows you to build a custom, high-capacity battery bank for a fraction of the retail cost. Unlike 'black-box' commercial products, this build is fully modular and repairable. We've selected components that prioritize safety and durability, ensuring you have a dependable power source for your tools, electronics, and appliances during any adventure or power outage.

Schematic:



SYSTEM CONFIGURATION AND RATINGS:

1. SOLAR PANEL INPUT
TYPE: MONOCRYSTALLINE SOLAR PANEL
MAX INPUT VOLTAGE TO MPPT: 100V DC
MAX INPUT CURRENT: 30A DC (DEPENDING ON PANEL ARRAY SIZE)
2. MPPT CHARGE CONTROLLER
MODEL: 48V MPPT CONTROLLER

BATTERY NOMINAL VOLTAGE: 48V DC
MAX CHARGING VOLTAGE: 58.2V DC
MAX CHARGING CURRENT: 60A
FUNCTION: MAXIMIZES SOLAR POWER AND REGULATES SAFE BATTERY CHARGING

3. BATTERY PACK

TYPE: LITHIUM-ION BATTERY PACK
NOMINAL VOLTAGE: 48V DC
FULLY CHARGED VOLTAGE: 58.2V DC
CAPACITY: TYPICAL 50AH–100AH (DEPENDING ON BUILD)
ENERGY CAPACITY EXAMPLE: $48V \times 100AH = 4.8KWH$

4. BMS (BATTERY MANAGEMENT SYSTEM)

TYPE: 14S LITHIUM BMS
OVERCHARGE PROTECTION: 48V DC
CHARGE CURRENT: 50A
FUNCTION: CELL BALANCING, OVERCURRENT, OVERCHARGE, AND SHORT-CIRCUIT PROTECTION

5. DC PROTECTION

MAIN DC FUSE: 80A–100A DC RATED
DC ISOLATOR SWITCH: 100V DC, 63A RATED
FUNCTION: SYSTEM SAFETY AND MAINTENANCE ISOLATION

6. INVERTER

TYPE: PURE SINE WAVE INVERTER
RATED POWER: 1500W
INPUT VOLTAGE: 48V DC
INPUT CURRENT AT FULL LOAD: APPROX. 31A–35A DC
OUTPUT VOLTAGE: 110V–240V AC
OUTPUT FREQUENCY: 50HZ/60HZ

7. AC DISTRIBUTION OUTPUT CONNECTOR

AC OUTLETS: 2 SOCKETS, 110–125V AC OUTPUT

USB OUTPUT: DC:5V 2.1A

8. DISPLAY AND MONITORING

DIGITAL VOLTAGE DISPLAY: 0–300V DC RANGE, CURRENT: 200A
VOLTAGE SUPPLY RANGE: 5-90
FUNCTION: REAL-TIME BATTERY VOLTAGE AND STATUS MONITORING

