

ISU KLM Meeting

September 13

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Summary

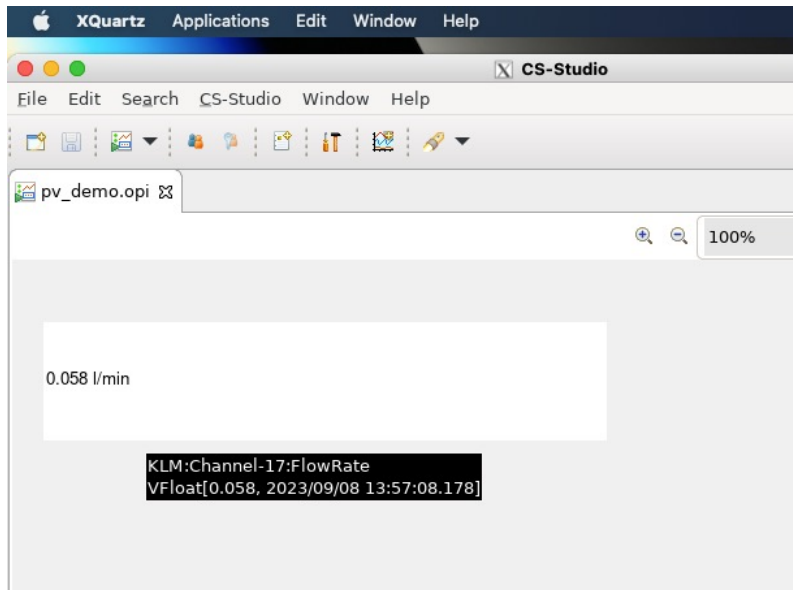
1. b2nsm networking update
2. GUI first steps
3. GUI additions
4. GUI next steps
5. Other items

Networking Update

- Nakao-san agreed to add one RaspberryPi to the b2nsm network
 - pi2 now has an IP on b2nsm: klmpi2.b2nsm.kek.jp has address 172.22.35.228
 - No news on KLM private network yet, but Michele indicates it should be simple once Sourav is free ~ September 30
- pi2 has ethernet connection to KLM switch
 - Can use ssh from bdaq: “ssh pi2@172.22.35.228”, password: Belle2
 - Reminder: readout board attached to BB3 outer RPC return side bubbler
- Can read see PVs on network: see next slide

Bubbler Monitoring GUI

- Tommy Lam suggested we use a CSS installation on klmpc03 for development
- First step: we can see PVs on CSS



Bubbler Monitoring GUI

- Second step: basic GUI
 - LEDs indicate channel status (bubble rate > 0 Hz)
 - and(channels<16-31>) LED indicating if all channels are running
 - Channels 16, 30, and 31 are disconnected at the bubbler panel, so exclude them from the and() LED

Channel 16 flow rate	● 0.000 l/min
Channel 17 flow rate	● 0.064 l/min
Channel 18 flow rate	● 0.267 l/min
Channel 19 flow rate	● 0.633 l/min
Channel 20 flow rate	● 0.500 l/min
Channel 21 flow rate	● 0.291 l/min
Channel 22 flow rate	● 0.262 l/min
Channel 23 flow rate	● 0.185 l/min
Channel 24 flow rate	● 0.200 l/min
Channel 25 flow rate	● 0.086 l/min
Channel 26 flow rate	● 0.601 l/min
Channel 27 flow rate	● 0.288 l/min
Channel 28 flow rate	● 0.278 l/min
Channel 29 flow rate	● 0.556 l/min
Channel 30 flow rate	● 0.000 l/min
Channel 31 flow rate	● 0.000 l/min




Flow rate status
(good: light, bad: no light)

Bubbler Monitoring GUI

- Third step: various additions
 - Adjust minimum allowed flow rate that light up an LED
 - e.g. if our code tells us that a disconnected channel's bubble rate is 0.001 Hz, only channels with a bubble rate larger than 0.001 Hz lights up an LED
 - User can vary the value while running

Channel 16 flow rate 0.000 l/min
Channel 17 flow rate 0.082 l/min
Channel 18 flow rate 0.278 l/min
Channel 19 flow rate 0.674 l/min
Channel 20 flow rate 0.539 l/min
Channel 21 flow rate 0.304 l/min
Channel 22 flow rate 0.290 l/min
Channel 23 flow rate 0.219 l/min
Channel 24 flow rate 0.168 l/min
Channel 25 flow rate 0.070 l/min
Channel 26 flow rate 0.627 l/min
Channel 27 flow rate 0.318 l/min
Channel 28 flow rate 0.330 l/min
Channel 29 flow rate 0.586 l/min
Channel 30 flow rate 0.000 l/min
Channel 31 flow rate 0.000 l/min

