

Status of Pump Tests

02.09.2019 UTTPS Aachen Meeting

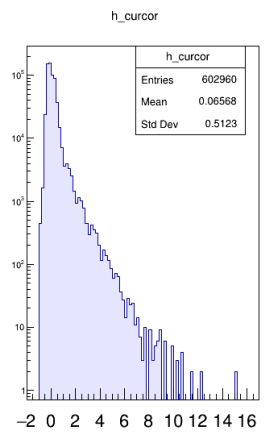
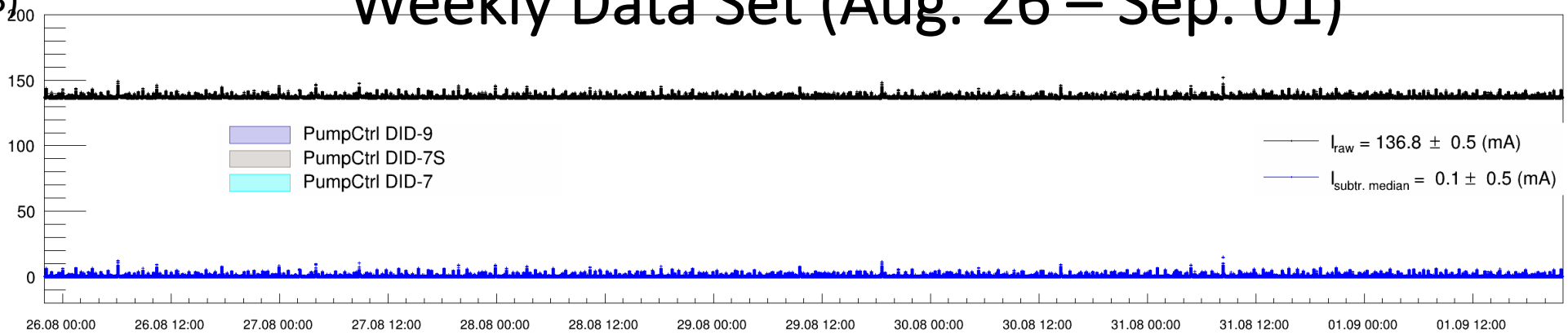
MK #1 (LT-003)

- $T_{\text{pump}} = +15^{\circ}\text{C}$, $T_s = +20^{\circ}\text{C}$
- $T_{\text{pump}} = +10^{\circ}\text{C}$, $T_s = +20^{\circ}\text{C}$
- Pump Inspection (Feb. 13 – 14)
- $T_{\text{pump}} = +10^{\circ}\text{C}$, $T_s = +20^{\circ}\text{C}$ (Feb. 18 – 25)
- $T_{\text{pump}} = +5^{\circ}\text{C}$, $T_s = +15^{\circ}\text{C}$ (Feb. 25 – May. 23)
- Pump Inspection (May 23 – 24) & Restart (May 27)

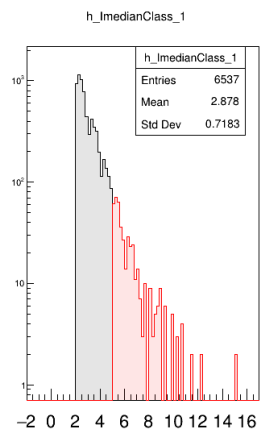
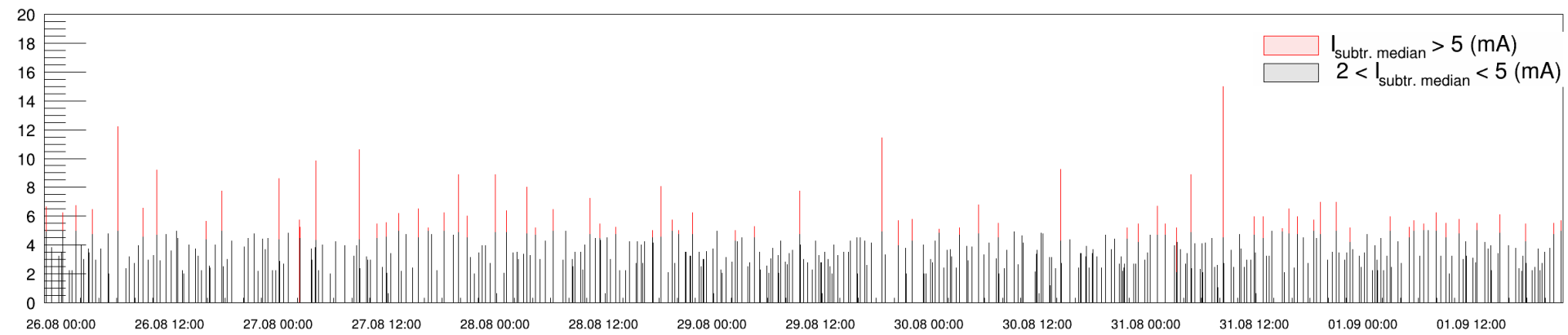
MK1 (LT003)

Weekly Data Set (Aug. 26 – Sep. 01)

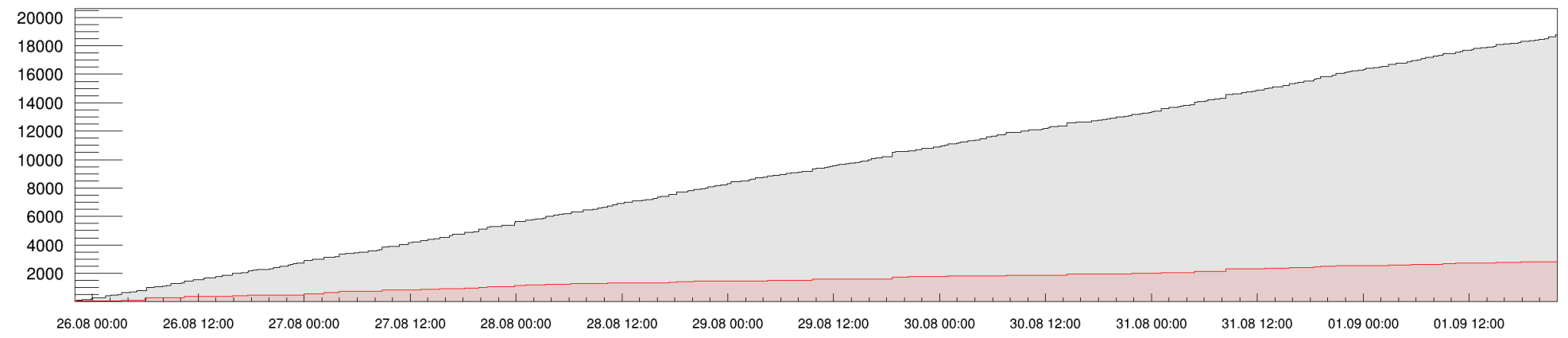
Pump Current (mA)



Pump Current_{Class} (mA)

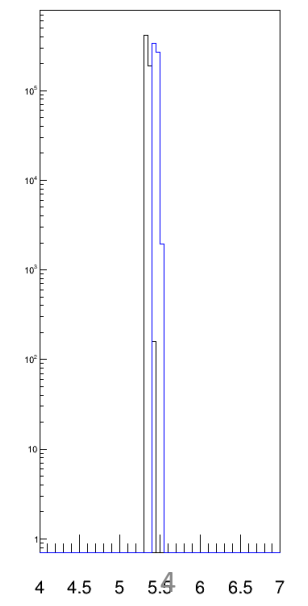
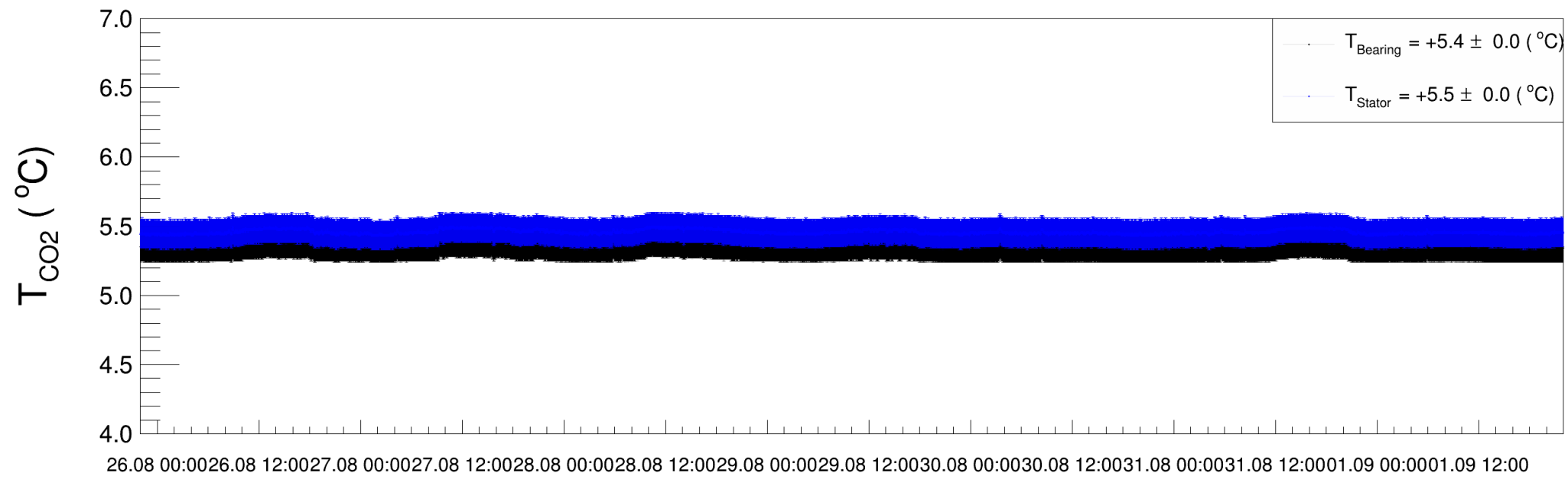
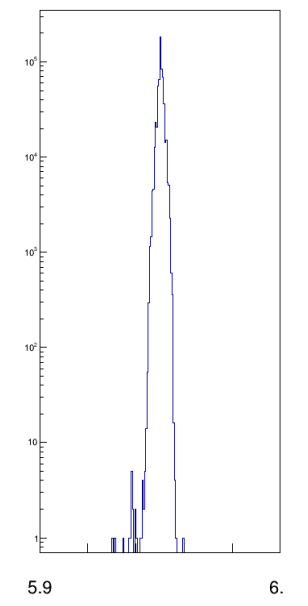
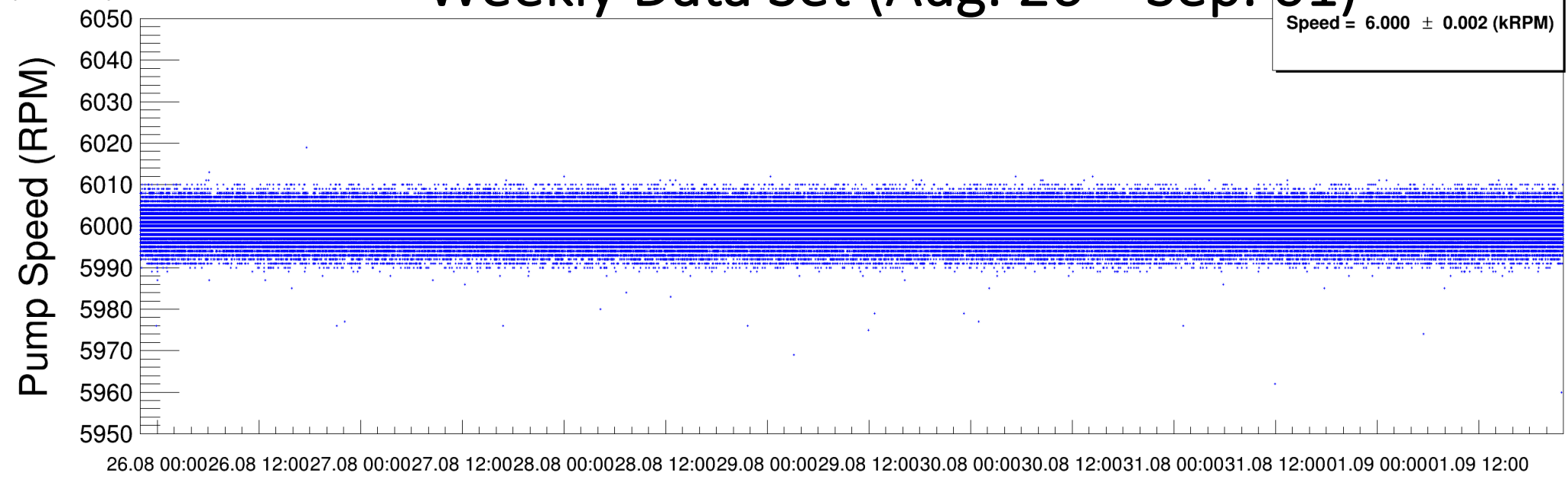


Pump Current_{Cumulative} (mA · s)



MK1 (LT003)

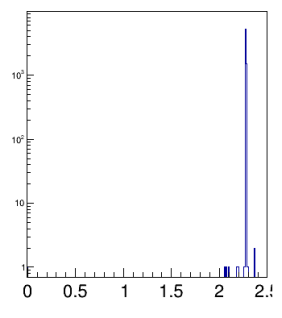
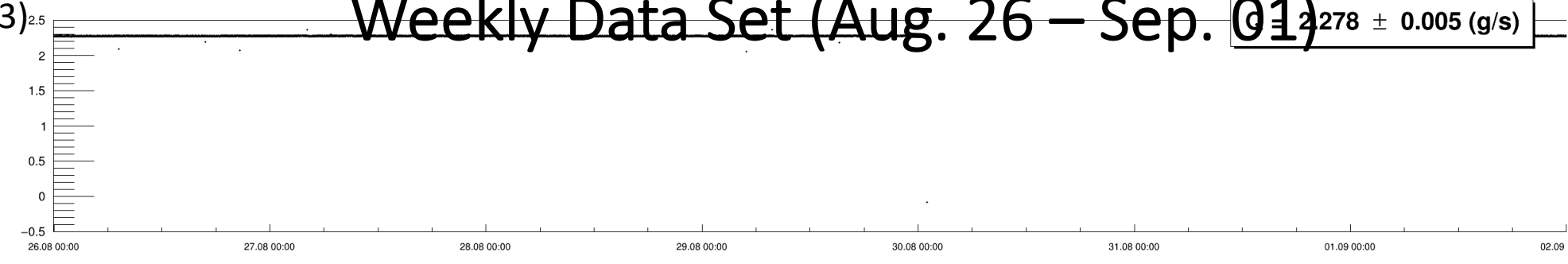
Weekly Data Set (Aug. 26 – Sep. 01)



