Introduction

These instructions explain how to install and configure UPS+PV-Shelter Boxes #16928 and #16929. These power supplies provide the MET Station with constant 12 VDC or 12V + 24 VDC (respectively) to keep the installed equipment operating continuously. Both the AC grid power and PV inputs are connected to a charging regulator that keeps the auxiliary battery(ies) topped off and ready to use in the event of a grid outage at the site.

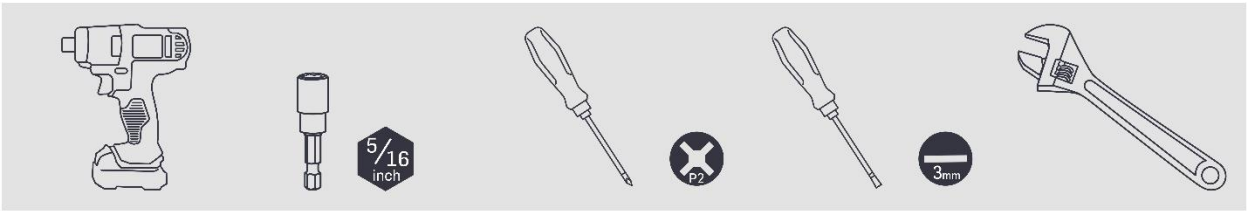
These instructions cover the installation and wiring of the LOGR-S UPS + PV Shelter Boxes #16928 and #16929 and Auxiliary Battery Kits. Refer to the separate instructions for assembly of the Remote Power System (RPS-PV) kit [Solar_RPS-PV1441X_Instructions.pdf]

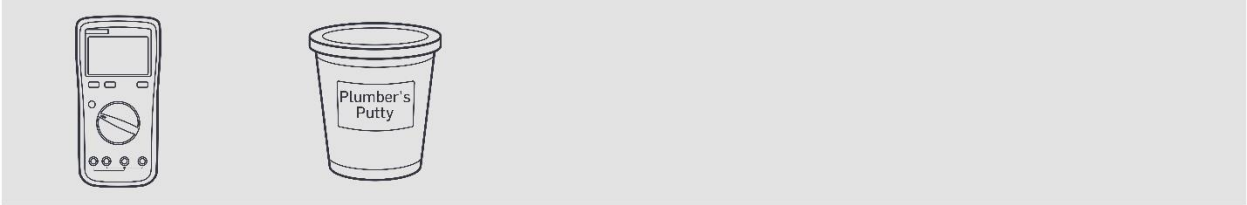
Parts/BOM

NRG PN	Part Description	Part Specification	Quantity
16928 **Or** **16929**	LOGR-S UPS+PV Shelter Box, 12V LOGR-S UPS + PV Shelter Box, 12V & 24V	Assembled & Pre-wired	1
Multiple	Remote Power System (RPS-PV Kits)	14414: 1x 100W PV panel 14415: 2x 100W PV panels 14416: 3x 100W PV panels	1
Multiple	Auxiliary Battery Kit	14482: 1x 108 Ah Gel battery 14483: 2x 108 Ah Gel batteries 14484: 3x 108 Ah Gel batteries	1