 Flow rate status
(good: light, bad: no light)

0.001


minimum allowed
flow rate [Hz]

Change minimum flow rate
from 0.001 Hz to 0.06 Hz



Mostly valuable for
calibrating flow rate
measurement rather than
final use case

Channel 16 flow rate 0.000 l/min
Channel 17 flow rate 0.051 l/min
Channel 18 flow rate 0.269 l/min
Channel 19 flow rate 0.638 l/min
Channel 20 flow rate 0.536 l/min
Channel 21 flow rate 0.273 l/min
Channel 22 flow rate 0.272 l/min
Channel 23 flow rate 0.203 l/min
Channel 24 flow rate 0.190 l/min
Channel 25 flow rate 0.096 l/min
Channel 26 flow rate 0.593 l/min
Channel 27 flow rate 0.273 l/min
Channel 28 flow rate 0.265 l/min
Channel 29 flow rate 0.547 l/min
Channel 30 flow rate 0.000 l/min
Channel 31 flow rate 0.000 l/min

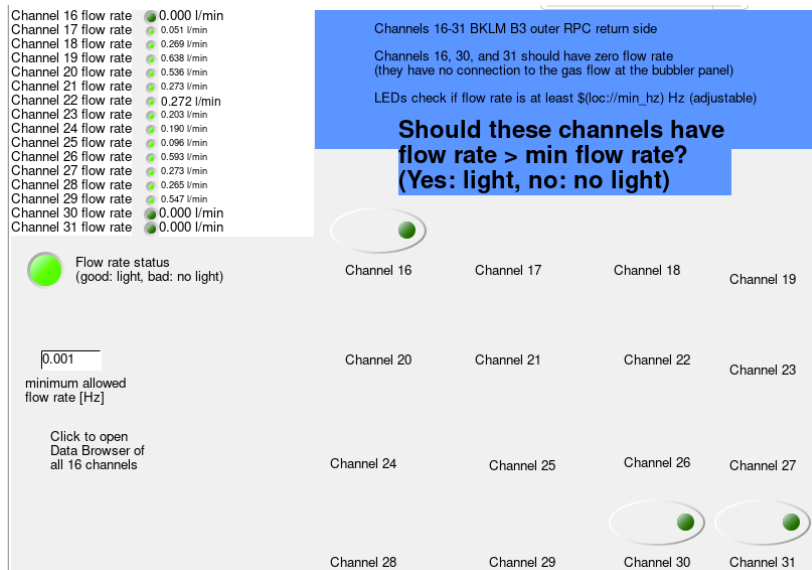
 Flow rate status
(good: light, bad: no light)

0.06

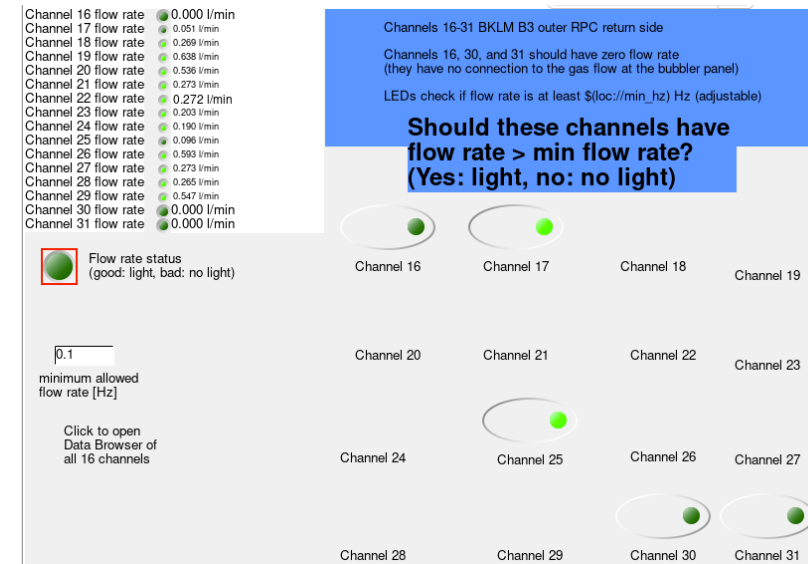
minimum allowed
flow rate [Hz]

Bubbler Monitoring GUI

- Third step: various additions
 - Maybe a channel other than 16, 30, 31 is expected to have less than minimum bubble rate
 - Add Boolean controls that indicate/control this behavior
 - Boolean buttons only visible when a channel has less than minimum bubble rate