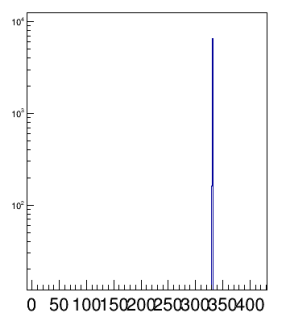
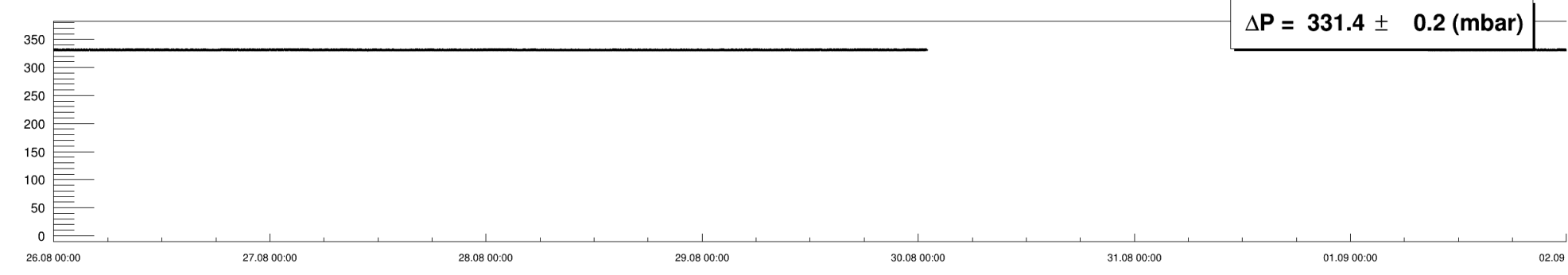
MK1 (LT003)

Weekly Data Set (Aug. 26 – Sep. 01)

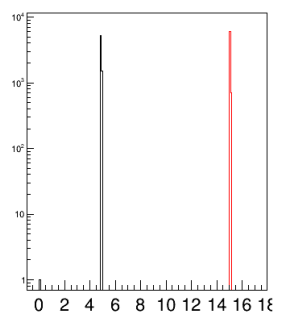
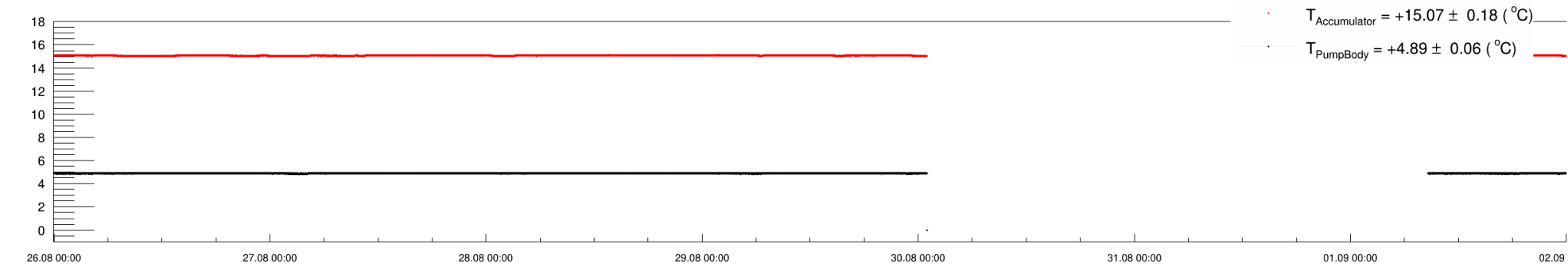
Flow Rate (g/sec)



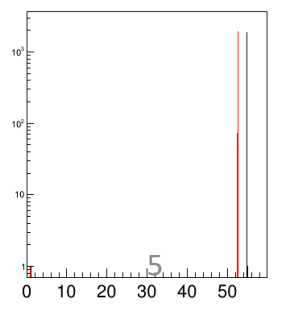
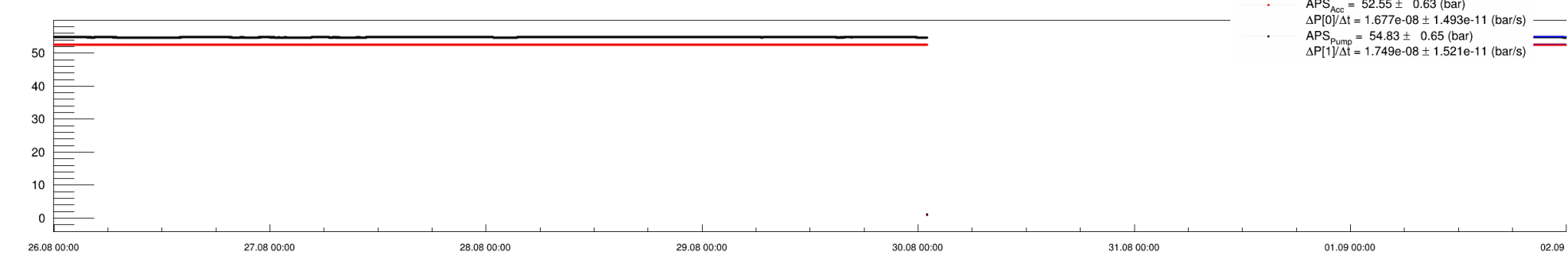
ΔP (mbar)



Temperature ($^{\circ}\text{C}$)

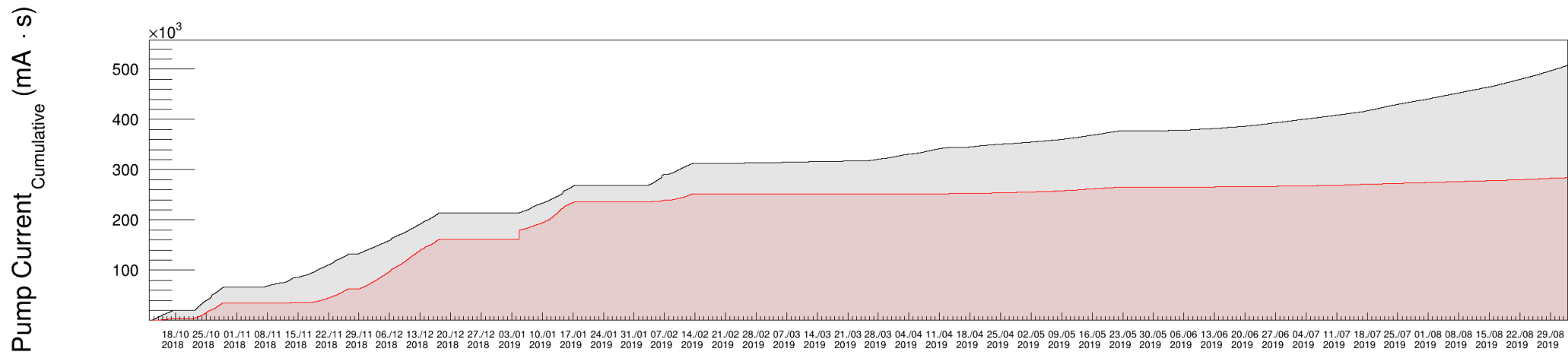
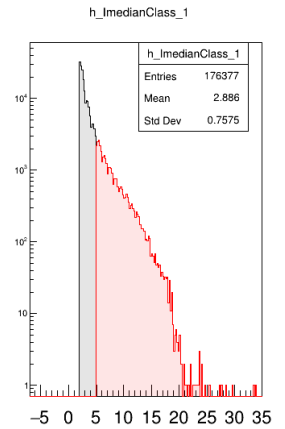
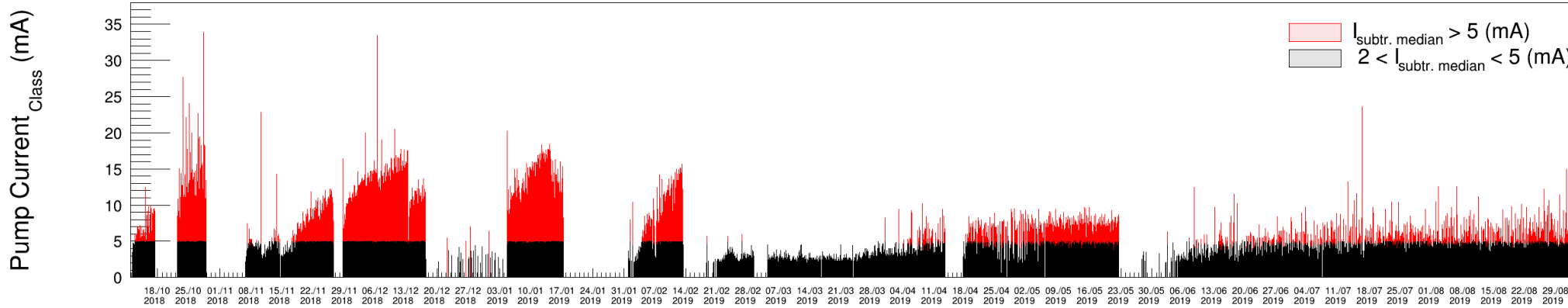
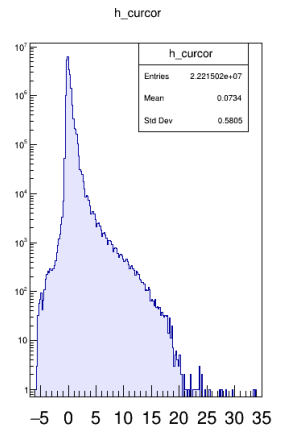
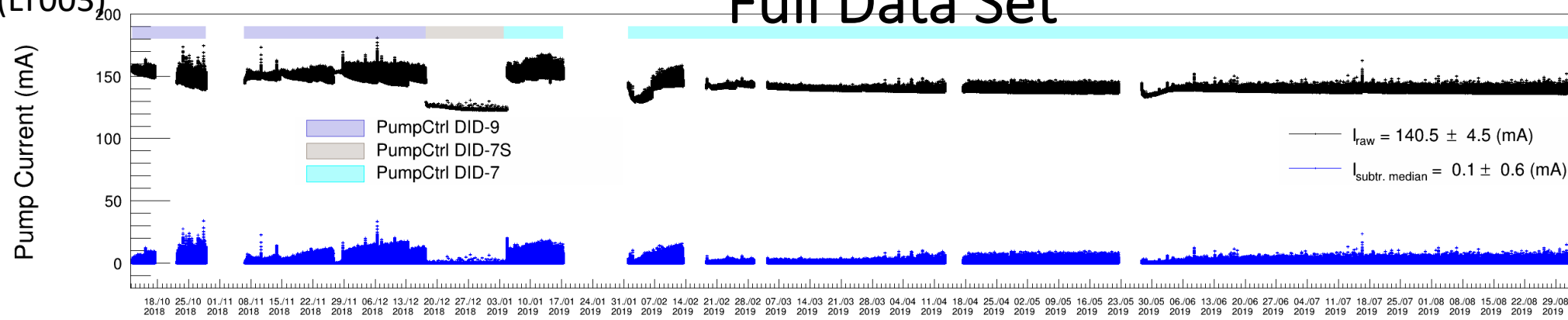


APS (bar)



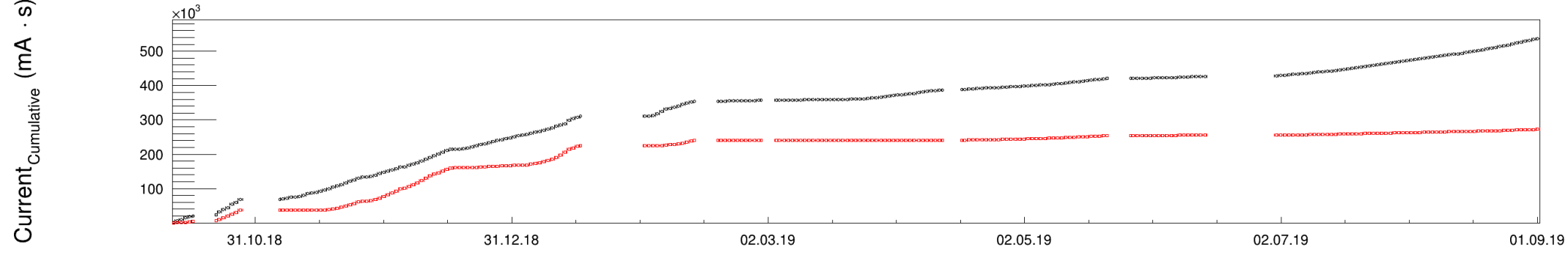
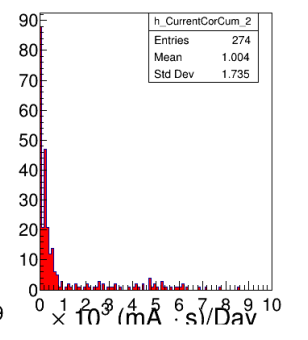
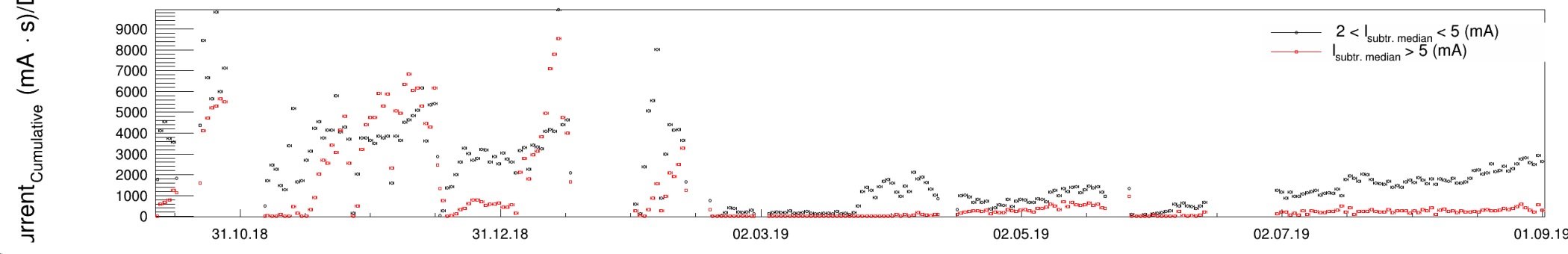
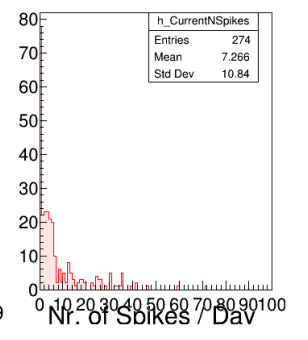
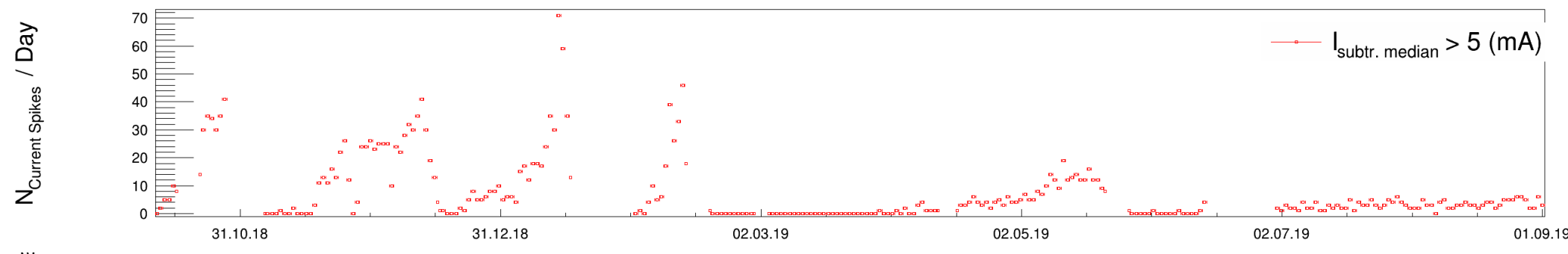
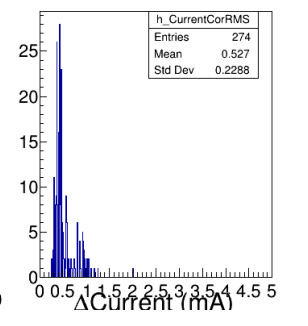
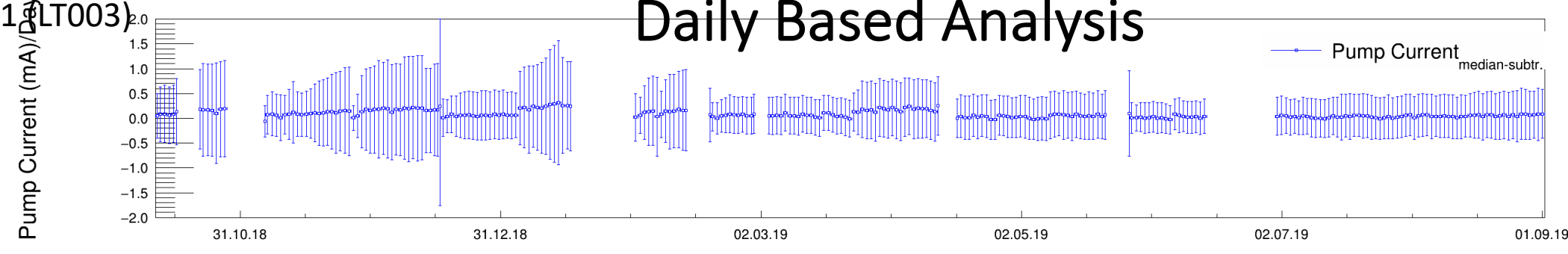
MK1 (LT003)