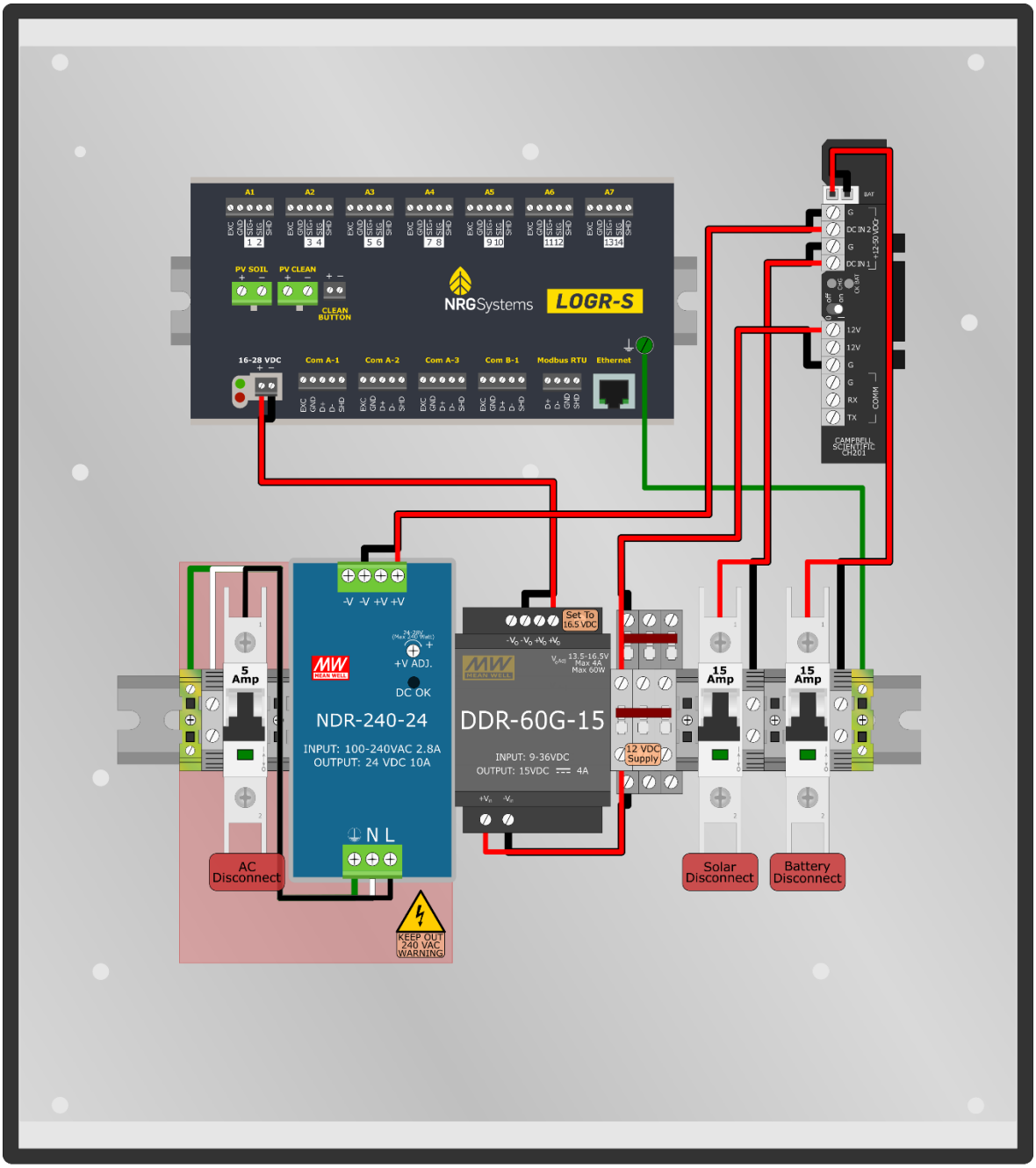
Tools

LOGR-S UPS+PV Shelter Box (#16928 & #16292) Wiring





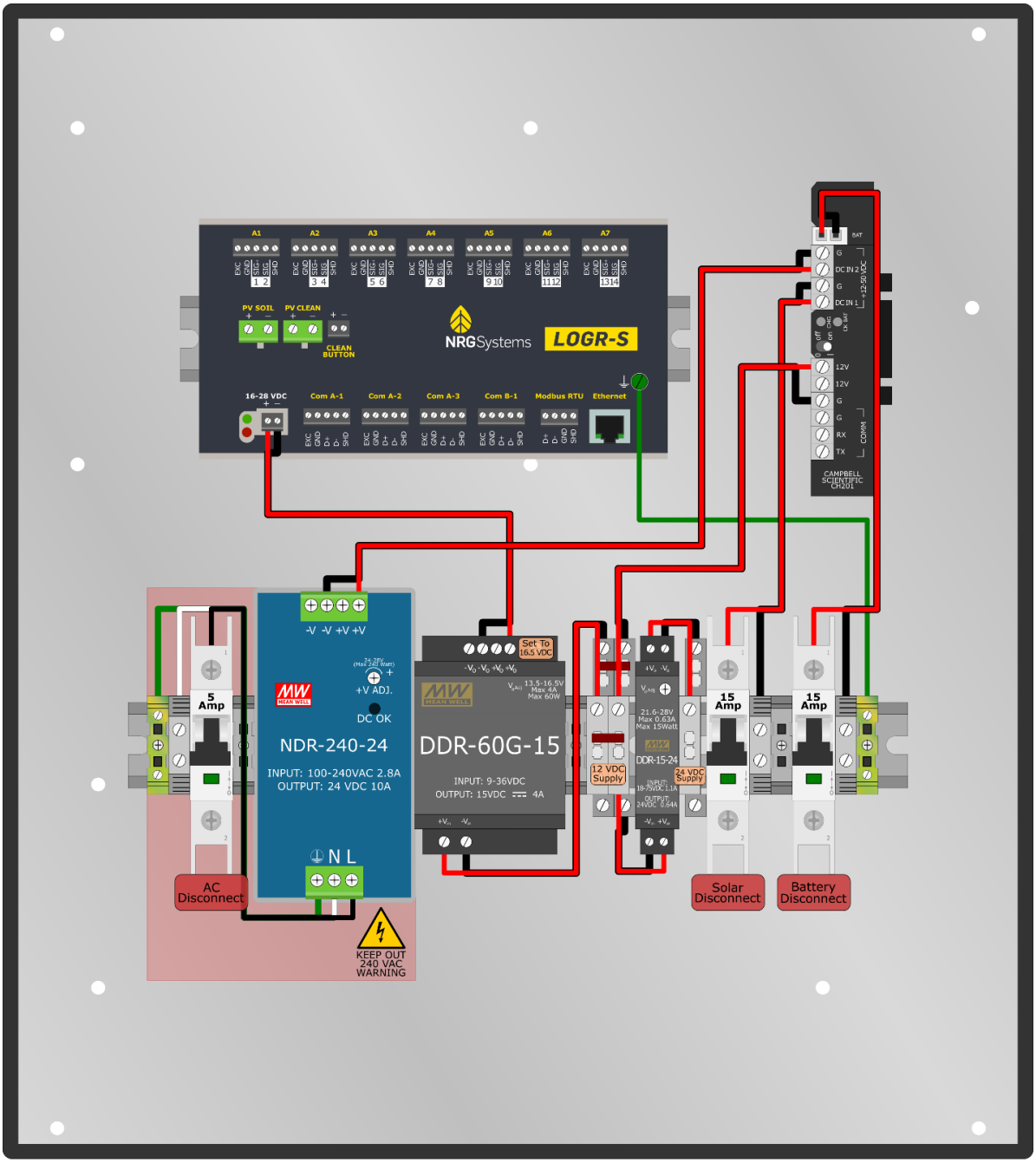
#16928: 12V LOGR-S UPS + PV Shelter Box, *12V Output Only*



NRG Part: 16928 - SRM UPS+PV, LOGR-S, 12V
Wiring Diagram: 17394
Rev: B

Notes:
- Wires Modeled To Show Termination Points, Do Not Reference For Wire Lengths
- Shown Electronic Components May Be Substituted With Alternatives Of Appropriate Specifications
- 15 Volt DC-DC Converter Tuned At 16.5 Volts To Power Logger

#16929: 24V LOGR-S UPS + PV Shelter Box, *12V & 24V Output*



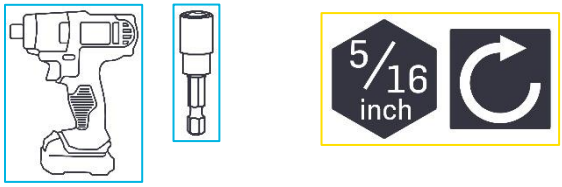
NRG Part: 16929 - SRM UPS+PV, LOGR-S,12V,24V
Wiring Diagram: 17395
Rev: A