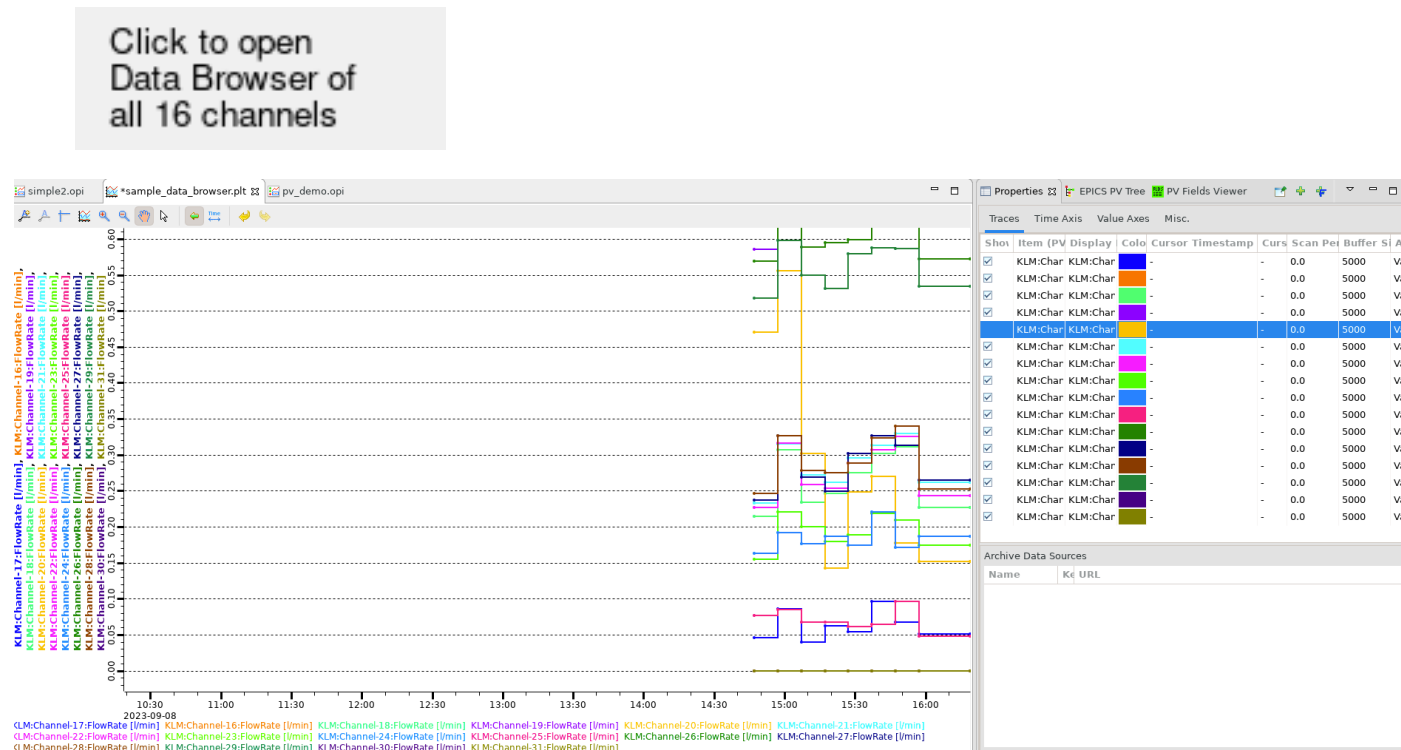
Expected case



Case where minimum bubble rate is expected to be > 0.1 Hz

Bubbler Monitoring GUI

- Third step: various additions
 - Open a time series plot of the 16 channels' bubble rates



This still needs some adjustment

Bubbler Monitoring GUI

- Next steps
 - Would like to have a home page with and() LEDs for each RaspberryPi with subpages like the one we have developed, reachable by a click
- Maybe we can see how it works developing with Phoebus
 - After attending “Discussion for migration from CSS to Phoebus” meeting, it seems it might be best to just start from Phoebus
 - These GUI files are not very complicated, so they should be fine
 - Might still be worth a shot to start right from Phoebus

Other Items

- PV naming
 - What is the configuration again?
 - For each Pi there are how many channels?
 - For each sector there are how many Pis?
 - Currently the PV names for one board, one ribbon cable are “KLM:Channel-<*i*>:FlowRate” with *i* 00-63
 - Would prefer to switch to “KLM:Bubbler:Sector<*j*>:Channel<*k*>:FlowRate”
 - More consistent with existing PV names from other subdetectors
 - Sector number determined by hostname?
 - Can have identical copies of the software on each Pi
- Archiving
 - Not yet completed
 - Will contact Seokhee Park or whoever is now responsible for registering PVs to b2arch1