

Battery Test System for LFP Batteries and Battery Management Systems

Chris Jones 11/9/2025

Equipment List, all with GPIB or LAN control

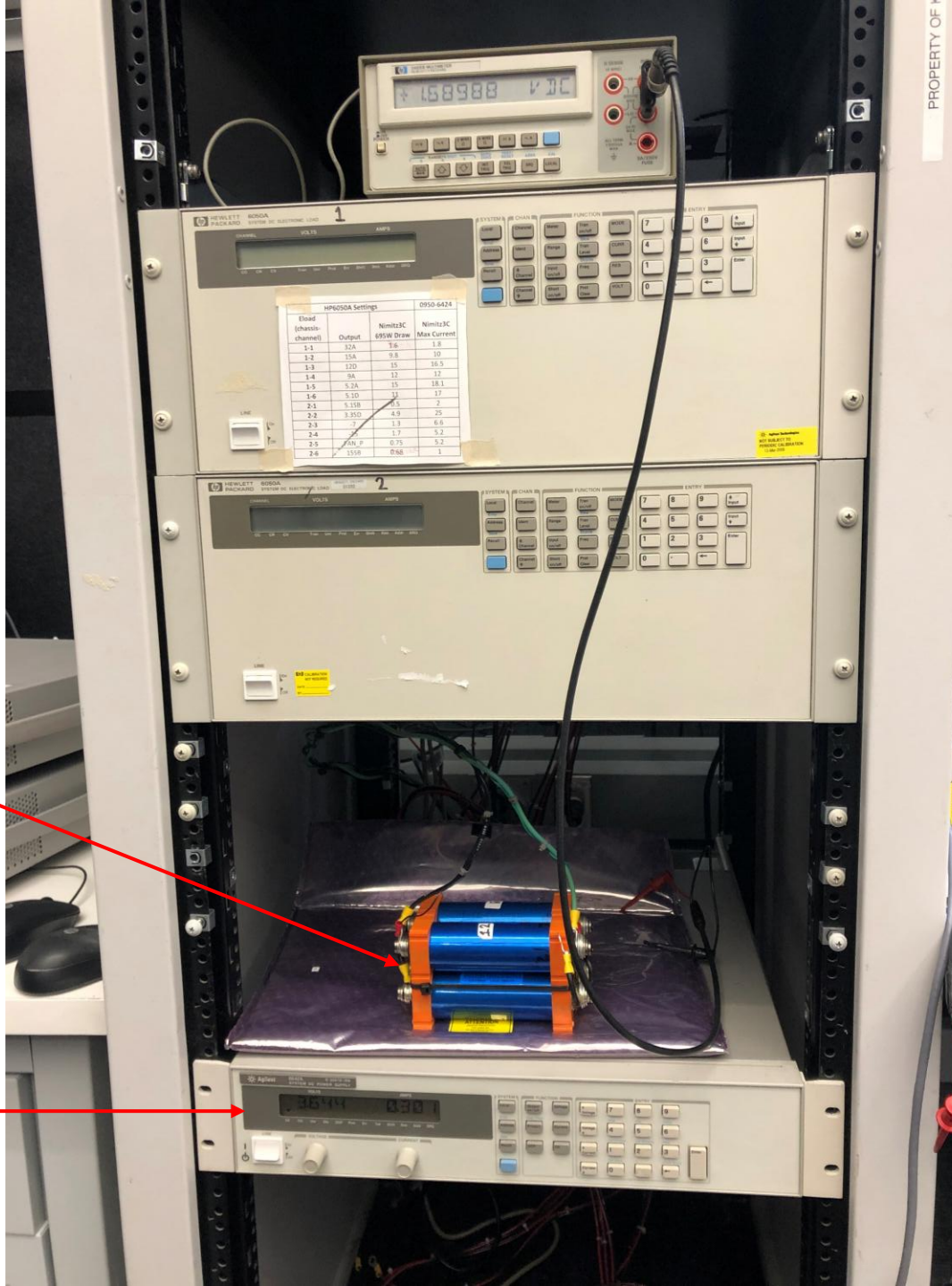
Feature	HP/Agilent used starting prices on eBay – As a hobby, but find someone to repair first	Keysight New - As a business
Battery Charging 16 cells 58.4V 20A	<ul style="list-style-type: none">6674A 60V 35A 2000W 240VAC DC System Power Supply, \$600 (could settle for 6654A 9A \$200)	<ul style="list-style-type: none">N5767A 60V 25A 1,600W Power Supply, \$4,493
Battery Discharging 16 cells 58.4V 20A	<ul style="list-style-type: none">6050A System DC Electronic Load mainframe, \$6254 60502B 60V 60A 300W load modules, \$300 each \$1,825 subtotal	<ul style="list-style-type: none">N3300A 6 slot 1800W electronic load mainframe, \$3,9274 N3304A 60V 60A 300W load modules, \$3,323 each \$17,219 subtotal
Battery Monitoring 16 cell voltages 2-5V, 16 cell temps 0-60C, and 1 current shunt 0-20A	<ul style="list-style-type: none">34970A Data Acquisition/Switch Unit, \$3802 34901A 20-channel multiplexer card, \$322 each16 thermocouples \$1,024 subtotal	<ul style="list-style-type: none">DAQ973A Data Acquisition System, \$3,2692 DAQM900A 20 Channel Solid-state Multiplexer Module, \$1,107 each16 thermocouples \$5,483 subtotal
Battery Emulation for Battery Management Testing 16 cell voltages 2-5V	<ul style="list-style-type: none">8 E3620A Dual 25V 1A DC Power Supply, \$150 each \$1,200 subtotal	<ul style="list-style-type: none">8 E3620A Dual 25V 1A DC Power Supply, \$1,457 each \$11,656 subtotal
Total	\$4,649	\$38,311 8.3x