Full Data Set



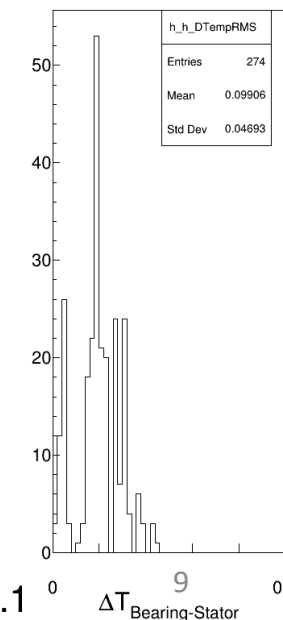
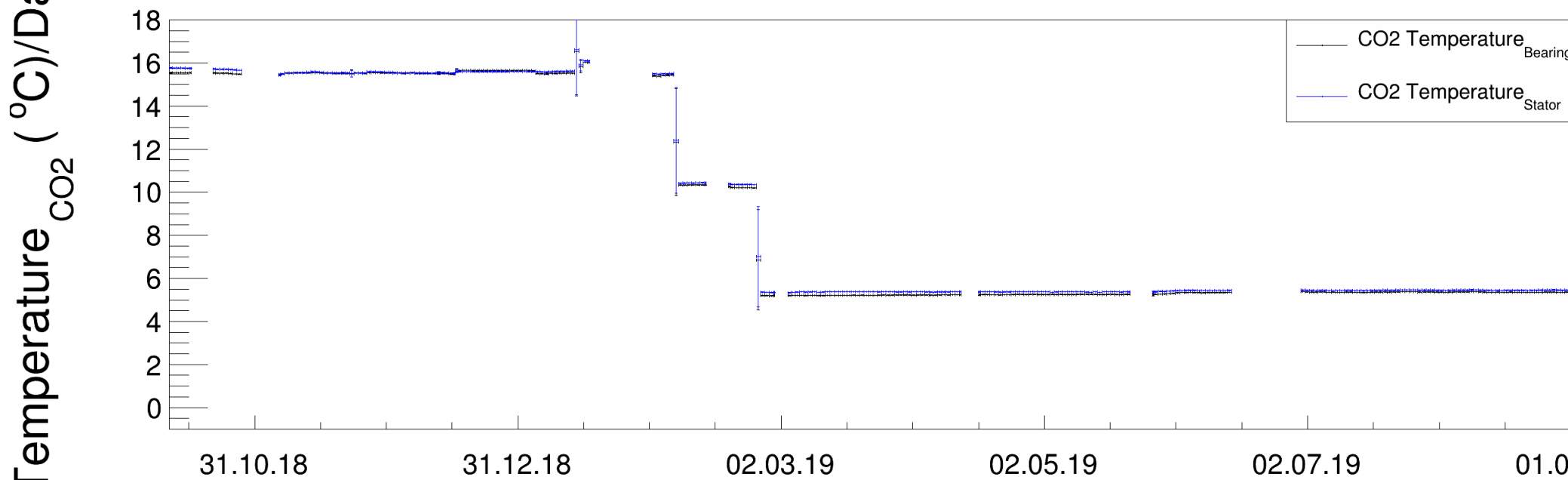
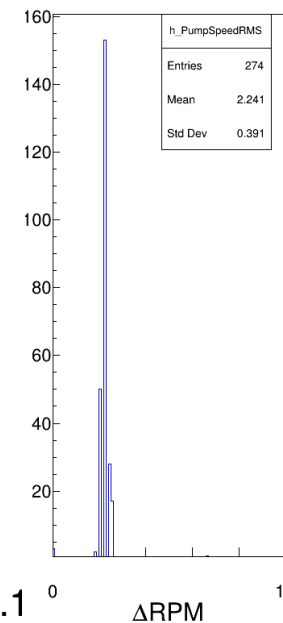
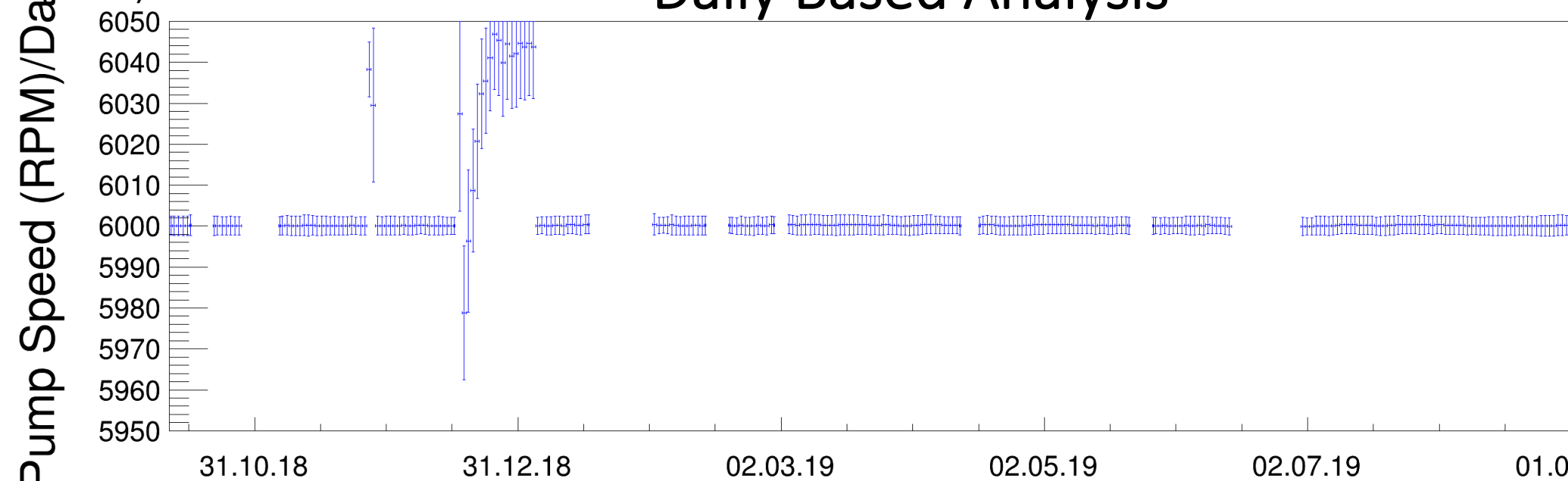
MK1 (TLT003)

Daily Based Analysis



MK1 (T003)

Daily Based Analysis

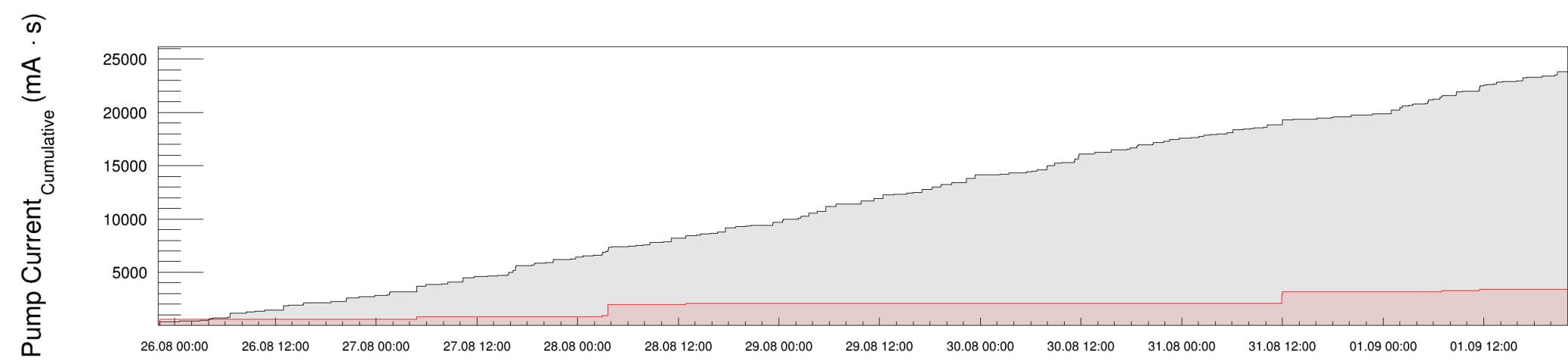
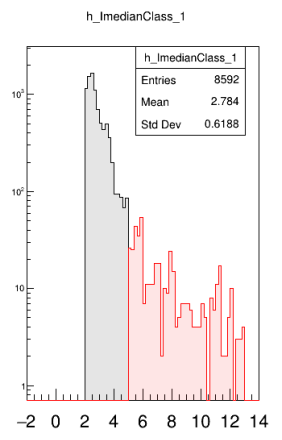
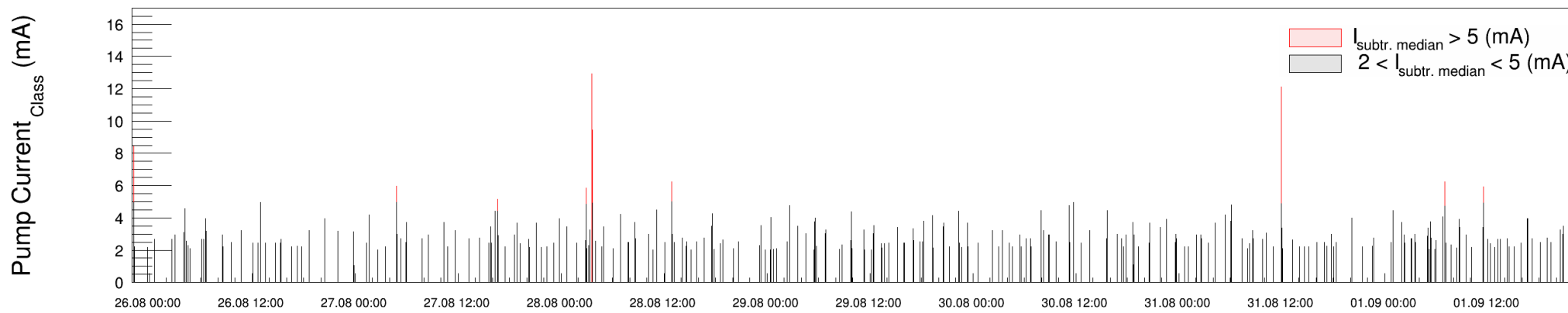
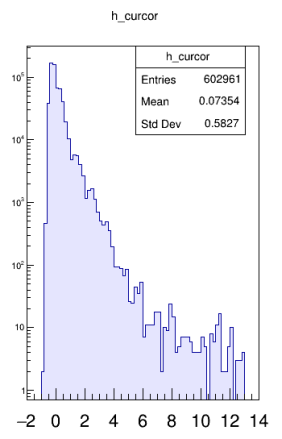
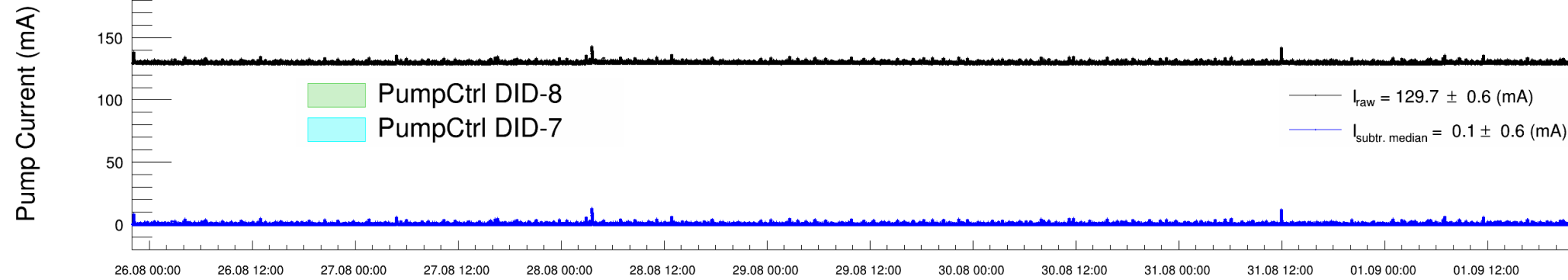


MK #2 (LT-002)

- $T_{\text{pump}} = +0^{\circ}\text{C}$, $T_s = +5^{\circ}\text{C}$ (constant condition)
- No Data while running
 1. 03/01/2019 @ 6:22am (UTC) - 03/04/2019 @ 8:02am (UTC)
due to s/w memory leak
 2. 04/13/2019 @ 8:54am (UTC) - 04/17/2019 @ 9:14am (UTC)
due to laptop power off
- Refill Accumulator
 1. 4min stop pump on 14.01.2019
 2. while keep running pump on 09.08.2019

