List of external connectors needed:

+12V, G battery connection (assume 5-10A reasonable)

+12V, G Ignition battery

ignition output (12V, G)

+12V, G router power line (Probably best to just plug the router into the box rather than use our nasty alligator clips). TODO: fix all the cables with real connectors.

4x Valve output (+12V, G) (300mA)

Signals in/out:

4x Load cell input (5V, G, out+, out-) small signal, make sure it is shielded (twisted pair cable might be useful too?, not sure about shielding on differential signals),

1x pressure transducer input (5V, G, out+, out-), possibly large signal

4x Thermocouple (5V, G, Vout), large signal

(shield plane should be connected to ground somehow).

Other:

1x Ethernet connection (see the old mk2 box)

Ignition Buttons:

See old box for these:

Key switch, emergency stop button, arm switch, buzzer.

Budget Constraints:

In theory we could probably spend $100-$200, but best to keep it lower, abt $50-$80 is target price range, but may not be perfectly realistic so let me know if not good (also note, we should still have shielded signal cable from last year, use that).

Extra Notes:

If you have spare time, I’d be interested in trying to add some debugging LEDs that we can connect to the GPIO pins on the pi and display externally. If we have a clear top box this isn’t important.

See connectors list from last year:

<https://docs.google.com/spreadsheets/d/18dvW1N24ohORKxLqlaeu4-Zr2-2PCiiwyTzpAIgzDT8/edit#gid=1448554278>

Though I’m not sure if we really need to go for such expensive connectors. I think our box does not need to be nearly that robust, but it’s worth being careful.

Also I’m going to make sure we pressure the OEDK into buying some anderson powerpole connectors, so if we do settle on those we probably won’t need to worry about buying them ourselves.

Strictly speaking we could probably use anderson connectors for signal wires too, but it’s certainly overkill. On the other hand they’re a good choice for reliable connectors that can take some significant strain.

Any connectors we get should be resistant to strain of abt 2-3 lbs (so no dupont connectors) because they need to plug into external of box not break from a heavy shielded wire hanging off to the ground.

May also want to do some research on how best to connect lots of wires up to a panel like this. I’m not really sure of good ways, but we’ll see.

Other helpful task. Reassemble batteries from last year so that we have two separate 12V batteries each with a detachable (possibly like [one of these](https://powerwerx.com/anderson-sb-connectors-sb120-120amp)).

I suggest adding a couple extra signal and power outputs for option other uses that we may decide we need. It’s also a good way to support different extra hardware.

Links:

* Case: <https://www.polycase.com/wh-18> or <https://www.amazon.com/dp/B071ZJLD9Y?th=1>
* Power Connector: see mk2 box or anderson
* Ignition Connector: see mk2 box or anderson
* Router power line anderson connectors
* Valve Output (x4): Anderson Connectors
* Signals in/out cable(x4 Load Cell + x1 pressure transducer): (2 pair twisted):<https://www.digikey.com/product-detail/en/general-cable-carol-brand/C1352A.18.10/C1352-50-ND/5039679>
* Anderson: pp15 housing<https://powerwerx.com/anderson-powerpole-colored-housings>
* Anderson: clamps (2)<https://powerwerx.com/anderson-1462g1-powerpole-mounting-clamp>
* Anderson: clamps (4)<https://powerwerx.com/anderson-1462g3-powerpole-mounting-clamp>
* Anderson: contacts pp30 <https://powerwerx.com/anderson-1331-powerpole-contact-pp30>
* Anderson: contacts pp15 <https://powerwerx.com/anderson-1332-powerpole-contact-pp15>
* Anderson: 2 Position connectors kit <https://powerwerx.com/anderson-sb-connectors-sb50-50amp>