Prototype - Charging

4 8 amp-hour screw terminal LFP cells, no BMS yet, similar to 10 amp hour version for \$145

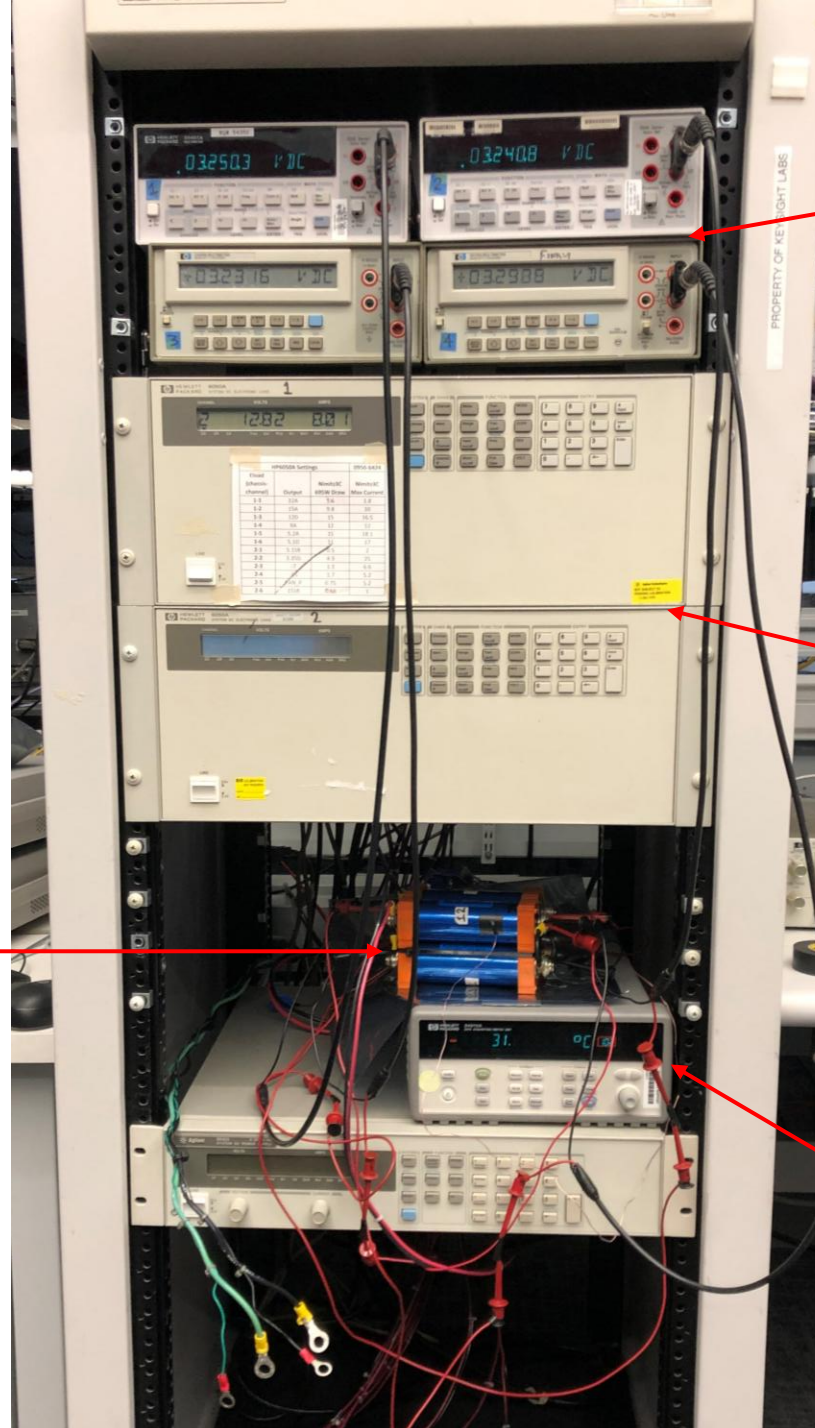
<https://www.batteryspace.com/lifepo4-38120s-battery-12-8v-10ah-128wh-30a-rate.aspx>