List of tools

1. Wire strip pliers



2. Fixed wrenches



3. Magnetic-head-screwdrivers-set



4. Scissors



5. Drill



6. Measuring Device



7. Normal pliers



8. screwdrivers set

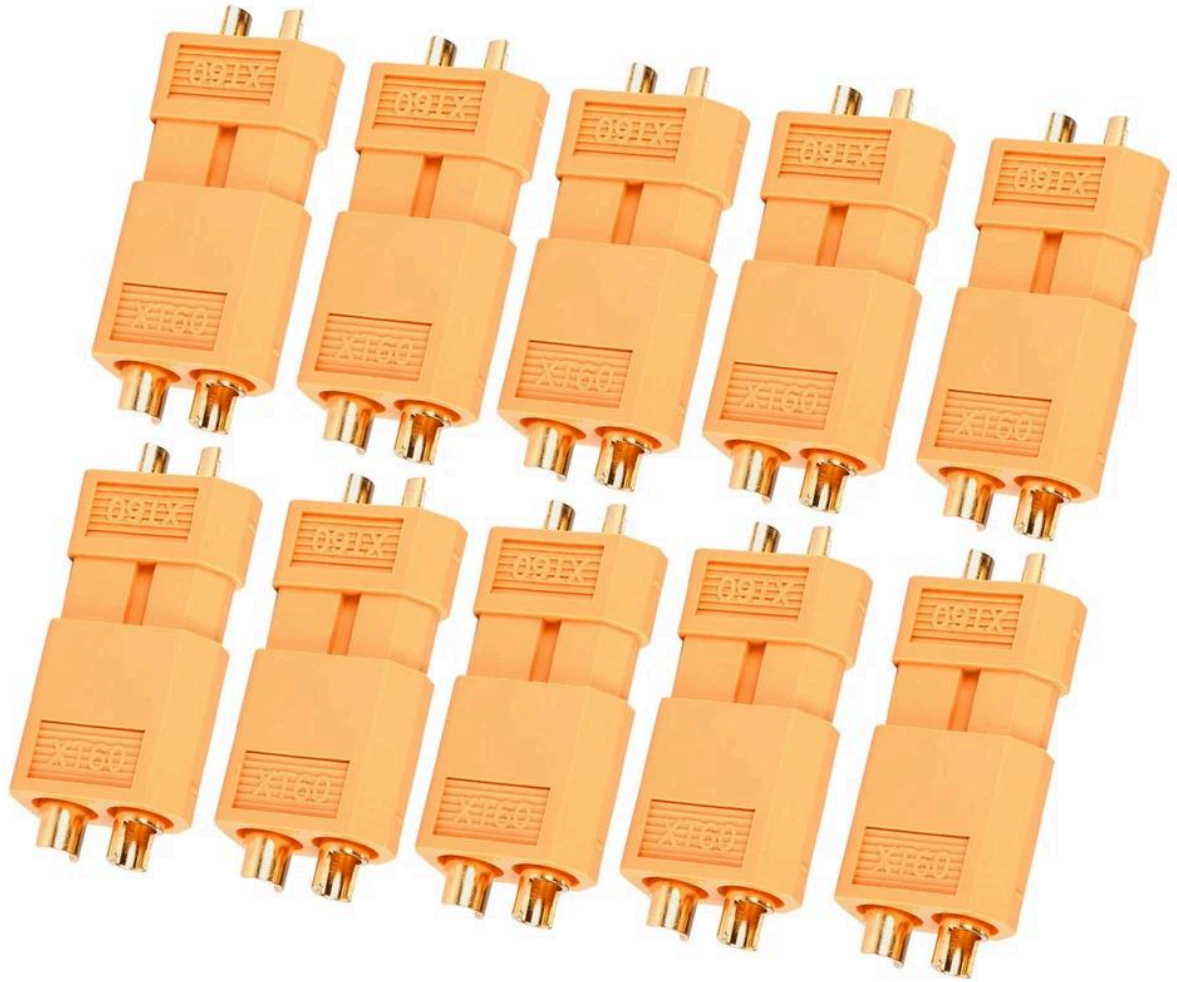


List of parts

1. XT90 Connectors



2. XT60 Connectors



3. Surface Mountable XT60



4. Pack-Sized Heat Shrink



6. Cell Holders



7. 100W Renogy Solar Panel



8. DALY-14S-BMS-40A



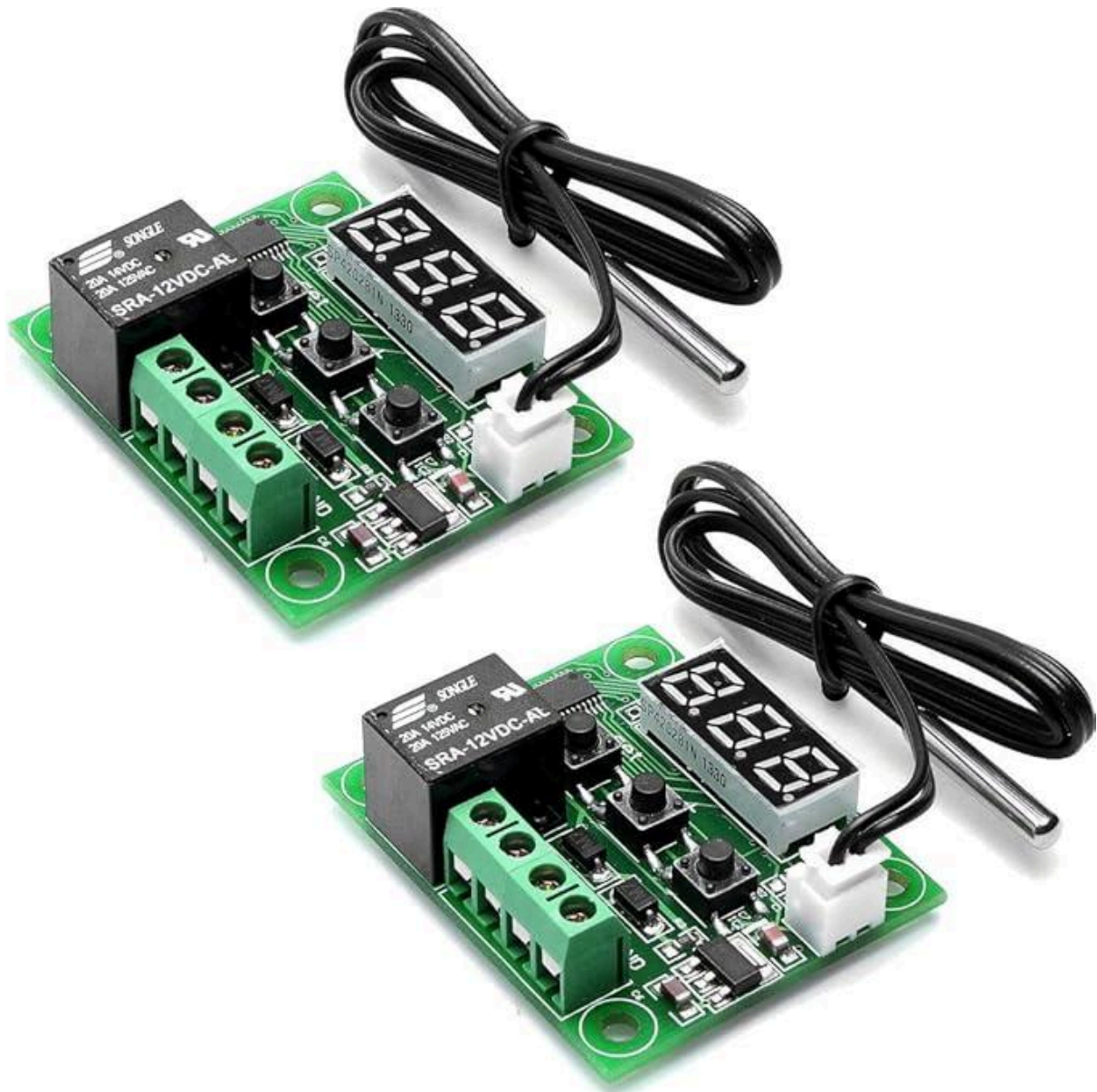
9. Craftsman



10. 48V to 12V Buck Converter



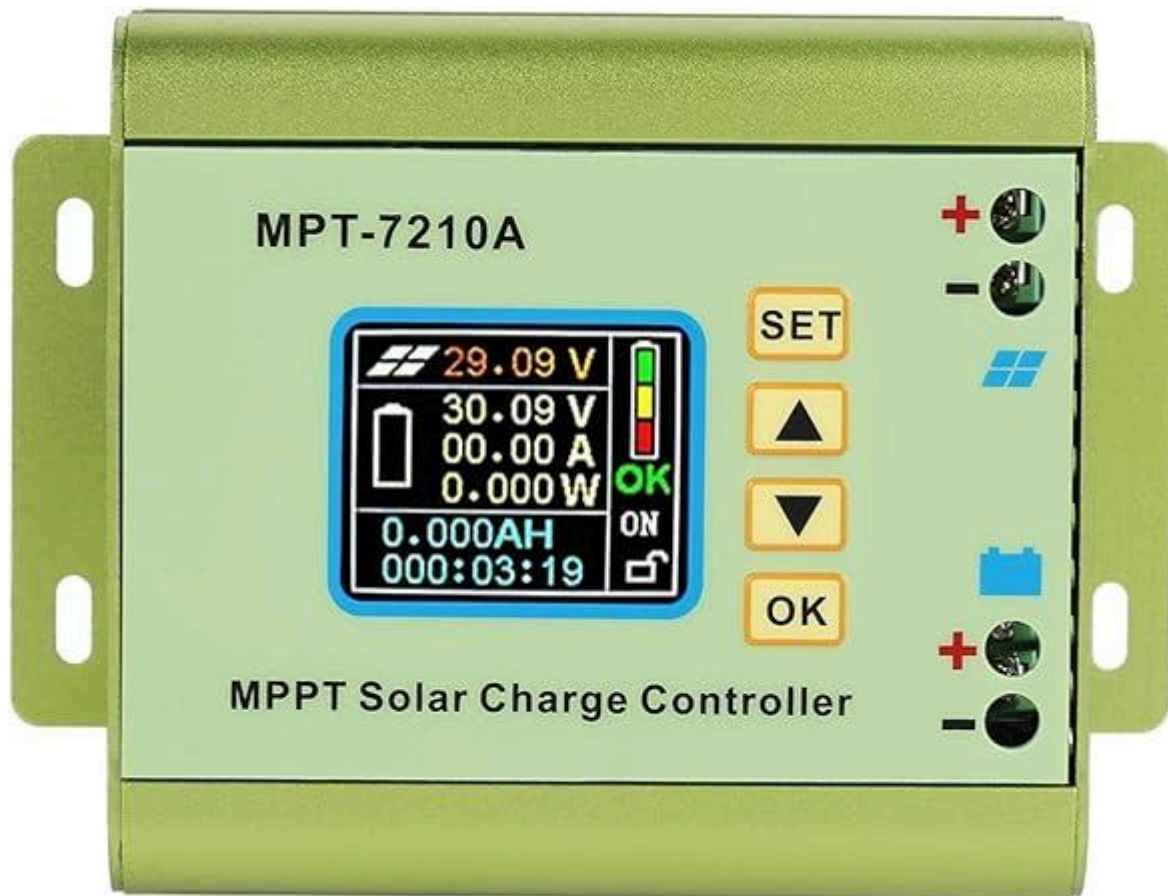
11. Fan Temp Controller



12. Cigarette Lighter Plugs