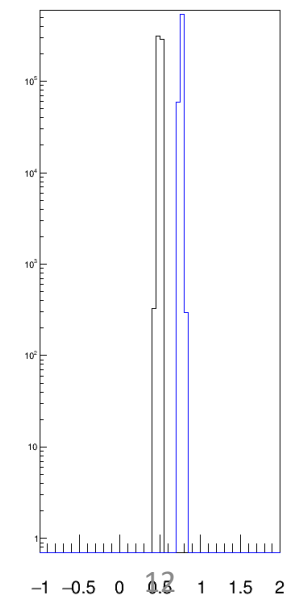
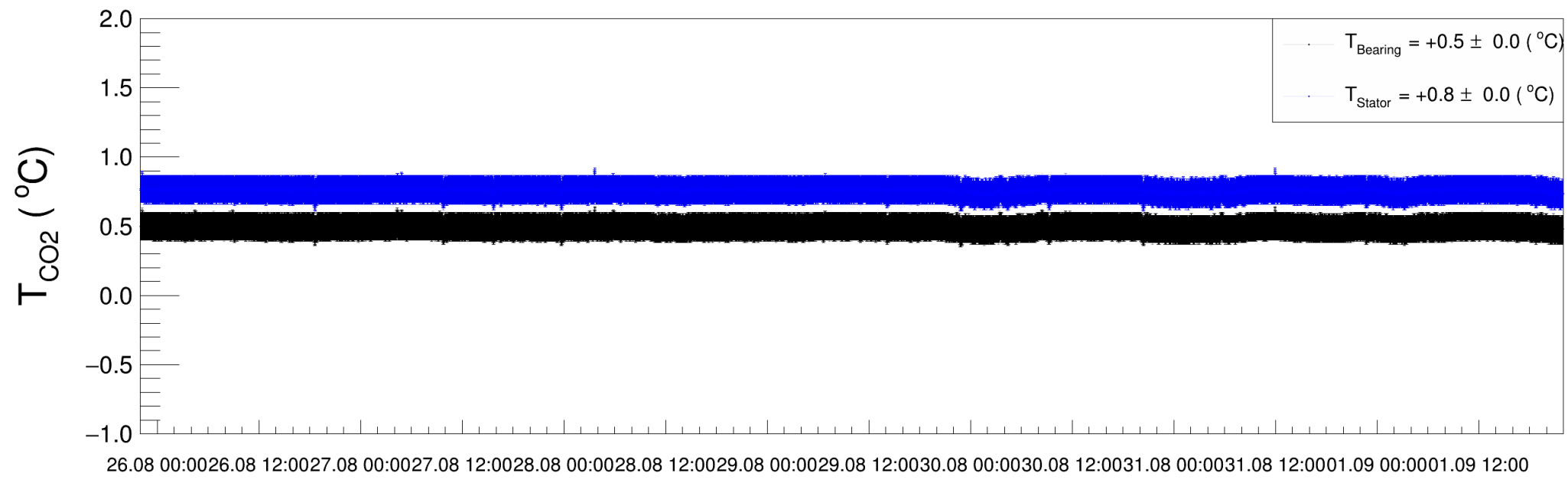
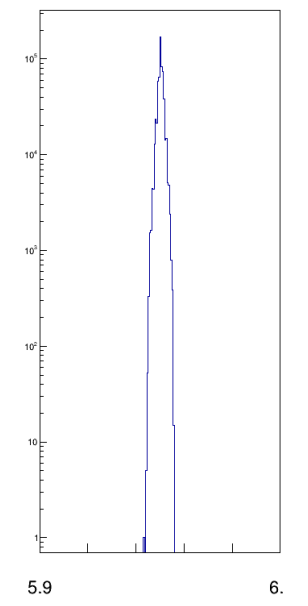
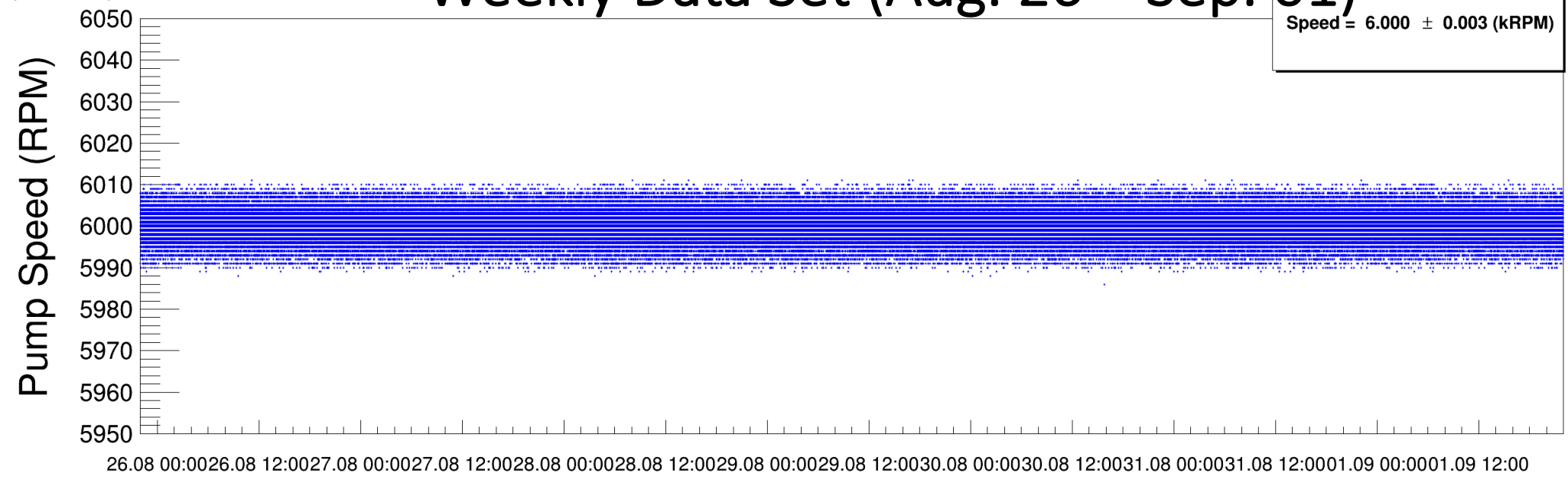
MK2 (LT002)

Weekly Data Set (Aug. 26 – Sep. 01)



MK2 (LT002)

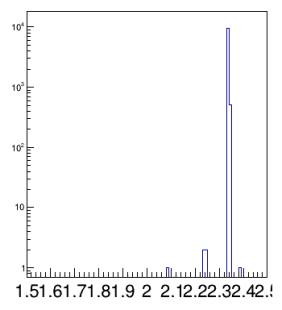
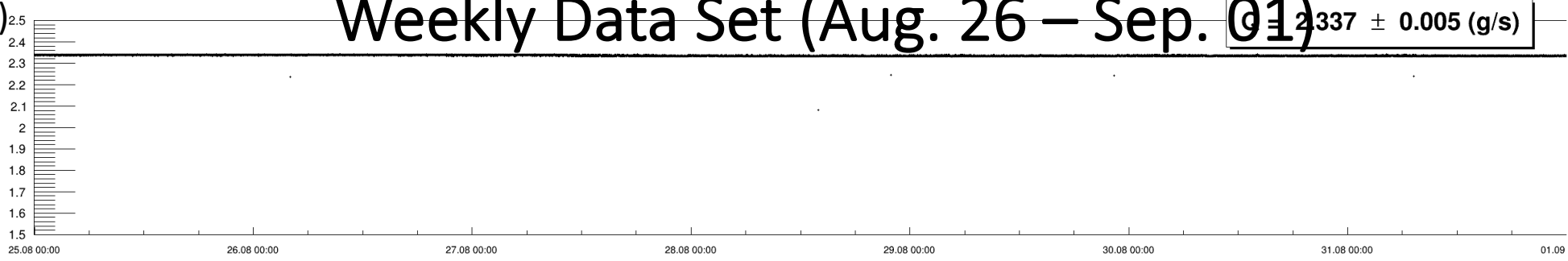
Weekly Data Set (Aug. 26 – Sep. 01)



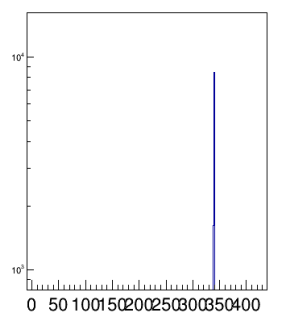
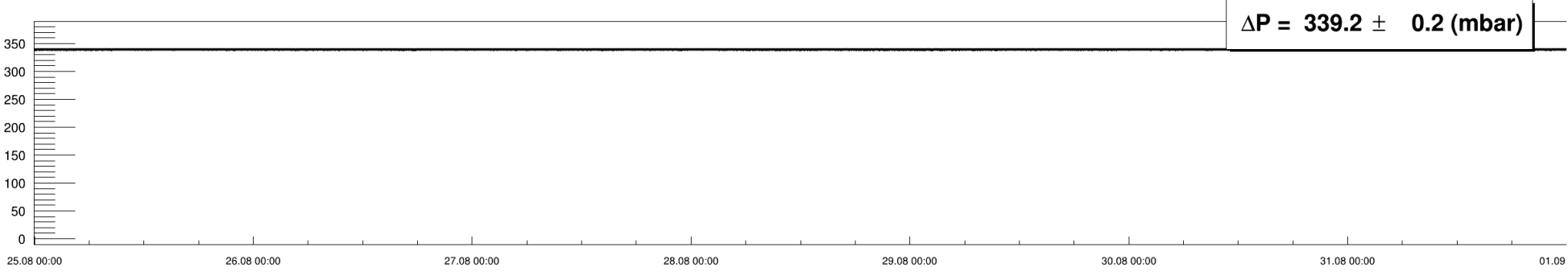
MK2 (LT002)

Weekly Data Set (Aug. 26 – Sep. 01)

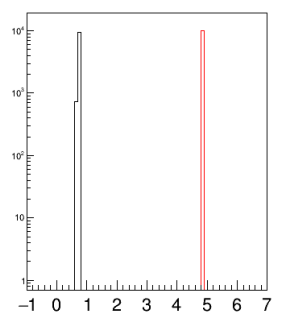
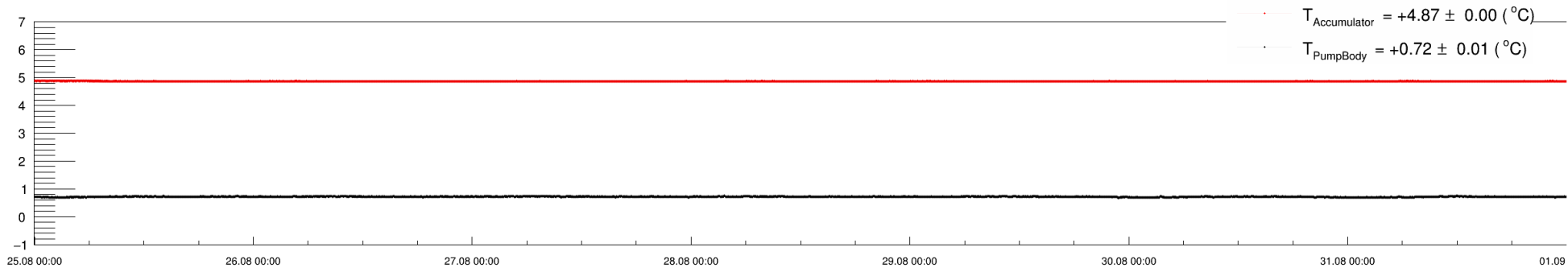
Flow Rate (g/sec)



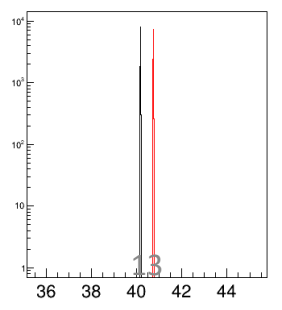
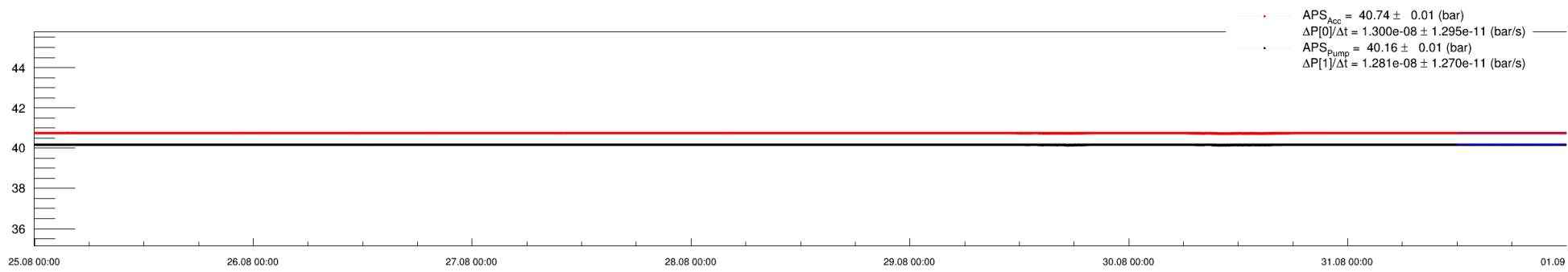
ΔP (mbar)



Temperature (°C)



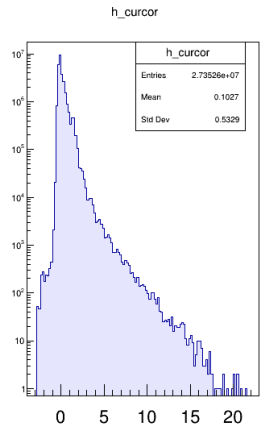
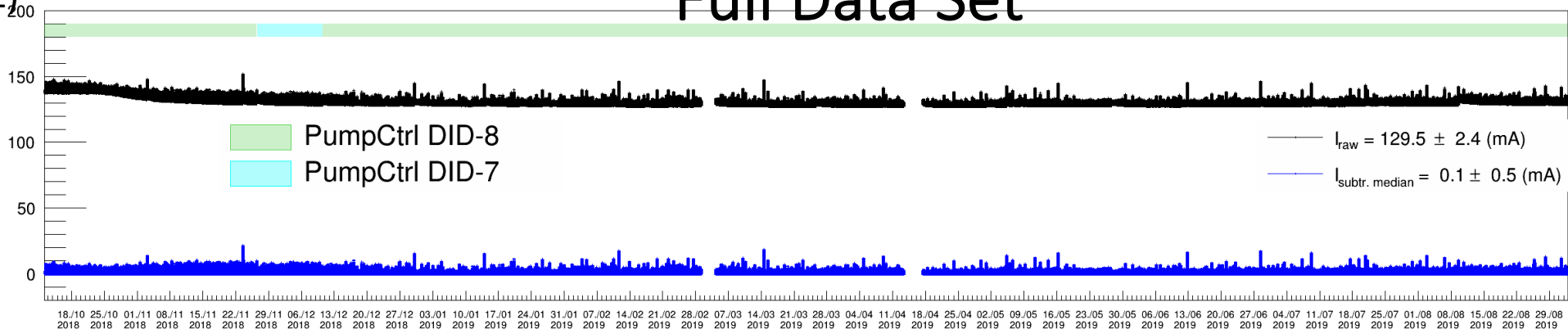
APS (bar)



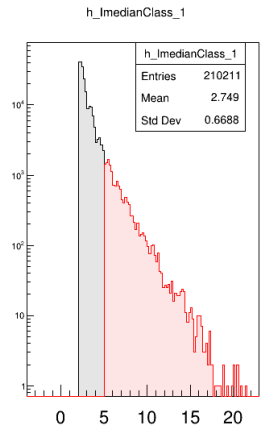
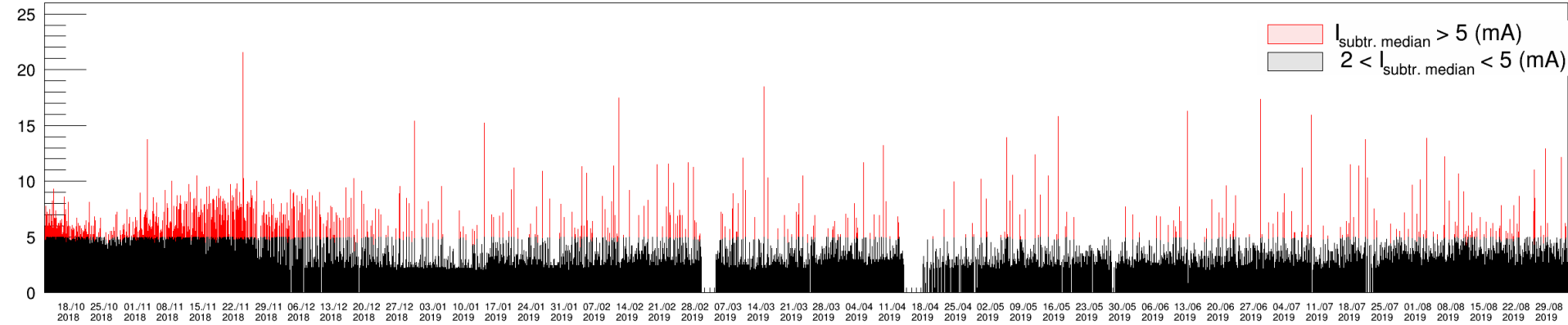
Full Data Set