Agilent 6642A 20V 10A system power supply
Set to 2 amps, 14.6V



Prototype - Discharging

4 8 amp-hour LFP cells



4 HP multimeters, 1 per cell
2 34401As, 3468B, 3478A, to
be replaced by probe wires
connected to data
acquisition card

2 HP 6050A System DC
Electronic Load mainframes with
6 slot cards each:

1 60501A 60V 30A 150W (box 2
slot 1)

9 60501B 60V 30A 150W

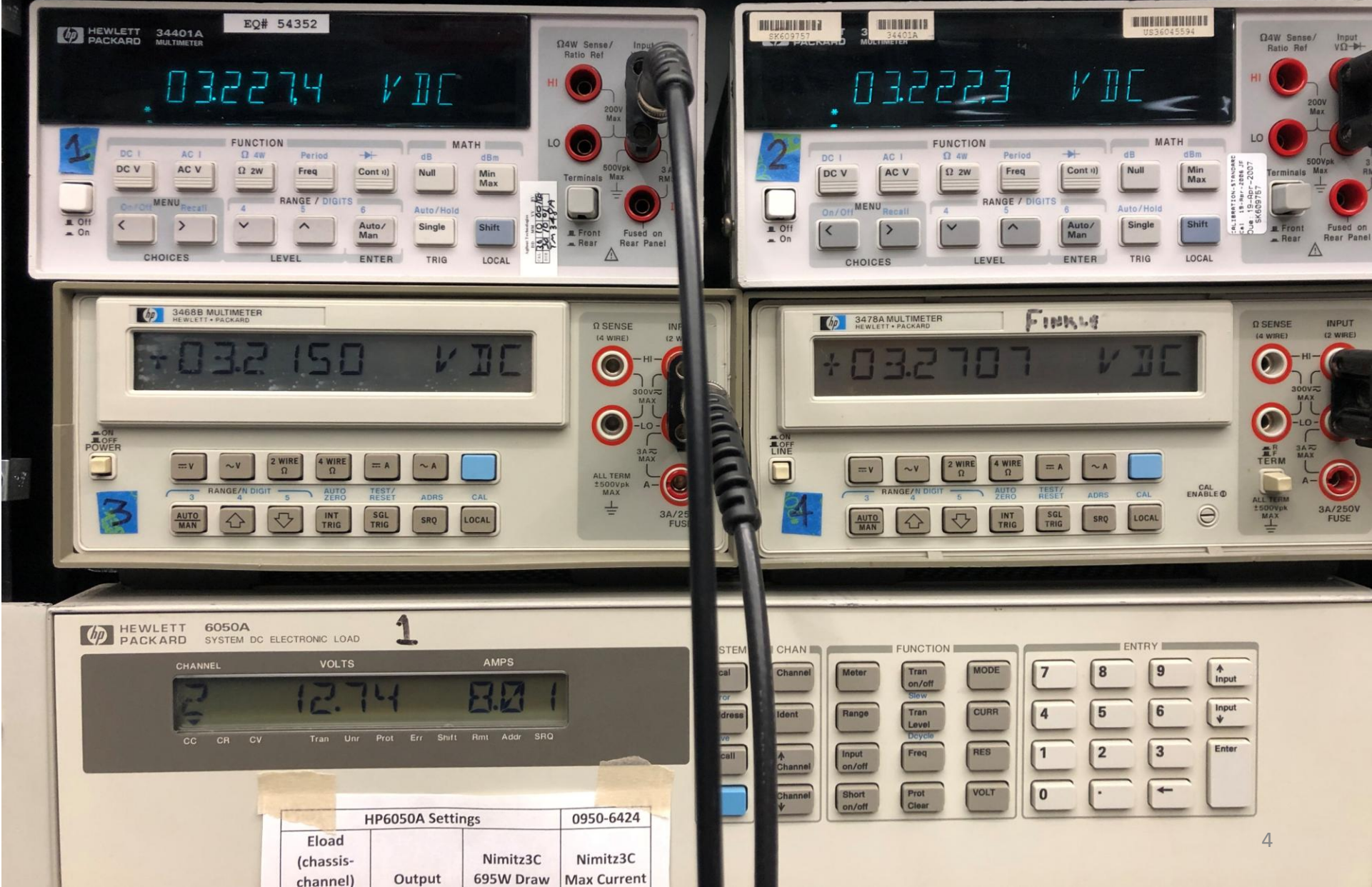
1 60502B 60V 60A 300W (box 1
slot 3)