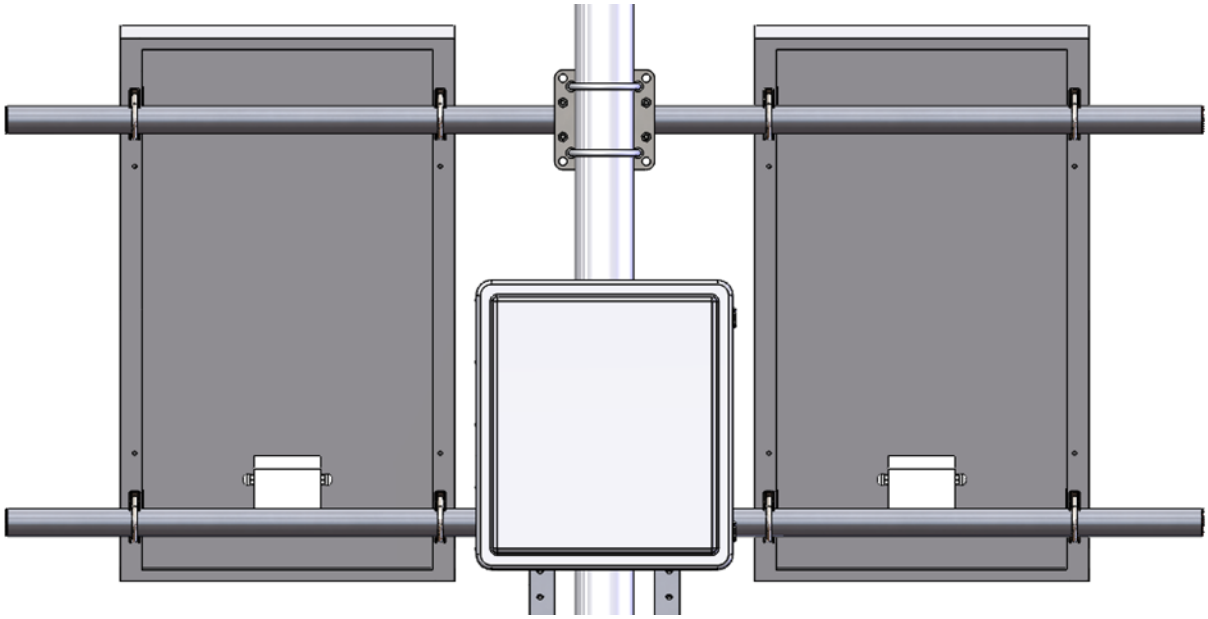
Notes:
- Wires Modeled To Show Termination Points, Do Not Reference For Wire Lengths
- Shown Electronic Components May Be Substituted With Alternatives Of Appropriate Specifications
- 15 Volt DC-DC Converter Tuned At 16.5 Volts To Power Logger

Procedures

Mounting Shelter Box

Using hose clamps, attach the Shelter Box to the tower as shown below.





Auxiliary Battery Kit

To provide the system with backup power, 1-3 sealed gel (BCI Group 27) batteries are used. Each battery has a C100 rating of 108 Ah.

These batteries contain a significant amount of energy. Use caution when handling and wiring the batteries or serious injury may occur.

Batteries Should be stored in a manner that protects them from the environment and disturbance by wildlife. The battery boxes supplied with the kit may not provide sufficient protection on their own in every case.

The installer must use their best judgement when considering how to protect these batteries for the life of the system.

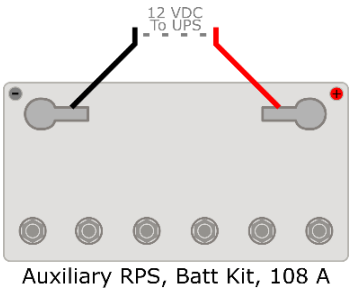
1 Place each battery inside of a supplied black plastic battery box. Set the top of each box aside until wiring is complete.