MK2 (LT002)

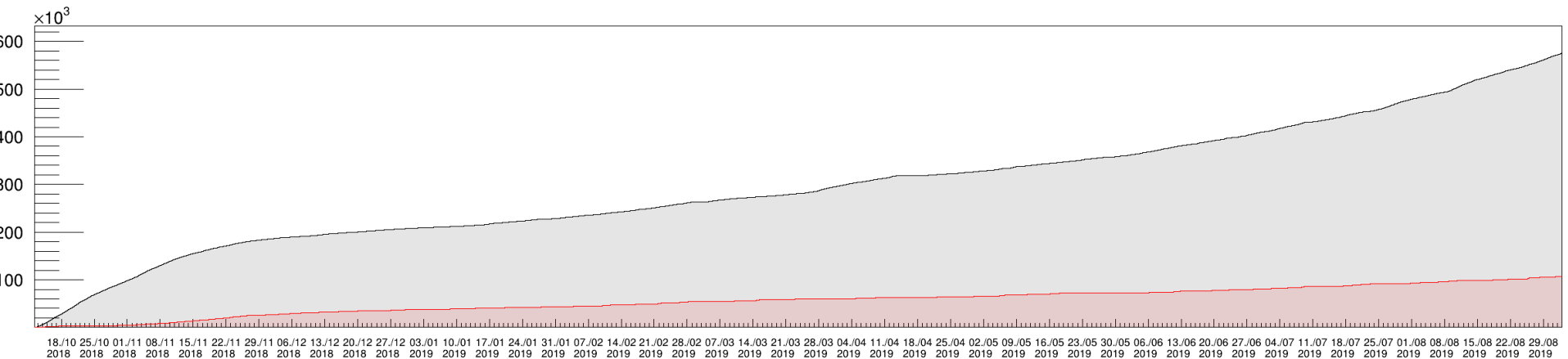
Pump Current (mA)



Pump Current_{Class} (mA)

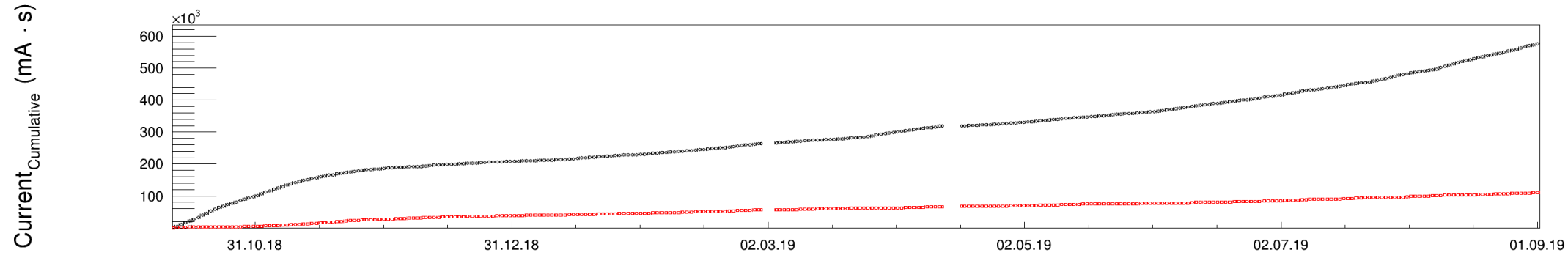
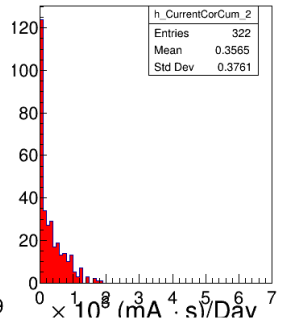
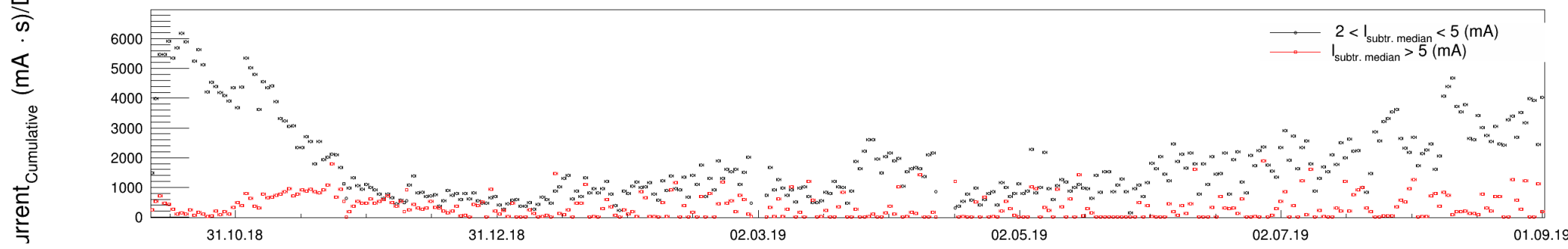
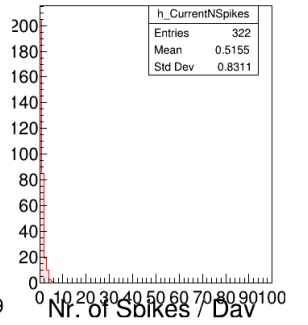
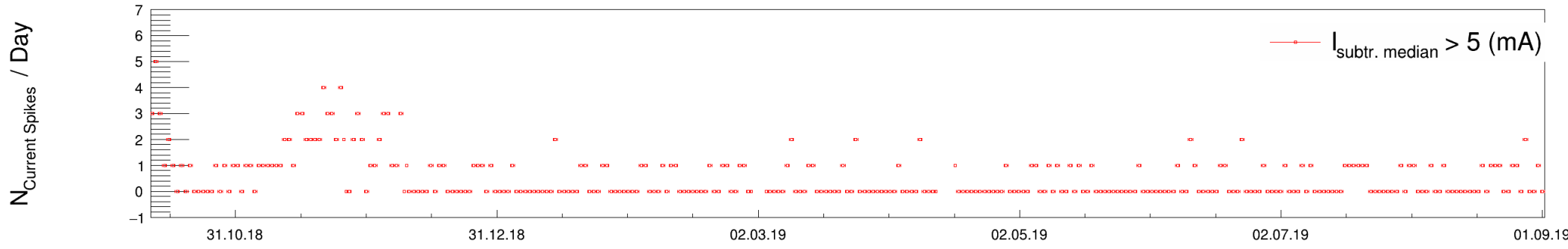
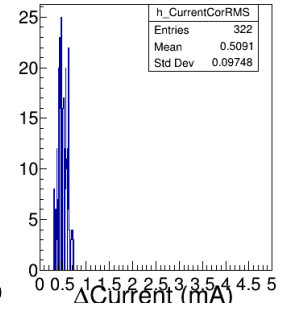
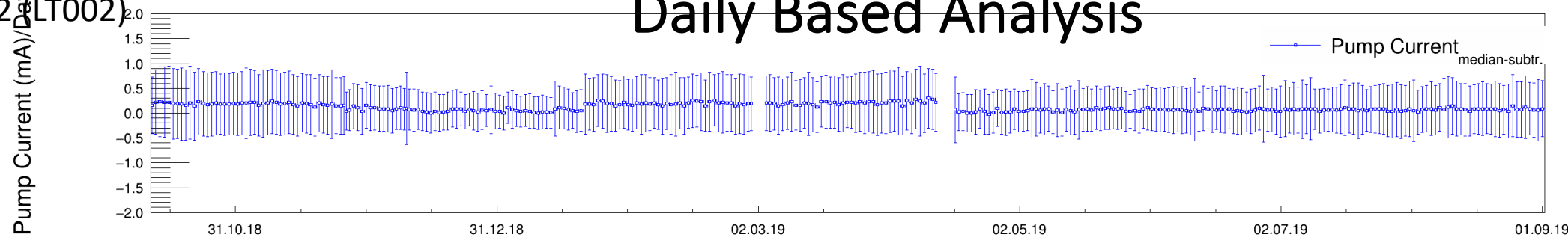


Pump Current_{Cumulative} (mA · s)



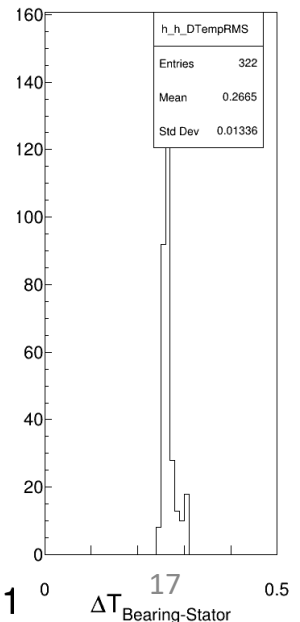
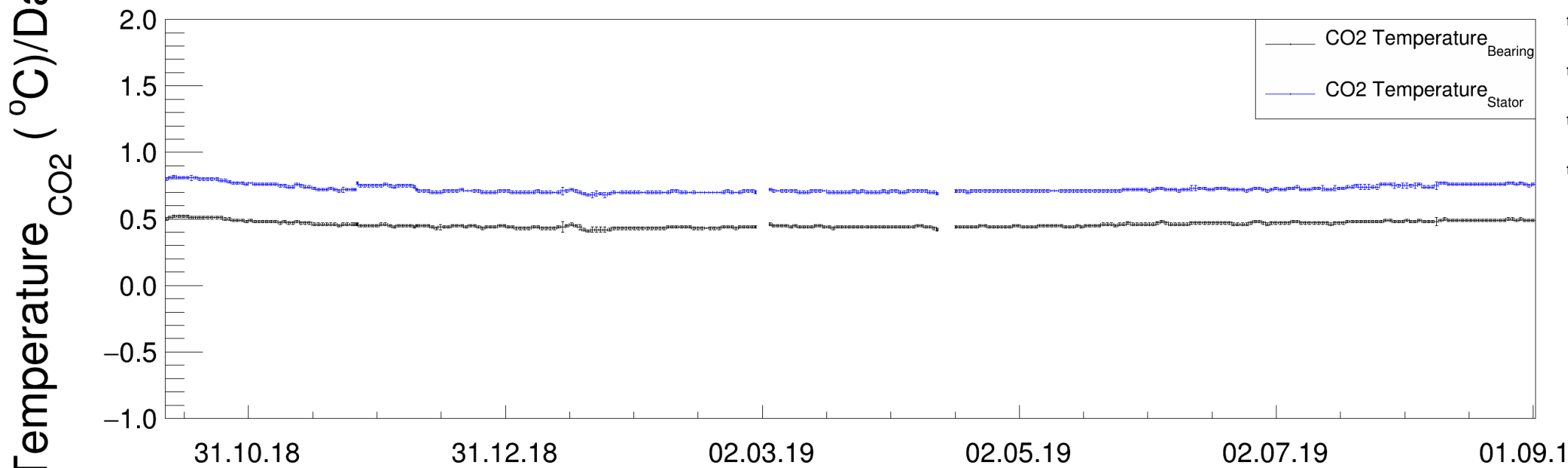
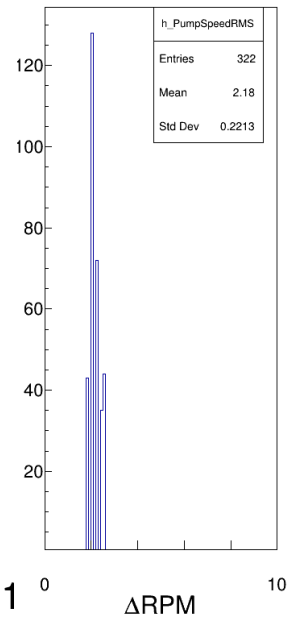
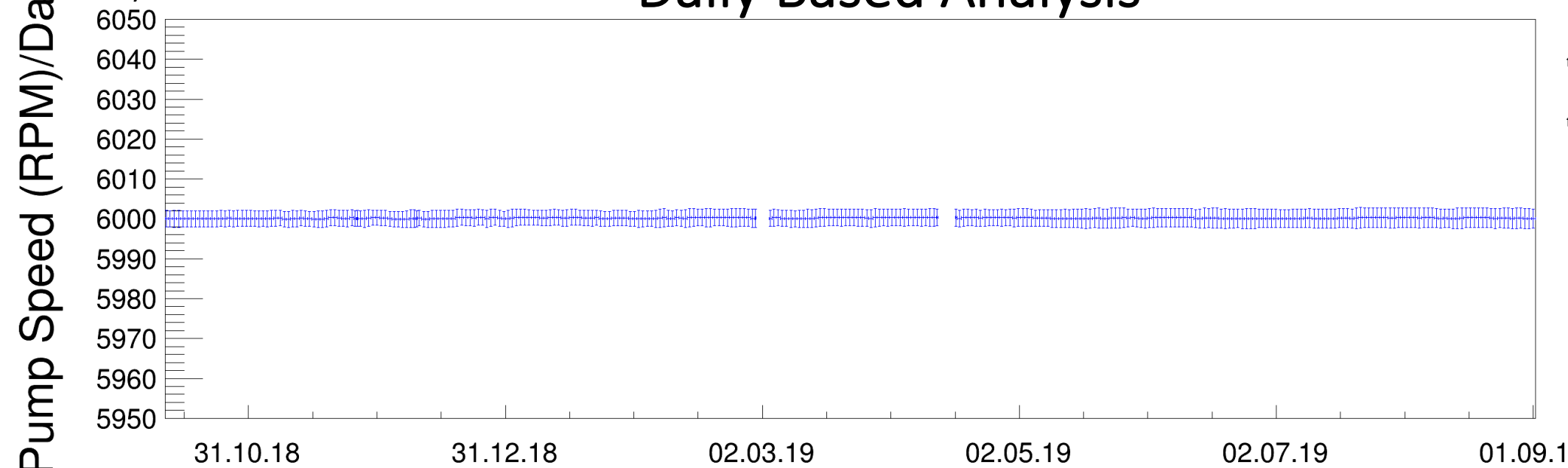
Daily Based Analysis

MK2 (TLT002)