13. MPT-7210A MPPT Charger



14. Kapton Tape



15. Nickel Strip



16. Recessed Outlets w/ USB



17. DROK Voltage Display



18. 50A Circuit Breaker



AA1-X0-09-703-X21
FLEX AMP
VOLTS 80
HERTZ DC
TRIP AMPS 50-60
CIRCUIT 6-80

9379
MEXICO
LOAD
LINE

OFF

50A

19. Reliable 1500W Inverter



Useful links for parts:

Craftsman Toolbox...

<https://www.lowes.com/pd/CRAFTSMAN-VERSASTACK-System-17-in-Red-Plastic-Lockable-Tool-Box/1000578373>

Modem Batteries...

https://batteryhookup.com/products/4-18650-2200mah-cells-in-modem-batteries?srsrtid=AfmBOoqbzyqRIH4_pKG8O1-4fa2GRtvEknK4hWMhQ3CfDSzDS5kKz9Na

100W Renogy Solar Panel... <https://amzn.to/2yh40Y5>

Reliable 1500W Inverter... <https://amzn.to/36i7VAS>

50A Circuit Breaker... <https://amzn.to/2Wiiv7g>

DROK Voltage Display... <https://amzn.to/2WMaCFY>

Recessed Outlets w/ USB...

https://www.amazon.com/gp/aw/d/B0B9JP8CY4/?encoding=UTF8&pd_rd_plhdr=t&aaxitk=0be1437080969af7c8557e0e0f908f4a&hsa_cr_id=0&qid=1771363227&sr=1-1-9e67e56a-6f64-441f-a281-df67fc737124&ref_=sbx_s_sparkle_sbtcd_asin_0_img&pd_rd_w=pN6xK&content-id=amzn1.sym.9f2b2b9e-47e9-4764-a4dc-2be2f6fca36d%3Aamzn1.sym.9f2b2b9e-47e9-4764-a4dc-2be2f6fca36d&pf_rd_p=9