2 **When installing multiple batteries:**

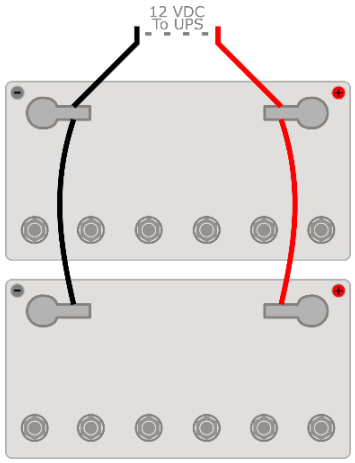
Use the supplied 4 AWG battery cables to chain the batteries in **parallel** (shown below).

3 Cover the bare ends of the 2C 10 AWG cable with electrical tape. They will be connected to terminals inside the Control Box in the next section.

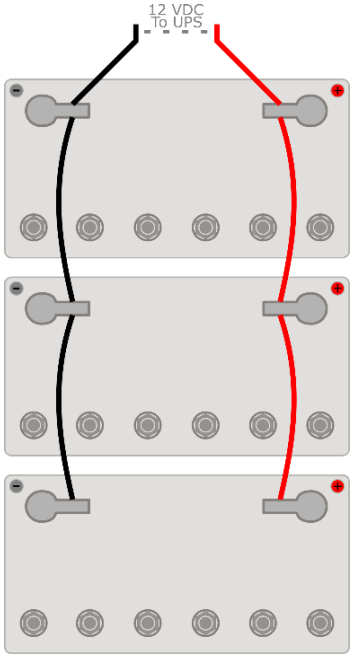
Connect the other ends of the wires to the battery bank at the terminals of one battery, matching wire colors to the battery cables.