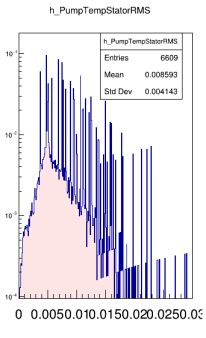
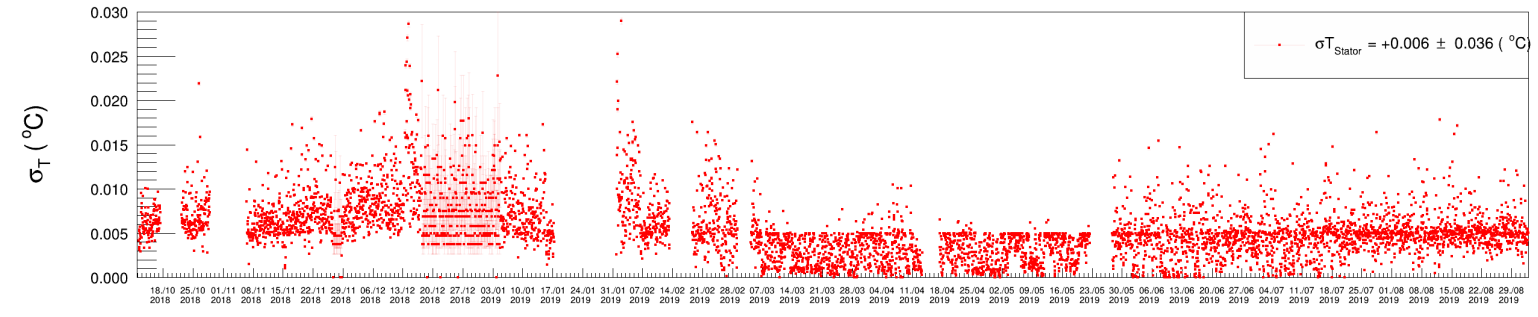
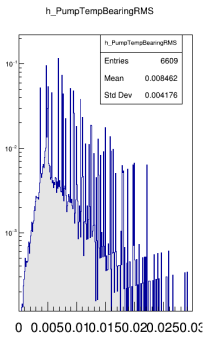
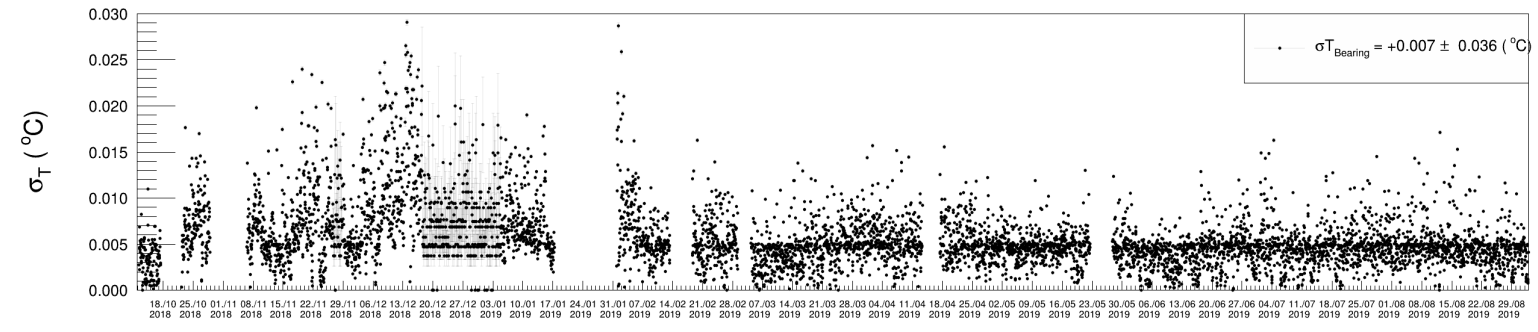
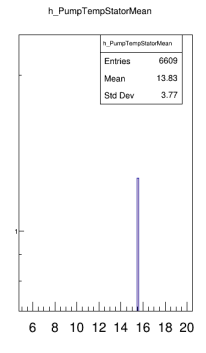
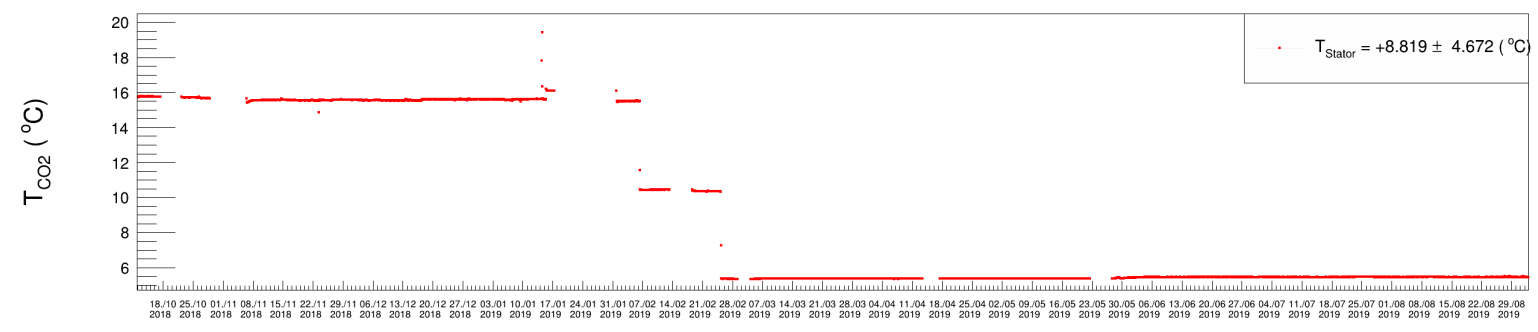
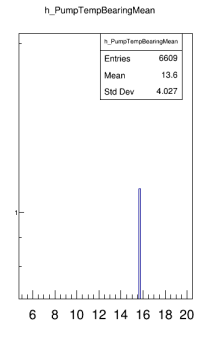
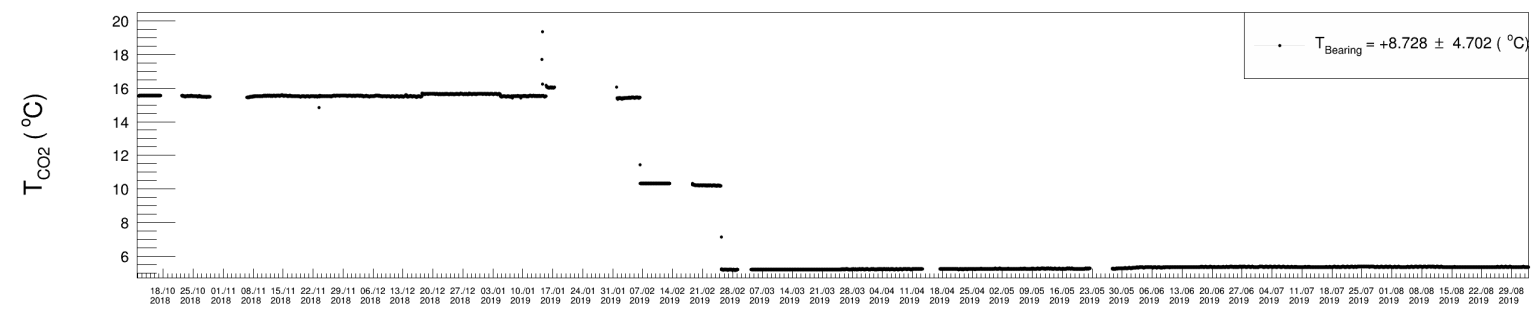
Daily Based Analysis

MK2 (T002)

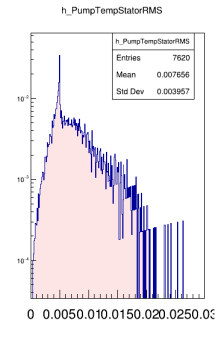
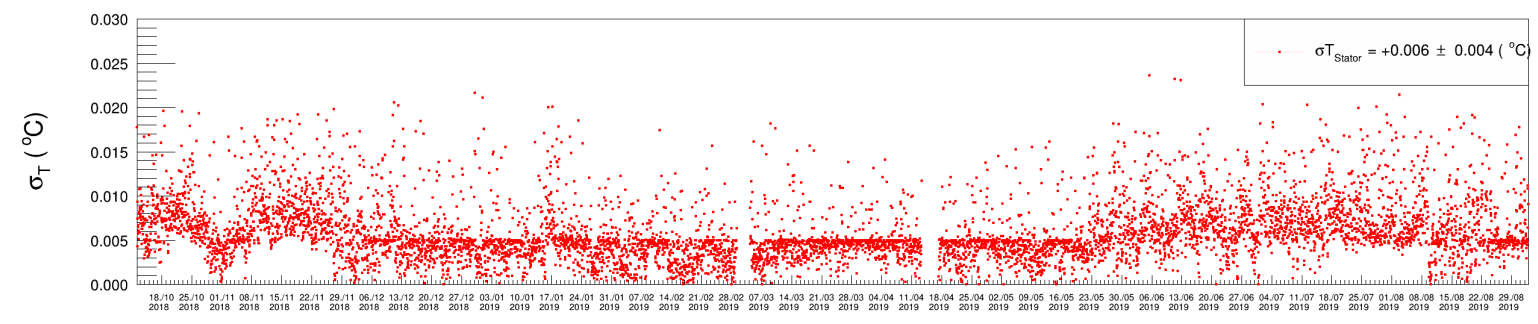
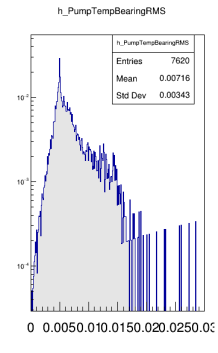
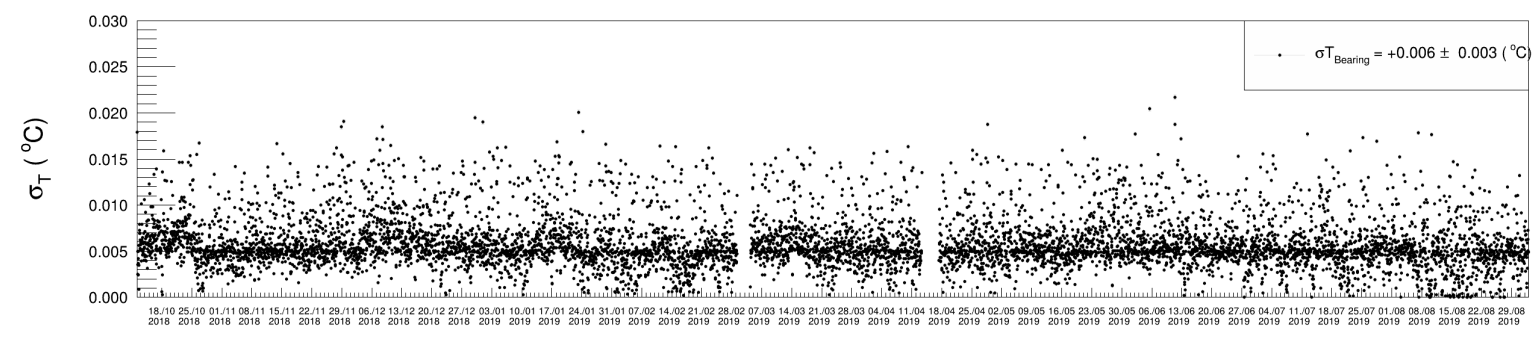
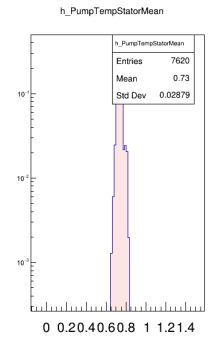
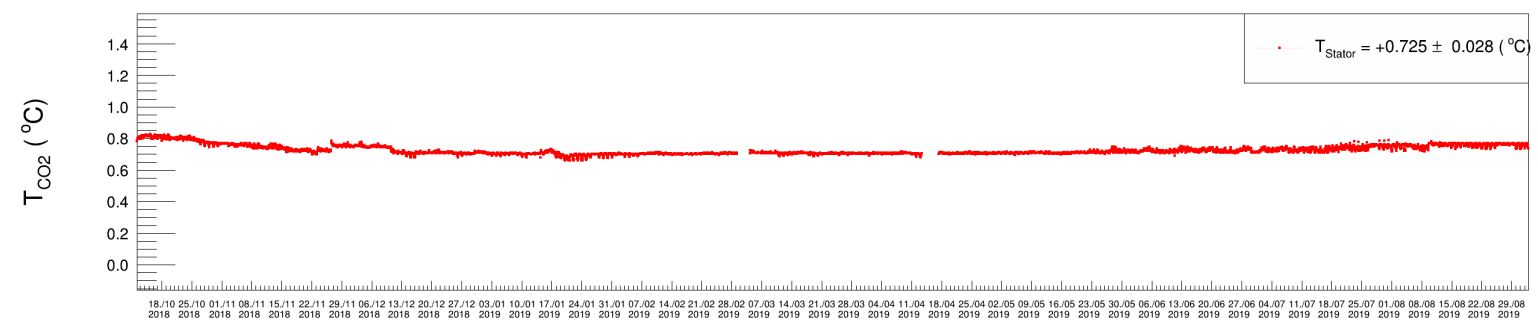
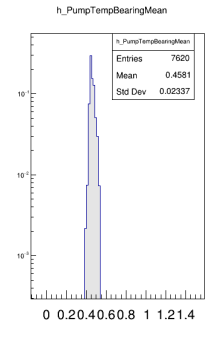
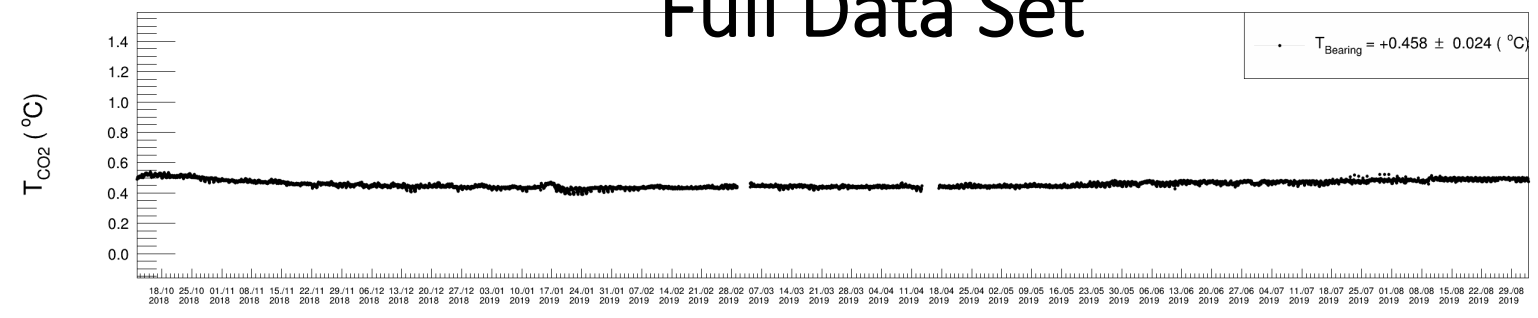


Appendix

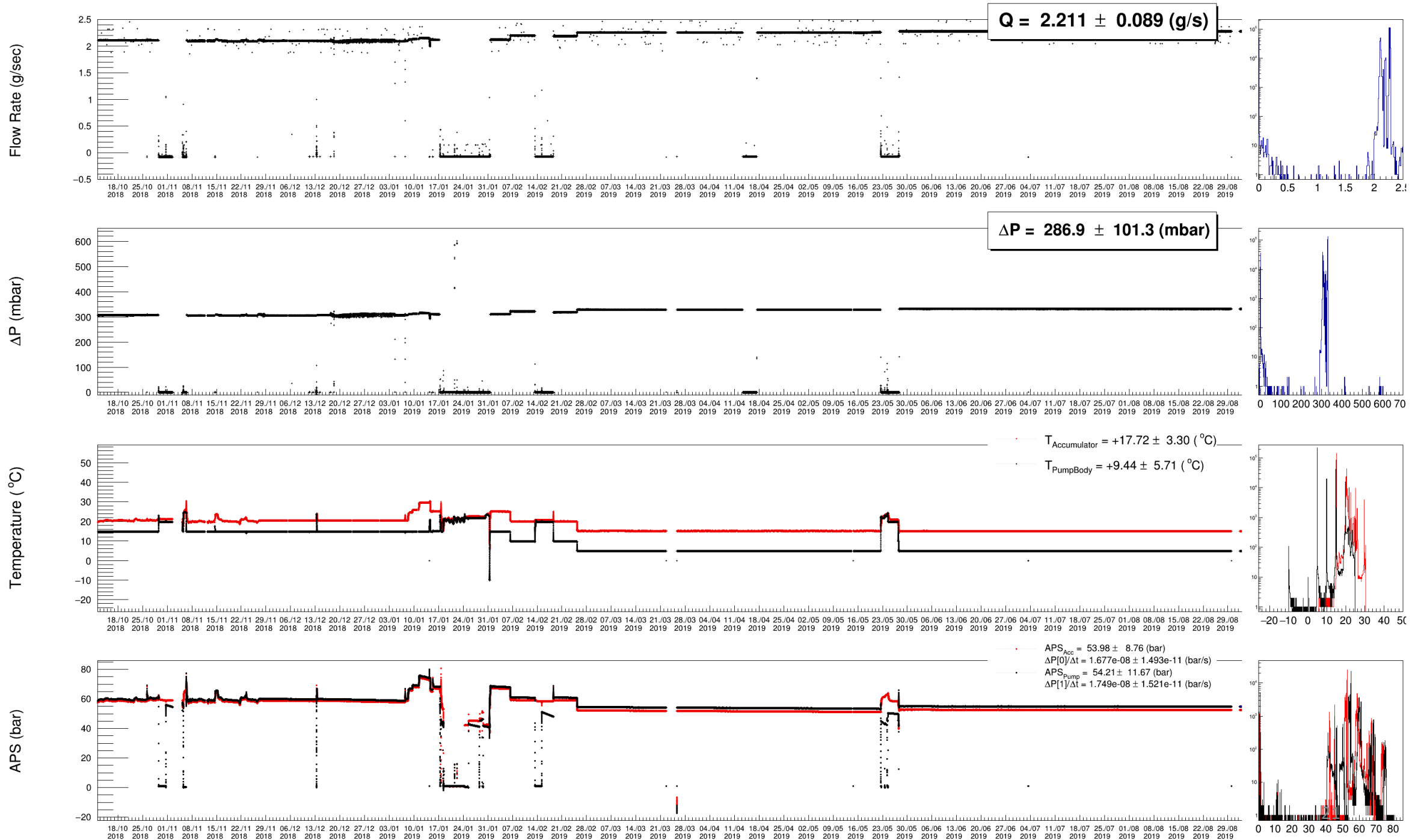
MK1 (LT003)