1 60503B 240V 10A 250W (box 2
slot 6)

Using just box 1 slot 2 to test 8
Ah cells at 8 amps; need 10x for
100 Ah cells

HP 34970A Data
Acquisition/Switch Unit
with 34901A 20-channel
multiplexer card in back (2 slots
empty)

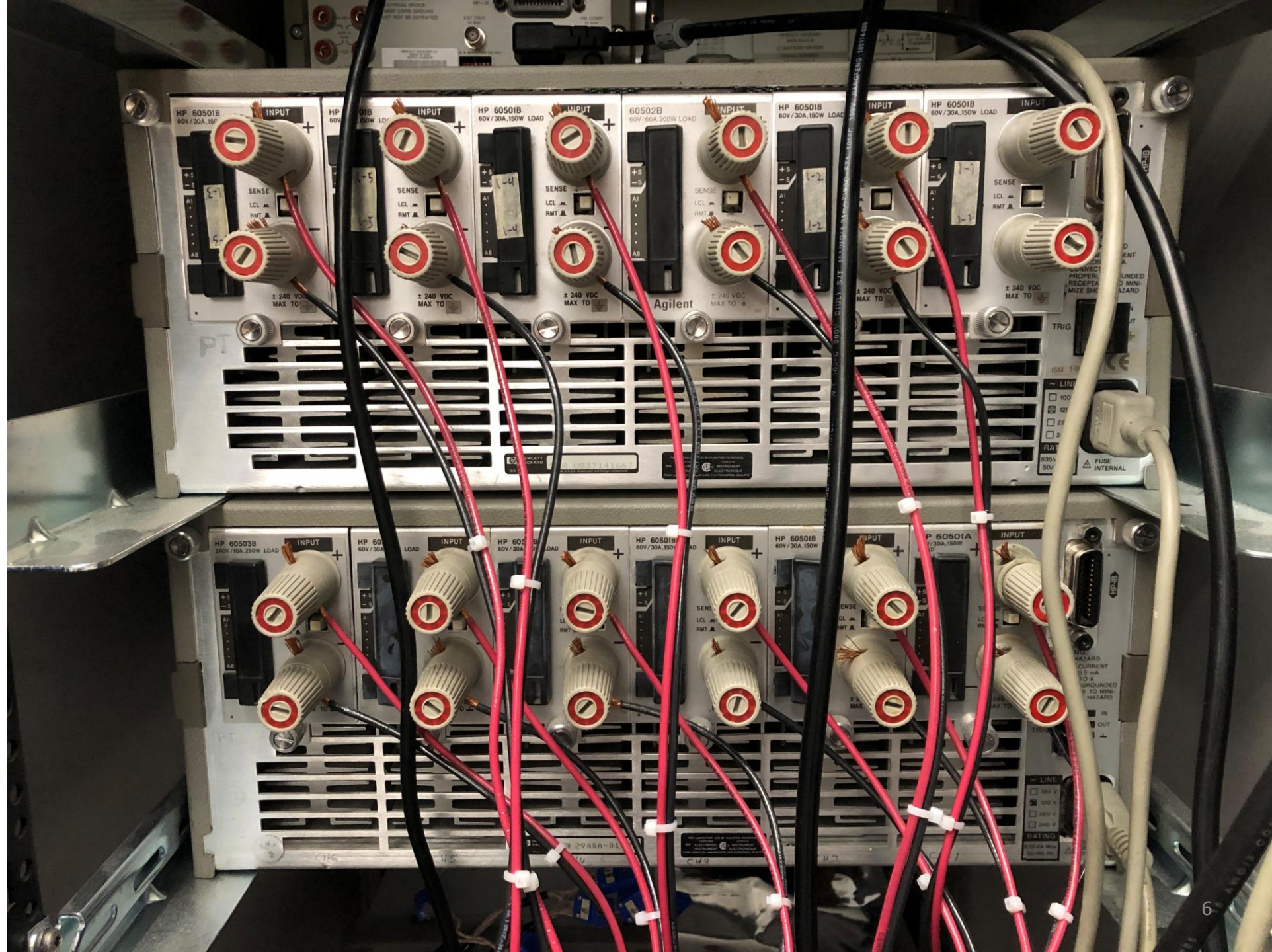
Multimeter and
E-Load Closeup - front



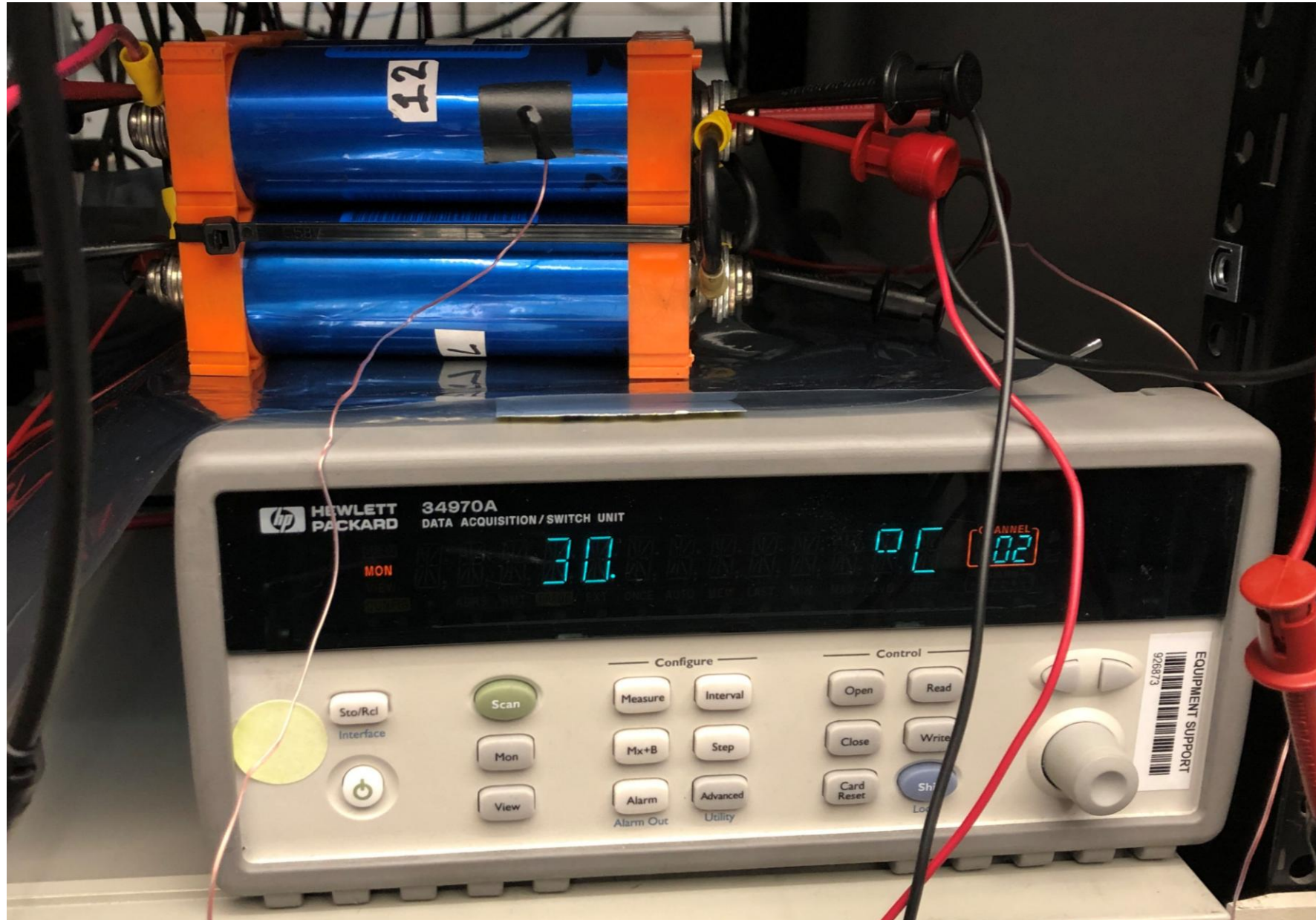
Multimeter Closeup - rear



E-Load Closeup - rear



DAQ Closeup - front



DAQ and PSU Closeup - rear