Auxiliary RPS, Batt Kit, 108 A
NRG Kit:14482



Auxiliary RPS, Batt Kit, 216 A
NRG Kit:14483

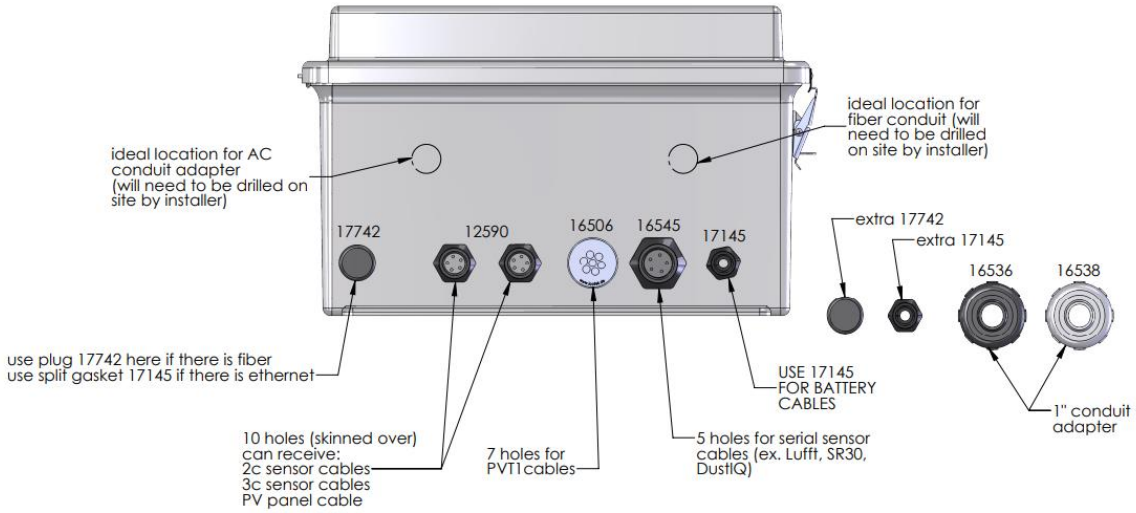


Auxiliary RPS, Batt Kit, 324 A
NRG Kit:14484

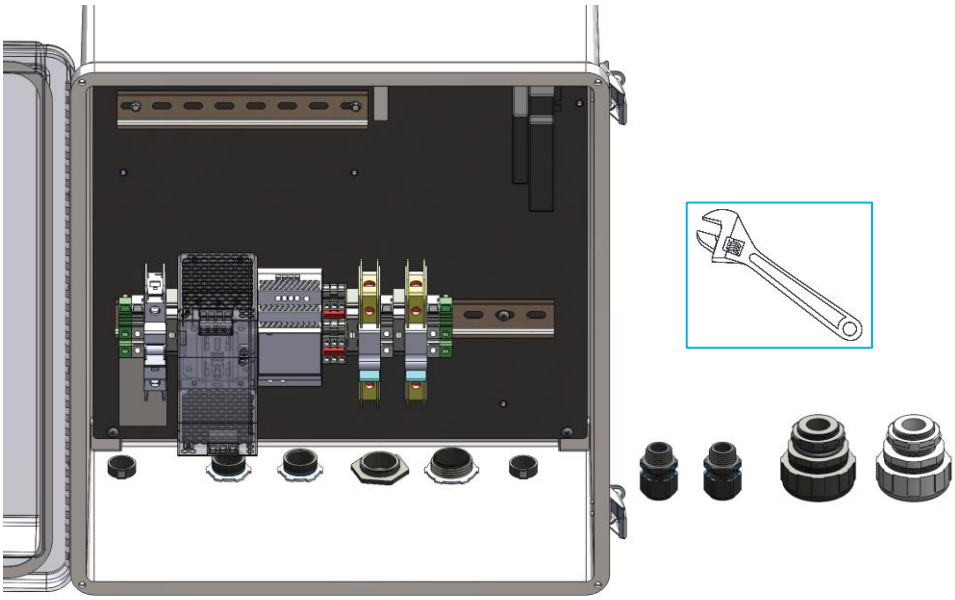
Wiring Procedure

The following steps require working with AC & DC electricity and should only be done by properly qualified individuals.

1 LOGR-S UPS + PV Shelter Box, 12 V #16928 and LOGR-S UPS + PV Shelter Box, 24 V #16292 each include 6 cord grips to seal the holes in the bottom of the shelter box. Install the cord grips in the shelter box as needed according to the drawing below.

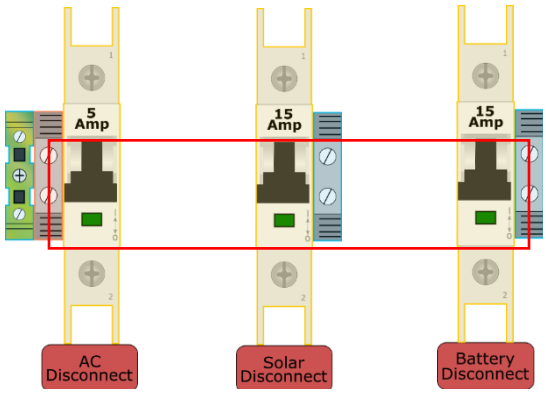


Note that the position & wire compatibility of cord grips may vary at each installation. Different cord grips may be required.



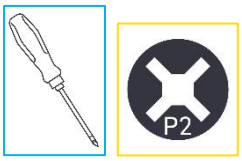
2 Feed the cables into the shelter box through the appropriate cord grips. Leave plastic covers loosely threaded to allow cables to move.

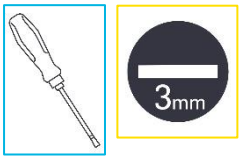
3 Prior to wiring, make sure all breakers are turned to the OFF position (switch down, saftey indicator green).



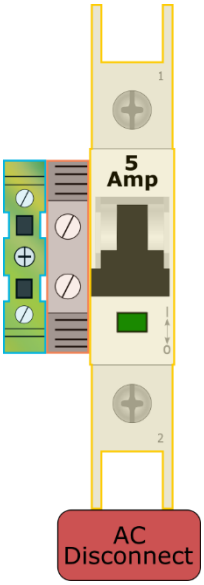
4 Wire the AC power cable into the EATON breaker & terminal blocks labeled for 120 – 240 VAC.

Ensure the AC power wire is de-energized by completing necessary LOTO procedures and using a digital voltmeter to verify that there is no AC voltage present.