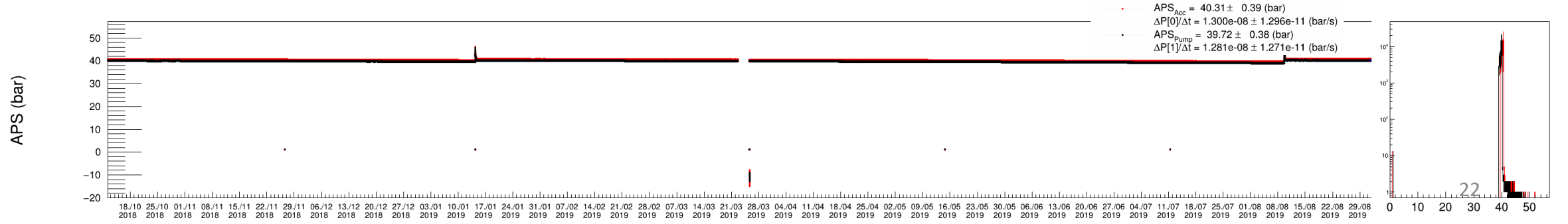
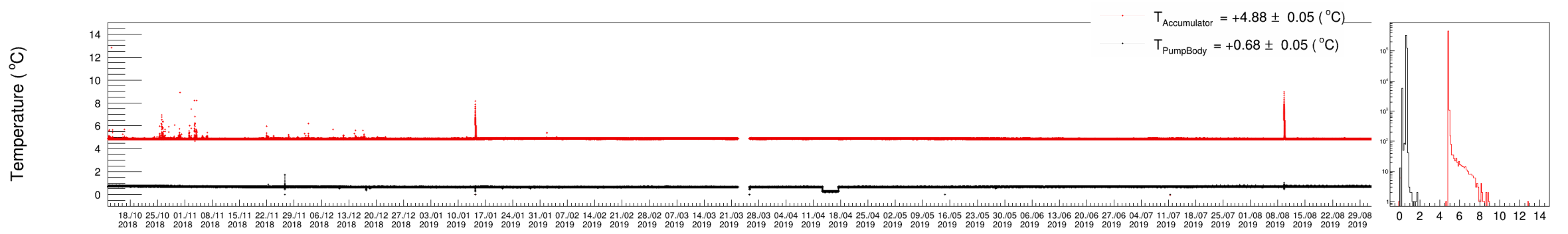
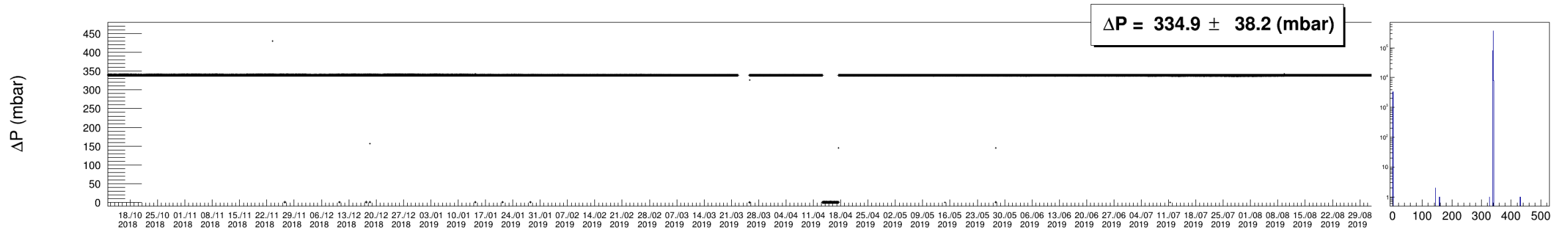
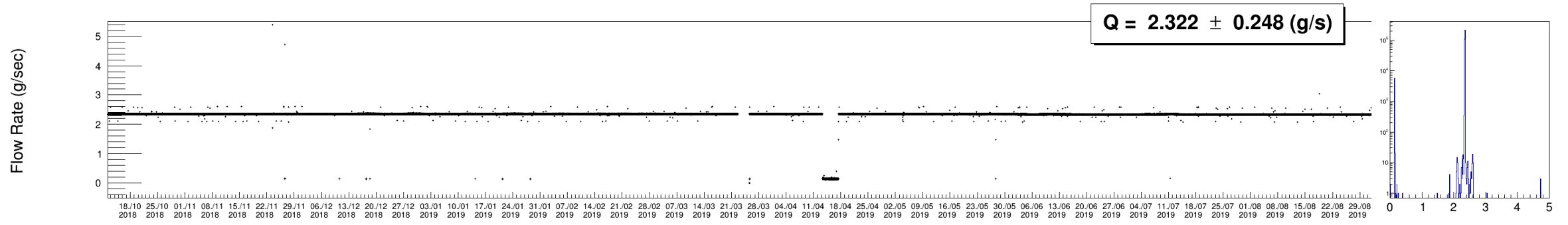
Full Data Set



MK1



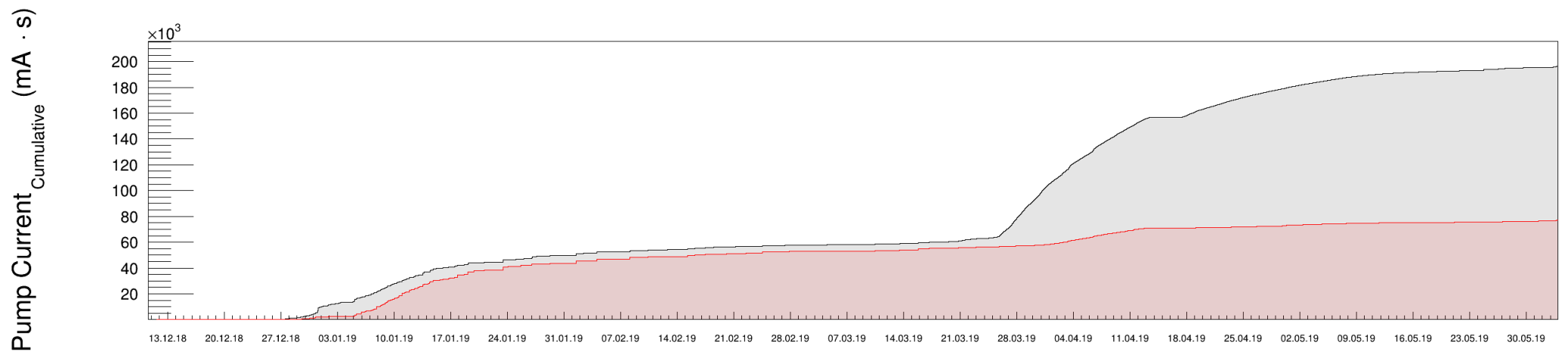
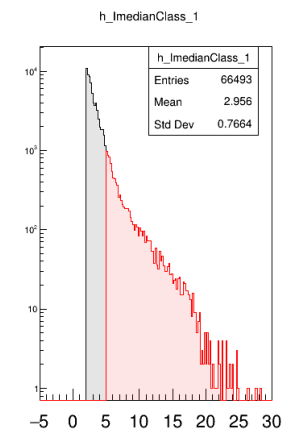
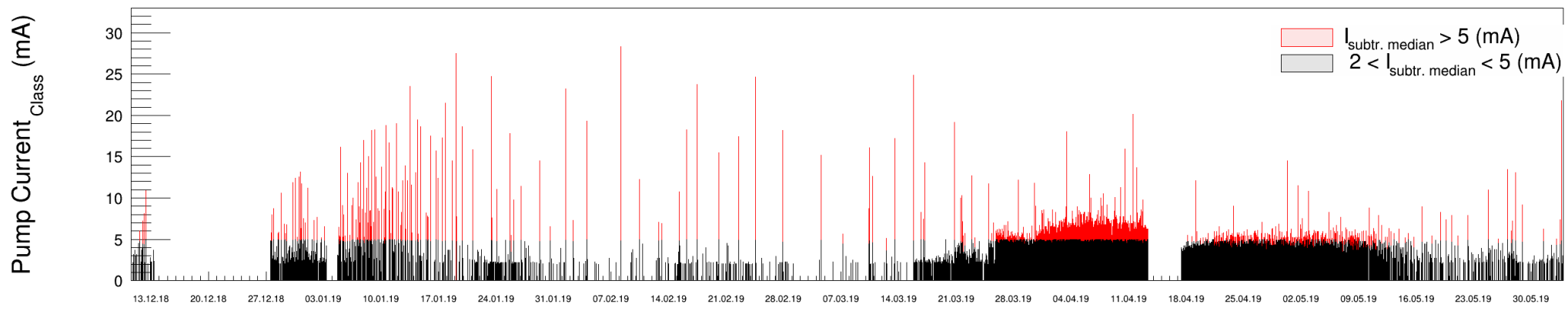
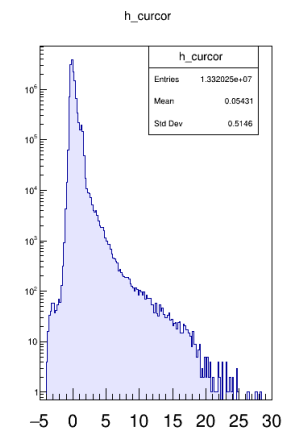
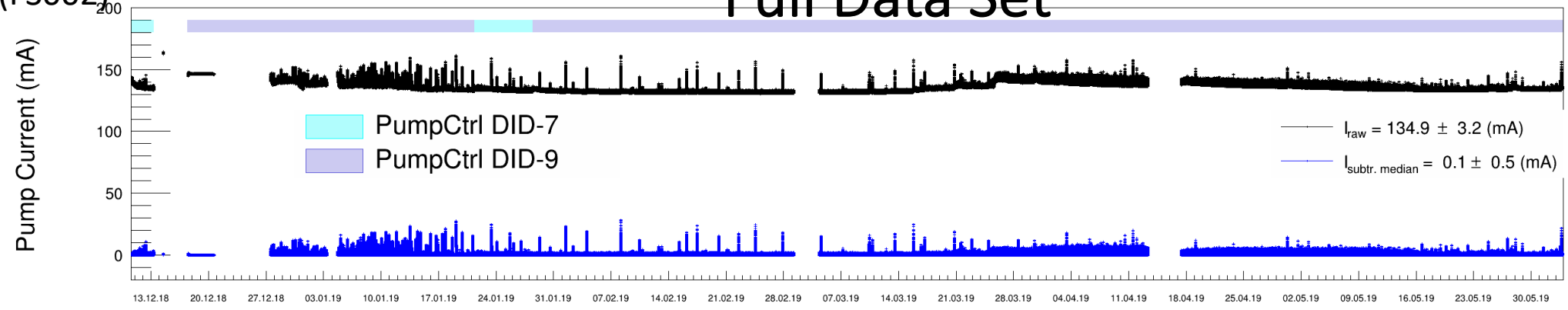
MK2



MK #3 (FS-002)

