

2021-09-13

- The heads of bolts attaching ears to dMCE and attaching mce to cryostat interfere with each other.
- Heads of bolts holding backpanel are sticking out too far and interfering with cryo mount.
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- Loctite on collars missing (or somehow they slip? Maybe not tight enough)
- Some card guides were not housed properly, just more careful final inspection needed
- Backpanel and leg bent in shipping , so better packing next time
- Bent pin on RC4 location of DSR-1, we should do final inspection on all backplane connectors for bent pins.

2021-08-16

MH sent photos email dated Aug 15,

Here are some assembly / design comments and questions.

- Dmce6 shows the assembled unit.
- dmce1

shows the two Hirose clamps. I smoothed all sharp corners. -- MA : aka retainer bar
I also trimmed the height of the back riser to be half. This is to reduce how much the clamps push the flex around.

While installing I notice the holes are drilled in the wrong place, allowing the clamp to be pushed in too far, again, disturbing the flexes. Also, the wiring harnesses slightly get in the way of tightening the clamps, so maybe easier to do the clamps before the harnesses.

- dmce7

shows the bottom and the back. I have replaced the string of stock edge/corner pieces with single long rails, and I like how this works.

This is not much extra work since the stock pieces do not work anyhow for the top edge.

- dmce5

shows quite a few things.

1. The balance point is just at the edge of the handles. It requires quite a bit of torque to hold the electronics for mating to a cryostat.
Lightening the filter rail assembly will help, but let's move the handle to the rear few cm.
2. the front bracket only uses two bolts for attachment and that is sufficient. Let's only use two for the rear.
3. The rear bracket should be modified to include a leg. Just extend the body down to the right place.
4. The handle, when stowed, interferes with the ground lug. Let's move the lug.

- dmce2

The bolts attaching the rear bracket to the body interfere with use of the bracket. Swap use of 8mm socket head bolts to 5mm flathead.

- dmce4

Notice that the bolts holding the back in place stick out past the plane of the brackets and connectors. This must be a bad idea!

- dmce3

There was not a place to bolt the back panel to the sides. I folded the back, and this seems to work very well.

- dmce8

The top and bottom panels simply end at the top and bottom rittal rails. It would be nicer if they end in a fold, as in the Rittal diagrams.

Mark

MA: sees photos in that email

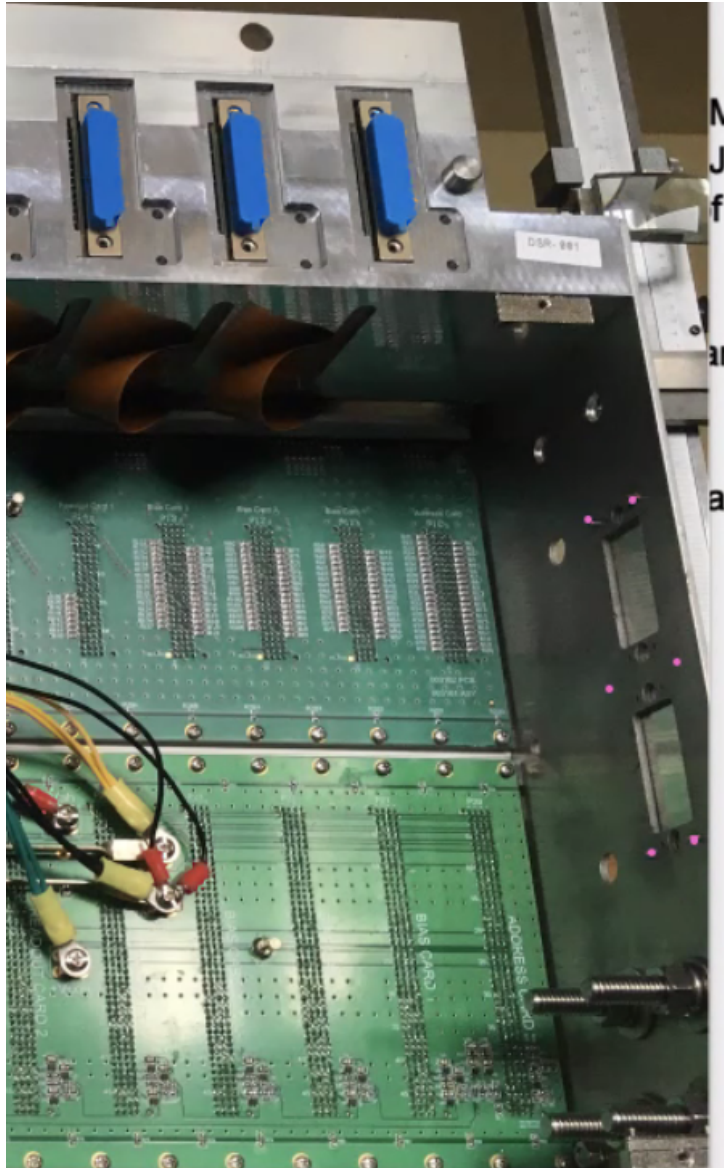
2021-08-09

The rittal blocks (1"?) need to be drilled out before mating to the filter block, because two threaded things can't fit together. (the first dmce has a custom - made bar instead of the 3 blocks