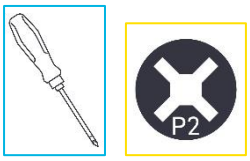


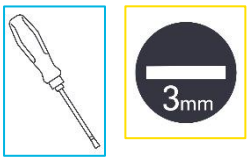
AC Power Wire	Control Box #16210 Wiring
AC Line (black)	AC Disconnect breaker IN
AC Neutral (white)	AC Disconnect grey terminal (left)
AC Ground (green)	AC Disconnect green terminal (right)



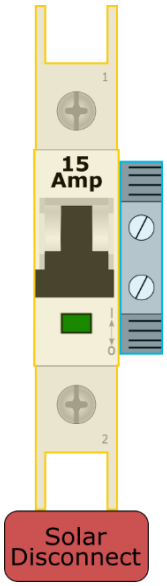
Note that AC wire colors vary around the world and the wire colors shown here (and used in North America) may not pertain to the region that the control box is installed in. If needed, swap out the wires between the terminals/breaker and the AC/DC converter to match local regulations.

5 Connect the PV wires to the breaker & terminal block labeled for solar.

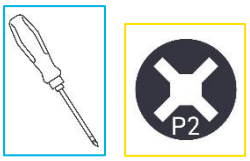


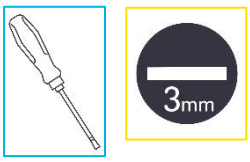


PV Power Wire	Control Box #16210 Wiring
PV + (red)	Solar Disconnect breaker IN
PV – (black)	Solar Disconnect terminal (right)

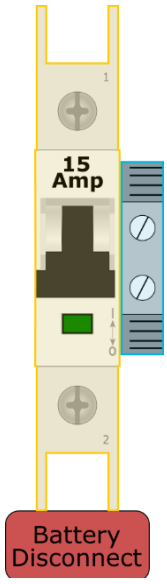


6 Connect the 2C 10 AWG battery bank wires to the breaker & terminal block labeled for battery.





Battery Bank Wire	Control Box #16210 Wiring
Battery + (red)	Battery Disconnect breaker IN
Battery – (black)	Battery Disconnect terminal (right)



7 Turn on the circuit breakers & check wiring in the following order:

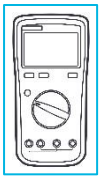
1. **110-240 VAC Breaker:**
   The MeanWell NDR-240-24 AC/DC converter will light up indicating it is active.

2. **CH201 Charge Regulator:**
   Flip the switch on the front of the black Campbell Scientific charge regulator from the OFF to the ON positon. The CHG light should flash green.

3. **Battery Breaker:**
   Flip the battery breaker on to connect the batteries to the charge regulator.

4. **PV Breaker:**
   Flip the PV breaker on to connect the PV panels to the charge regulator.

5. **Verify**: check voltage outputs from the following sources to confirm they're working:



- **MeanWell NDR-240-24**
  Measure the **-V** and **+V** terminals.
  OUTPUT: ~24 VDC

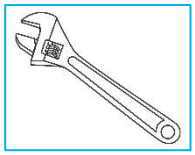
- **Battery Input**
  Measure from the breaker screw and ground terminal screw.
  OUTPUT: >12.5 VDC

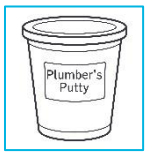
- **PV Input**
  Measure the **G** and **DC In 1** on the CH201.
  OUTPUT: 0-22 VDC
  (Output will vary based on sun conditions.)

- **12 VDC Power Supply**
  Probe one set of 12 VDC Power terminals.
  (bottom row = -12 VDC / top row = +12 VDC)
  OUTPUT: >12 VDC

Turn the breakers off before connecting sensor wires.

8 Seal up the UPS+PV shelter box by tightening the cord grip gasket covers enough to seal around the cables running through them (if used) or by using plumber's putty around the wire grommets.





Place the covers on the black battery boxes and ensure that the batteries are in a suitable location.

9 Turn on all breakers in the shelter box. Verify that the (configured) logger is receiving data from the sensors.