[f2b2b9e-47e9-4764-a4dc-2be2f6fca36d&pf_rd_r=V1S9899Q6PDSXK6109EV&pd_rd_wg=u2fY1&pd_rd_r=5364f147-9f13-4812-bbed-312a98f1f2a2&th=1](https://www.ebay.com/itm/335434609079?_skw=Amass+Panel+Mount+Male+XT60+Connectors+PN+XT60E-M&itmmeta=01KHPR7C19DQ27MMNMPX5J8D2Z&hash=item4e1975f1b7:g:HFcAAOSwO4JmZ17o&itmprp=enc%3AAQALAAAA8GfYFPkwiKCW4ZNSs2u11xBb5DDUIFWP5QdYMAr4iARFQtlCRxES6Kywp65fcd9v0rIUZtZDWdhrJ5uGjpnGT9gdgsCXlujvA2xpqwsQyQkHN672t3oQ9NvdXXcgKtdfuncCQYvhPHcgqdnN8lEdXa80xN6sJe%2BK4q0NcOOjSCEMwBwu41tWzit9xhNU9%2BTRGazz6Xp%2FoHPeNjSYX7vK%2BvirIFVS45hOq0EuxiTda7w6A10VYQpiMppyO%2FImpv0zSab7rWOrEx2NnkJt6dD4iqcAePAHOXcuplsTYgc9XxnMetughq1zHXVWrQzVomZTw%3D%3D%7Ctkp%3ABk9SR-rAndiNZw)

Surface Mountable XT60...

https://www.ebay.com/itm/335434609079?_skw=Amass+Panel+Mount+Male+XT60+Connectors+PN+XT60E-M&itmmeta=01KHPR7C19DQ27MMNMPX5J8D2Z&hash=item4e1975f1b7:g:HFcAAOSwO4JmZ17o&itmprp=enc%3AAQALAAAA8GfYFPkwiKCW4ZNSs2u11xBb5DDUIFWP5QdYMAr4iARFQtlCRxES6Kywp65fcd9v0rIUZtZDWdhrJ5uGjpnGT9gdgsCXlujvA2xpqwsQyQkHN672t3oQ9NvdXXcgKtdfuncCQYvhPHcgqdnN8lEdXa80xN6sJe%2BK4q0NcOOjSCEMwBwu41tWzit9xhNU9%2BTRGazz6Xp%2FoHPeNjSYX7vK%2BvirIFVS45hOq0EuxiTda7w6A10VYQpiMppyO%2FImpv0zSab7rWOrEx2NnkJt6dD4iqcAePAHOXcuplsTYgc9XxnMetughq1zHXVWrQzVomZTw%3D%3D%7Ctkp%3ABk9SR-rAndiNZw

Nickel Strip...

https://www.amazon.com/0-15x27mm-Spacing-Soldering-Battery-Welding/dp/B0CRQF6B4X/ref=sr_1_2_sspa?dib=eyJ2ljojMSJ9.koqX4Lu5lr9kuAgm6CTi2tevNMWGrW9t1_LA63xzTGWyQMijBq2iCR_bdWu6xyTqMXHdJwHjWLRaew0txQc1CMrliTho_A6L42M6QXHzAOeqkETGKUJbGKPYNw3t5iUzBfM_1-Qs-04QO30mJN_3PDTdUAZIW9zFAfsfrBCDnuEAAt3TeOIDMFe56ftQgsiGBII_Von7Sw3EoGIFTENM7L-ZiTI4KT5vT-AzDG0yX0DxuT1Bj113X1e2VImrRXK0A7vn5oPMYUgUd3SR5Nt6r3yljKtGavqDnzdv_0nh2Dc.wUPJCJzssolLU12xgmj2qfBnijwLzCUvC53A0ImGVg4&dib_tag=se&keywords=Nickel%2BStrip&qid=1771364714&sr=8-2-spons&sp_csd=d2lkZ2V0TmFtZT1zcF9hdGY&th=1