2021-07-05

When you go to the lab,

- Check that harness is easy to swap over to the other side with all the teflon rigidity.
- check holes for handles and separation of the power connectors. As of today, the model has not changed the vertical spacings of the connectors nor the holes or the handles.
Add holes to the sheet metal side panel



2021-06-21

To be discussed:

- Modifications to DMCE SW model (notes [here](#)).
- Pixus new front rails (to prevent MCE from bending): should we order those? Lead time?
- 2 bias cards missing at Caltech (see Lorenzo's email on 06/17).
- Mandana to check email thread w CAD for SW license outside Canada.

2021-06-07

Changes to be applied to the DMCE first prototype (and to the following 3 boxes):

- Top cover to extend (~2mm longer) on the top of the filter fail (a groove has to be made on the filter rail)
- More rittal blocks for the connection side panel - to - top cover (~twice as many blocks)
- Filter rail has to extend laterally on the side cover, to avoid tilt (we should be careful about the fact that the foot bolts here)
- For alignment precision we could rivet the bolts corresponding to the four feet.

About directories structure on scuba2:

- We should make a revision folder that contains .zip SW folder, BOM, pictures and Notes.
- AI [Sofia] : Add BOM on Drive to the proper server directory.

2021-05-17

- Metal shaving on top panel
- Retainer bar can be bevelled to avoid sharp corners.
- Loose screw on top panel, does it need a locking nut?
- One of the flex PCBs are turned over when going into the slot (looks different, mated OK)
- SF to check with Rittal on spec for top to bottom that can take the front panels.

2021-05-03

- Deliver first mce in July
- nice to have the first mce when assembling others
- need to have filter enclosures and filter rail (spin parts) by the end of may
 - RFQ for 30 enclosure + 3 filter rail from Spin / from machine shop
- SF : finalize decision on ears (?)

2021-04-12 After BICEP check

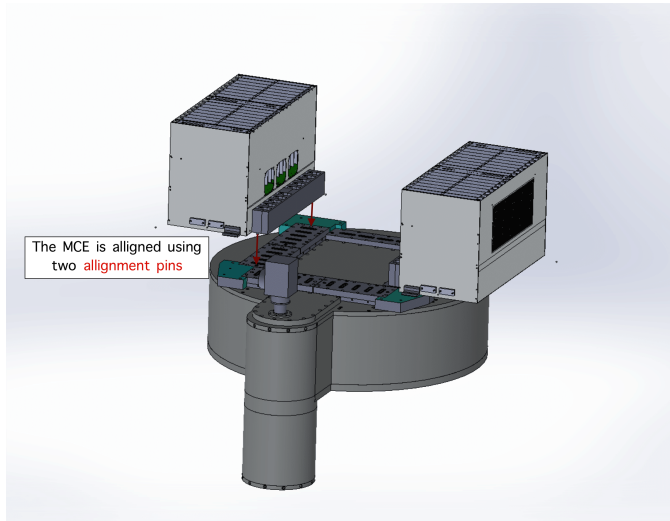
- hole for one foot interferes with the cryostat bracket (foot on the power connector side and hole closer to the connector)
- cryostat mounting ear holes need to be moved to the other side of the connector in the SW model.
- hard to mount: discussion with bicep is called for whether we can make changes to facilitate mounting on cryostat. no change on the mce for now. MH/SF will provide a mounting recipe to Lorenzo

- We are ok to proceed with manufacturing filters

2021-02-22 ()

To be discussed:

- Who is going to manufacture the mounting plates to anchor the MCEs to the cryostat?
(Green plates in the picture)



2021-02-22 (MA/SF/MH)

- Lorenzo confirmed via email that they typically mount on cryostat with no cards plugged in. So we will at best ship with partial cards (half?)
- MH to communicate with Mladen _today_ details for the front-rail reinforcement.
- Clem confirmed 2m length for two power cables, so Victor is making two cables.
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2021-02-17 (MA/MH)

- Email Lorenzo if we can ship crate with few cards only, so we don't have to worry about strengthening the front rail (when all cards are populated, the front rail is too soft and can't eject cards anymore)
[I think the latest decision on that (and what they need) is the double MCE to be half populated. Are we hoping to send it with less cards than that? (Sofia)]

