TOP status for cables, service space, crates, grounding, EMC

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TOP status for cables & service space

- for each TOP module inside detector, need:
  - HV: (32) RG-316; 512 overall
  - LV: (4) twisted pairs @ 14 AWG for 3V@4A, (8) twisted pair @ 20 AWG (4V@1A, 5V@2A [not yet final]); 128 @ 14 AWG overall, 256 @ 20 AWG overall
  - timing/jtag: (8) flat CAT7 to FTSW; 128 overall (will be AC-coupled on final version of front-end board)
  - BPM: (4) RG-316; 64 overall
  - data/trigger: (8) fiber optic pairs 50/125 LC/LC duplex; 128 overall
  - (4) analog output RG-316; 64 overall
  - ??? cooling pipes for 16*120W of dissipated power
TOP status for cable layout

proposed iTOP grounding scheme

LV DC (isolated)

CAEN HV DC (non-isolated)

return/shield for groups of 24 channels tied together inside supply

coax (RG-316) *512

twisted pair for each LV (3V, -4V, 5V) *4*16

E-hut

shields tied to local ground

HV panel?

LV DC shields tied to local ground and supply returns at front-end electronics power entry

iTOP module (contains 4 front-end electronics modules)

HV returns/shields isolated from each other through 220 Ohm resistors, and also isolated from LV DC returns with 100 Ohm resistors in parallel

Belle 2

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TOP status for crates

- TOP: none needed on detector [except for (8) FTSW {6U}; but these 6U crates are shared with bKLM]

- details at:
  - http://www.phys.hawaii.edu/~idlab/taskAndSchedule/KLM/KLMcrate_config.pptx
  - http://kds.kek.jp/getFile.py/access?contribId=145&sessionId=82&resId=0&materialId=slides&confId=11575
TOP status for grounding

- LV power supplies:
  - returns tied together at front-end only (occurs at carrier0/1/2/3 level)

- HV power supplies:
  - grounds/shields are tied together at CAEN supply module, and also at front-end HV active divider module, but may also be tied together at patch panel on/near detector
TOP status for EMC

• TOP:
  • untested
  • waiting for pre-production prototype hardware and final fully functioning firmware before testing this, as the EMC details will likely change based on these