Cell Holders... <https://www.18650batterystore.com/collections/spacers/?ref=lithiumsolar>

Kapton Tape...

https://www.amazon.com/gp/aw/d/B08M3R6G3W/?_encoding=UTF8&pd_rd_plhdr=t&aaxitk=a1efe4537e9c0f6f3b579159a711d676&hsa_cr_id=0&qid=1771366786&sr=1-1-9e67e56a-6f64-441f-a281-df67fc737124&ref=sbx_s_sparkle_sbtcd_asin_0_img&pd_rd_w=W57WP&content-id=amzn1.sym.9f2b2b9e-47e9-4764-a4dc-2be2f6fca36d%3Aamzn1.sym.9f2b2b9e-47e9-4764-a4dc-2be2f6fca36d&pf_rd_p=9f2b2b9e-47e9-4764-a4dc-2be2f6fca36d&pf_rd_r=SMR3YJ7HJDZGPTE6R3A1&pd_rd_wg=J9QBm&pd_rd_r=fa0e0349-718b-4e8b-a255-f26585f1bdbc&th=1

DALY 14S BMS 40A...

https://www.aliexpress.com/item/1005008262274921.html?spm=a2g0o.productlist.main.1.4cfcDWOaDWOaS5&algo_pvid=0840cd3f-deaf-46bc-8f8d-86de16ab53b5&algo_exp_id=0840cd3f-deaf-46bc-8f8d-86de16ab53b5-0&pdp_ext_f=%7B%22order%22%3A%221381%22%2C%22spu_best_type%22%3A%22price%22%2C%22eval%22%3A%221%22%2C%22fromPage%22%3A%22search%22%7D&pdp_npi=6%40dis%21MAD%21428.85%21300.19%21%21%21299.52%21209.66%21%402103919917713668578656486e7c55%2112000046006935843%21sea%21MA%210%21ABX%211%210%21n_t ag%3A-29910%3Bd%3Adc5ae408%3Bm03_new_user%3A-29895&curPageLogUid=1Junce5TAWlV&utparam-url=scene%3Asearch%7Cquery_from%3A%7Cx_object_id%3A1005008262274921%7C_p_origin_prod%3A

MPT-7210A MPPT Charger...

https://www.amazon.com/Controller-DC12-60v-MPT-7210A-Display-Regulator/dp/B07XC6VV17/ref=sr_1_3?crd=2ML8JILGJ4B9F&dib=eyJ2ljojMSJ9.mwMmDYW2vjBSinYA7gxG2q2II6sC8pZC-xnKOnr6MmN08AdRNYokph2ER0mnHArqmVpYfRK1Olvc8P_AbcXqOCApDc0IIDHzk5vPJI8xKd4oV_T5kG4er72y1XkWfaLSYgu1eCM4Wlqg2zIE-i5-B9Y4zCnUYdgMWb66WTLFFyDNIC9lyXCsm1iACCBjcs6caBhycb6Bs6FMMj5BgfW973pa2vgEaJKWvFpGmBkAoo.v3gen0cDnxbVoP6ZVTygcGwXCf31DDOrlRk jQTUDs8&dib_tag=se&keywords=Solar+Charge+Controller%2C+Akozon+MPT-7210A+Aluminum+Alloy+LCD+Display+MPPT+Solar+Panel+Charge+Controller+for+Lithium+Battery&nsdOptOutParam=true&qid=1771367084&sprefix=solar+charge+controller%2C+akozon+mpt-7210a+aluminum+alloy+lcd+display+mppt+solar+panel+charge+controller+for+lithium+battery%2Caps%2C233&sr=8-3

Cigarette Lighter Plugs... <https://amzn.to/3dDiSPH>

Fan Temp Controller... <https://amzn.to/2yBR1AF>

XT60 Connectors...