2021-02-09 (Ma/VS)

- Shafts are shortened, by they are sticking out about 1cm or less
- Filter holder is tapered
- Fan plate is beveled and there is a groove on the front rail for the fan plate to slide in
- VS notes that Hirose connectors are getting loose with more insertion. He plans to repeat the IB test.
- MA notes that we could increase the separation of the two power connectors (move the lower one lower).
- We forgot what the handle resolution was!!
- Next subracks will have power harness such that it would reach both sides. Make sure the connector mounting housing block is redesigned to be able to move the harness over.
- Add more brackets (currently 3) for the backpanel attachment to the bottom floppy panel. Older MCEs had a proper rail that is missing now.

2021-01-25 (Mon)

MA/MH/Mladen/VS met at UBC and decided on which changes need to be applied before shipment

- Filter box holder to be tapered to ease the bend of the flex cables
- Handles are non ideal

2021-01-21

Victor brought the proto unit to 204, we inserted all cards and here are few things that need to be checked. MA/MH reviewed the prototype with input from Victor.

- Shafts are too long, about an inch too long. They should not stick out of the fan plate.
 - Check whether the drawings are the right length (on future ones)
- Fan Wiring
 - Fans also need to be powered via the Winchester power connector.
 - Preferable: all fans come up even if one supply is on. If this is hard, then each power connector should bring up two fans.
- Labeling power connectors and MCEs
- Fan cover dimensions are not quite right, it does not fit properly.
 - Holes in the fan cover are too loose for the shafts, they better be tighter and maybe use a collar.
- Holes in the shaft housing (top rail? Mid rack top rail) not aligned with holes for shafts in the filter housing.
 - Collars had to be removed to fit the shafts.

- Make an assembly/disassembly set of instructions for the Filter Stops (MH to interview Victor)
- Handles are missing
 - Holes on side panel need to be moved to be further away from Power Connector
 - Vertical is fine
 - There is an extra hole aligned with the original two to allow for an alternative installation of handles. If two holes are moved, make sure the third is moved too.
 - Holes can stay where they are for the prototype.
- Flex pieces on the sides are under stress. After looking into this carefully, we notice that they are not mounted as expected. We like to check the Solidworks drawing
 - Also there is now a confusion about Hirose connector orientation and whether we have an orientation issue per layout.
 - MA or MH to do connectivity test from Backplane to pin1 to confirm. (MA done 2021-01-25 passes, also Continuity test had passed)
 - MA to check layout and confirm with Mike's help. (MA done 2021-01-24)
 - Has the MDM orientation ever confirmed with BICEP group. (Sofia - Done)
 - We need a proper label with card numbering: CC/AC/BC1, BC2.... Even I plugged them in the wrong order.
- The retainer unit in the back of the Hirose connectors needs clearance around the screws close to the edge of the cards. As is, it is stressing the flexPCB
- The card ejectors are not quite grabbing and it is hard to insert/remove cards. It is almost impossible to take the middle cards around middle CC out.
 - Make a hook tool to eject middle cards

2020-12-14

- Fan plate: no drawing yet, no vendor chosen, Mladen (to do)
- Mounting plate for Winchester connector: Mladen (before holidays)
 - This subrack - plate is outside
 - Future subracks - plate inside and side wall opening larger to accommodate
- Stop filters: needs disassembly and retest,
 - Victor to disassemble and pass enclosures to Mladen
 - Mladen to leave the parts with the shop and ask to add M4 (?) hole
 - A screw going through the hole , big enough to catch
 - Mladen asks how much travel you need before the stopper? Aim for max minus ~2mm
- alignment pins: Victor to insert
- MA to test after the above is done.

New items

Alignment: Do we need the 72HP style Alignment pins? Or Filters are enough or do we envision a new way to align?

2020-11-25

Meeting with Sofia at 8am, with Mladen/Victor at 14h15

- **(AI)** Top Plate:
 - **Mark** will make a drawing for the first doubleMCE, **Mladen** makes a model based on what Sofia had and will send out to a shop for the next 3 MCEs. They are going to decide what is the best folding pattern.
 - To be modified for 5 fans (it's good to have one fan dedicated to the center as we have some extra heating there due to the RC+CC combination).
 - The Low noise fans that Caltech is using are okay (they are 12V but work well with 10V)
 - Two Fan connectors and mounting plate for both needs to be supported
 - **MA** to pass the connector part number to Mladen/Mark (not on the bom)
- **(AI)** Power Wiring harness
 - Make a mounting plate for the Winchester connectors (**Mladen**)
 - Double check on the jackscrews (done See Lorenzo's email Nov 25)
 - Check on the fan wiring pins why don't I see the fan connector dangling. (done, **Victor** is aware and will extend the wires and add the connector at the end).
- **(AI)** Filter FlexPCB stopper - **Mladen/Mark to meet on Thursday**
 - Has to be individual stopper
- **(AI)** retainer piece for the back of filters not in place at the moment, **Mladen to design and circulate**
- **(AI)** Do we want to anodize the subrack for look?
 - Apply a coating on filter envelope to keep the motion smooth (**Mladen to explore**)
 - **Decision made:** The first prototype stays as is: no anodize, no coating, the next 3 units will have coating and anodize