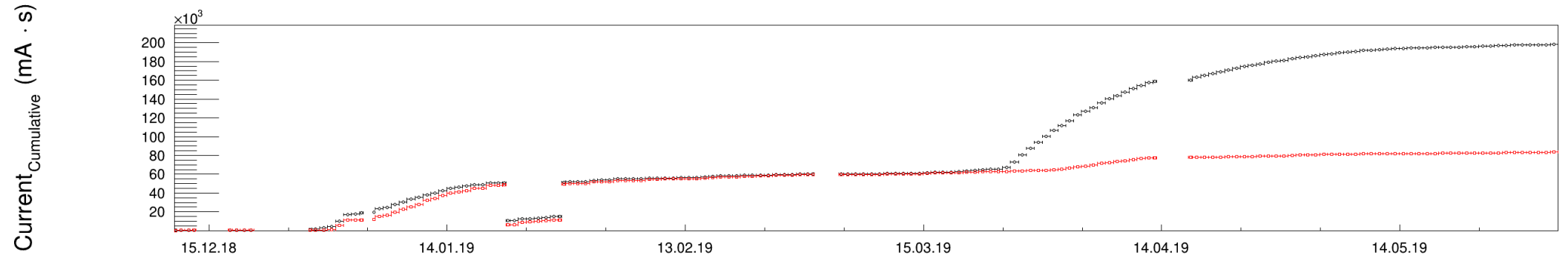
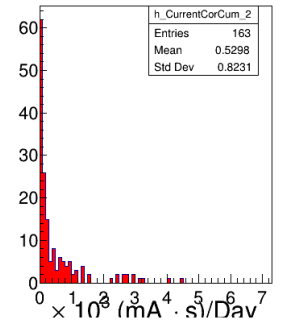
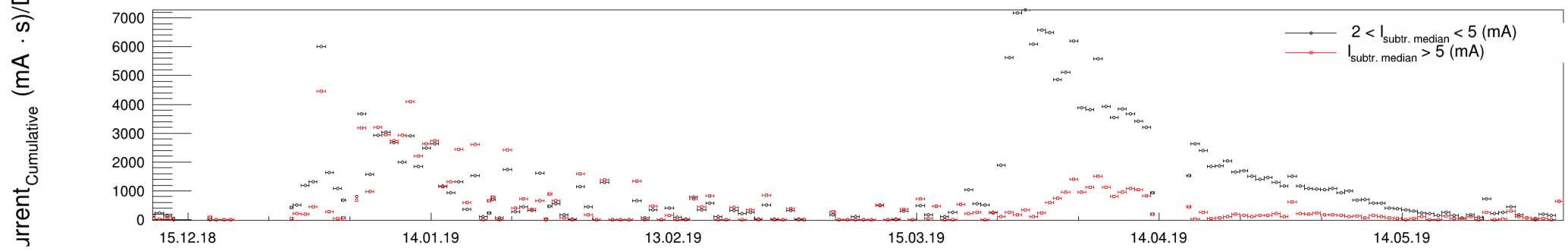
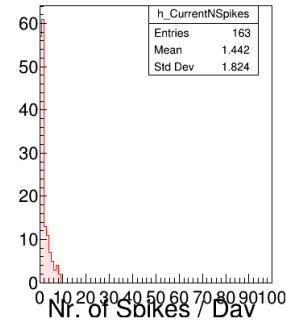
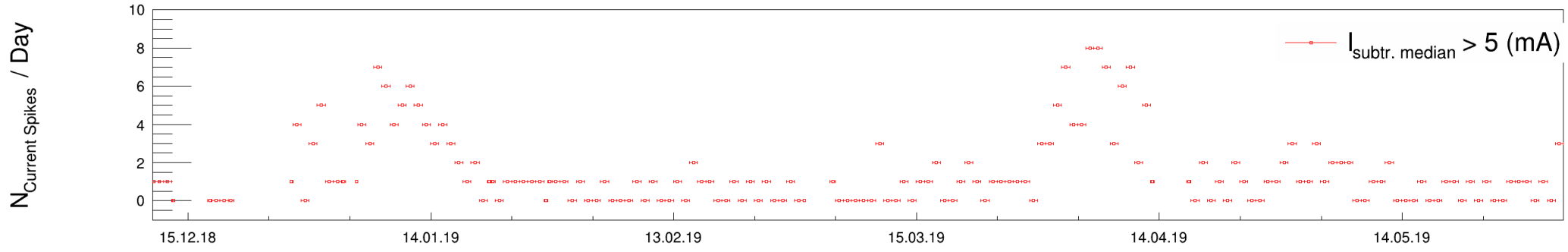
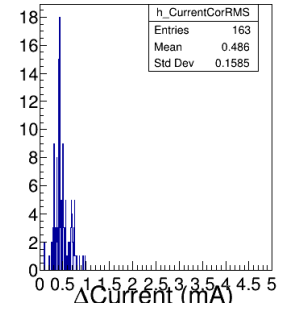
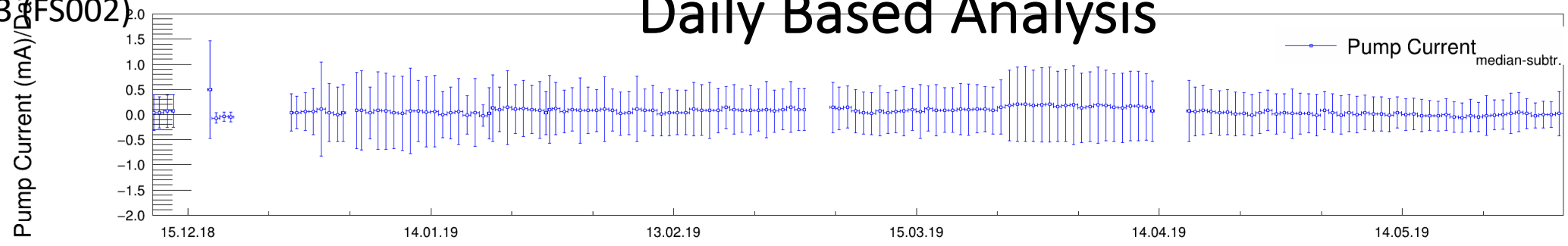
- $T_{\text{pump}} = +15^{\circ}\text{C}$ with IPA (Dec. 17-20, 2018)
- $T_{\text{pump}} = +0^{\circ}\text{C}$, $T_s = +5^{\circ}\text{C}$ (constant condition)
- Stop running pump on 03.06.2019

Full Data Set



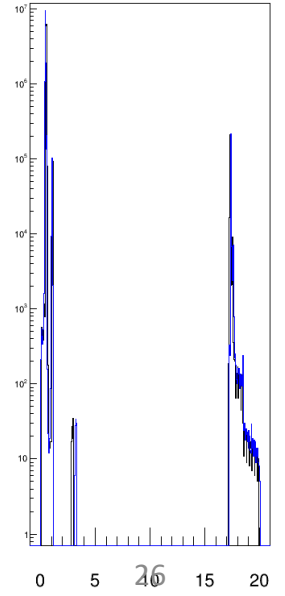
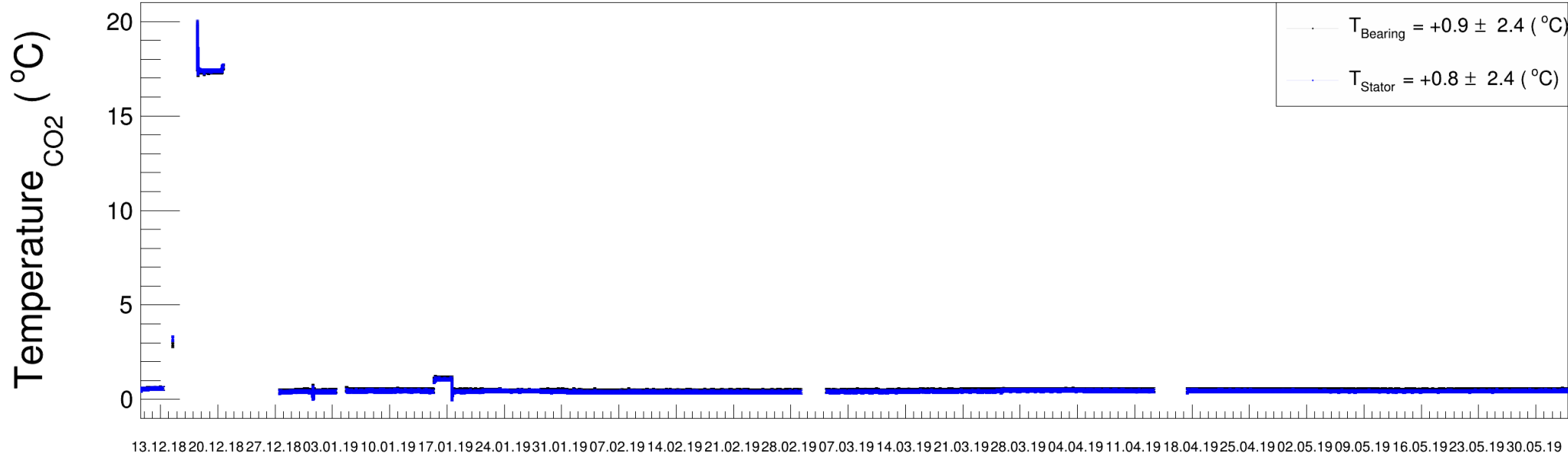
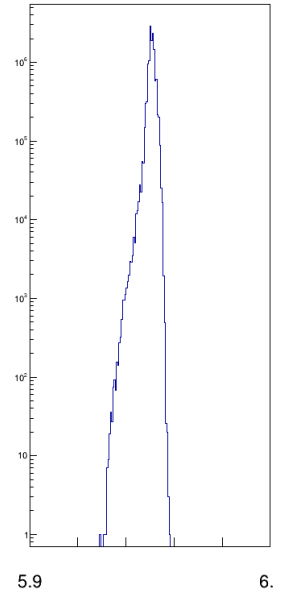
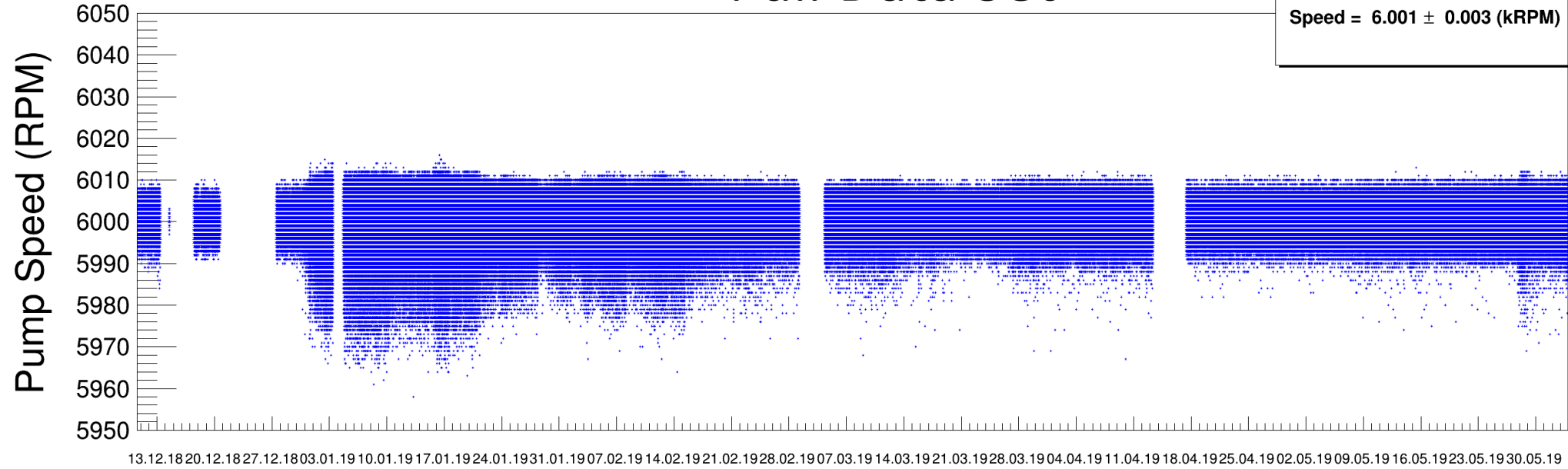
Daily Based Analysis

MK3 (FS002)



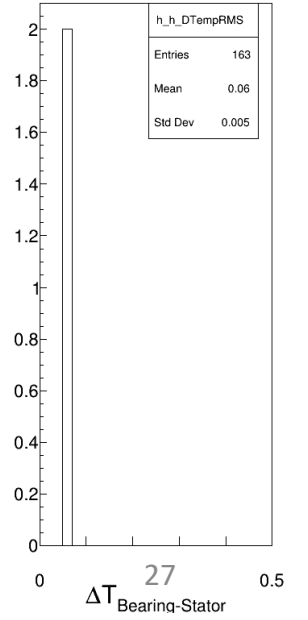
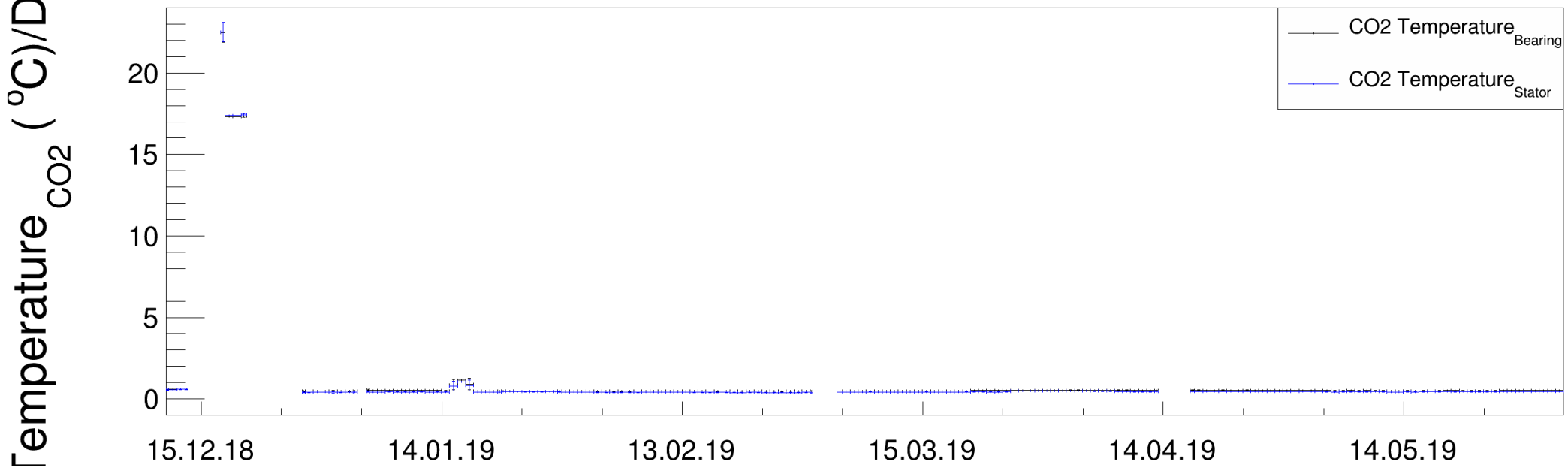
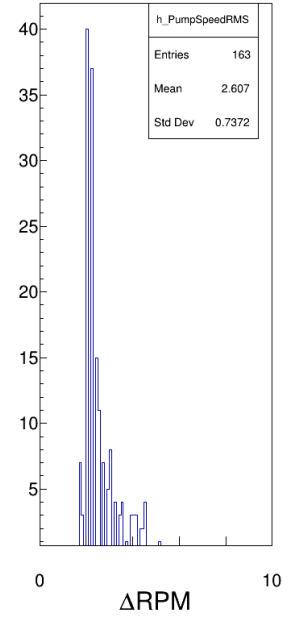
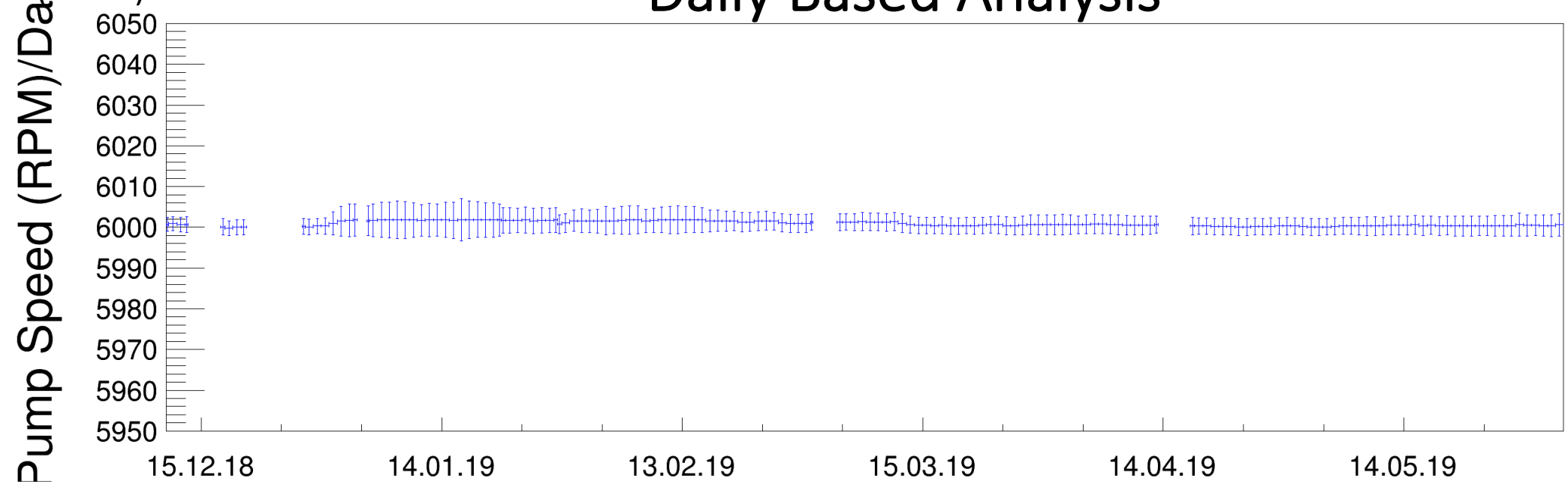
MK3 (FS002)

Full Data Set



Daily Based Analysis

MK3 (FS002)



MK3