https://www.ebay.com/itm/395430775091?var=664124145287&_trkparms=itm%3D1%26aid%3D1110006%26rkt%3D4%26asc%3D20231107084023%26mech%3D1%26alqv%3DSimVIDwebV4WithCtxRanchorV1UnifiedFeaturesWithVdb%26pmt%3D1%26amclksrc%3DITM%26sd%3D335434609079%26sid%3DAQALAAAENne4QTOuOA5eEt3pXHVTyg%3D%26itm%3D395430775091%26noa%3D0%26plcamp%3D0%3A14258054014%26algo%3DHOMESPLICE.SIM%26ao%3D1%26rk%3D2%26pid%3D101875%26b%3D1%26mehot%3Dnone%26lsid%3D0%26meid%3Dda7179457fde4bc09455edcf7dfacf71%26pg%3D2332490&trksid=p2332490.c101875.m1851&itmprp=cksum%3A395430775091da7179457fde4bc09455edcf7dfacf71%7Cenc%3AAQALAAABEDdugEFBaNN3EEVMKPTWLwTGLCuMNRsHQRx7FHeI5cm8qhpqgt8sfhW9uA8X%252BSpGF6cXSXn9hdgYKc886PbNKwYjWcyMQ77qbUqSVKiVGXypqXF9e2f0ef25UrSHmuGo330jnYiMEdWDLMTKW%252BlqrmqFI8Y9tCeG2Md6JWi%252FcSaRohaYISPfE0A7WY0Xh65VBx2JJS78uHAqYNszF5AIHkLzWiaTuDvRHlzbglL9F0vgoIqYG%252ByDiVH%252B3SEGaxvHYzaqhrDYG9hGw47%252FZtd5hfcqWnpzqNZE%252B7Vi8w4%252FbGEgS%252B0icrnxiIrt34f%252FeBB1zSxp1TKnAvAlTMV8xJYMX7x9eXJRMi8sMzZKUSTqoKP%7Campid%3APL_CLK%7Cclp%3A2332490&itmmeta=01KHPVEX8MFV8HE7376GSANEC3

XT90 Connectors...

https://www.ebay.com/itm/236020825840?_skw=XT90+Connectors&itmmeta=01KHPVHAR0PPQ91RV93C22RHD3&hash=item36f3effef0:g:CdAAAOSwt45n4wZo&itmprp=enc%3AAQALAAAA0GfYFPkwiKCW4ZNSs2u11xA2jEa93vzB0VkuYzfu5SpsA33zYKE0LGyEEV0zRAKWnZhVeYOVxeFOEzsKOjbuSYBUJIS%2FnRANufCDdyMGKToh8uKkHpO7x%2FQODwpUpqYrXOQIGEm7iyP3Q8PTIhgnFPqjl8d5T6cupRIUqvfixKXL7xnN3fRvhnwnE%2BIns8%2F5c0BQ8%2FRRYsXAvuDo9yXLUE0rmywOh%2BFwnMNS4GxBpef2Lo2GvbYlfadTfvoe3Cg--AcgElf0nzuHEjmGJy2dc9o%3D%7Ctkp%3ABk9SR6ysxduNZw

48V to 12V Buck Converter... <https://amzn.to/2SSTzkC>

Pack-Sized Heat Shrink...

https://www.ebay.com/itm/256822891256?_skw=Pack-Sized+Heat+Shrink&itmmeta=01KHPVP47TNKXX7CZHMD46GWE6&hash=item3bcdb652f8:g:0JsAAOSwi11nr-Wg&itmprp=enc%3AAQALAAAA0GfYFPkwiKCW4ZNSs2u11xBHXjtvS9%2FVEH7TXpcxu50q%2FxfqStqti0%2FPI12tq7KtaZlaYfAKqOfijvUHEkhf3Wyw%2BmH4OII2B9Pnq%2Fj3qilD0JnRRai6I5WBU61SBKZMr9WAI3SImxcqX9CzChXxht6FnQUKTu7F1taknqCYnsZcc%2FBDPvLLTek1pvtdVMDyfmLz9twnL4qUY5qytseSIPU6BPFx%2Fo7uYkT5jTRCXdp6apOI44QhtoJRIWsN9zG5JQDIVIH5Fp3T34VnHikka4%3D%7Ctkp%3ABk9SR5DF2NuNZw