2020-11-23

MA at UBC, gave an IB, 9 + 1 MDM connector and 5 Filter flexpcb to Victor to complete the first unit. So far it looks great. Will load photos.

- (AI) Fan plate: told Matt to put it on hold. It turns out that Lorenzo's fans are 12V/24V/48V and there is a discrepancy. He also said that it is complicated, MH/Sofia said they had left the drawing for folding instructions from whoever would build it!
- Victor sent a note with modifications
 - 1. MCE003239_Side Mount. Fl.: 4 x Ø 2.6
 - 2. MCE003226_Rear Panel: 6 x Ø 3.1
 - 3. MCE003232_Bottom Cover: 12 x Ø 3.1
 - 4. MCE003229_Side Plate: 4 x Ø 2.6
 - 5. MCE003231_Rear Horizontal Center: 2 threads of M4.
 - 6. MCE-C580_3245: 2 threads M4.
 - 7. MCE-C580_3228: 2 threads M4, two notches for MCE003244.
 - 8. MCE-C580_3246: 2 threads M4, two notches for MCE003244.
 - 9. MCE003234_Side Panel: Fig1, Fig2, holes 3 x Ø 5.1 for support legs.
 - 10. New part - Support legs: 2 of MEC-C580-308B-MCE002542_Support Legs revB.
 - (Two of MEC-C580-308B-MCE002542 ones are attached to both sides of subrack).
 - 11. Plastic card guides: very right guide is customized.
 - 12. New part: Metal Bar to clamp filter Hirose connectors on Instrument Backplane
 - There are also two marked drawings, see PDF
- (AI) Design a stopper for the filters: The current design is prone to ripping the flex pcbs when trying to undo the filters.
- (AI) Fan-plate connector - currently to 5V? Make sure compatible with the fan we choose.
- Asked Victor for test results under IB serial number directory. When I tried to print the labels, Victor magically found the previously printed serial number labels!
- Alignment Pins (MH to add)
- (AI) Do we want to anodize the subrack for look?
 - Apply a coating on filter envelope to keep the motion smooth (**Mladen to explore**)
 - **Decision made:** The first prototype stays as is: no anodize, no coating, the next 3 units will have coating and anodize

Matt 2020-11-20

Fan plate on hold till we confirm 3 or 4 fans? Fan is not on the bom. Sent a note to Lorenzo to confirm why that particular fan.

MA/VS 2020-11-18

VS wrote: new s/rack is almost ready to a stage as it supposed to be with prepared/made parts,

very few touch-ups and i'll move on to review stage - summarize changes and developments are needed

by now the only q.: may i have second Instrument Backplane board? i'd like to fully populate new s/rack with all cards in

MA/VS 2020-10-05

- MA returned the wrong parts to pixus, still waiting for material part numbers to purchase for drawings 003228, 003231, 003246, 003245
- I can't find those drawings on the server under sc2mce/system/subrack/design/mechanical/DoubleMCE/DRWs_.pdf
- VS reports that side panels have wrong size holes and he redrilled them , more info to come.

MA/SF/MB/VS 2020-09-24

- (Sofia) Material specified in following drawings is too short (84HP or 43cm) and need to be modified: 003231, 003238, 003245, 003246.

- (MA) Wire gauge 18 should be used for the harness, not 16, I order teflon wires as per Victor's advice.

- (Sofia) fan plate to be modified to support 4 fans.

MA/MH 2020-06-05

Tried the new parts from Spin, L-Shape filter, Instrument backplane Issues are:

- wrong gender connectors
are mounted on the filter and hence, they are on the wrong side of the board.
- Filter enclosure is just a bit too tight for the filter flex pcb, we need to carve it out for these 10 samples and modify drawings to account for tolerances
- filter rail has right handed thread while all previous MCE design shave left handed thread.
solution: we will use a steel insert to make it left handed. No change in drawings, we will use insert for all units. (SF: filter rail or filter boxes?)
- It is somewhat awkward to replace a filter box, but doable. no change needed.

[SF : videos and pictures at https://www.phas.ubc.ca/~mandana/double_mce/]