Clock drift correction for HK timing system

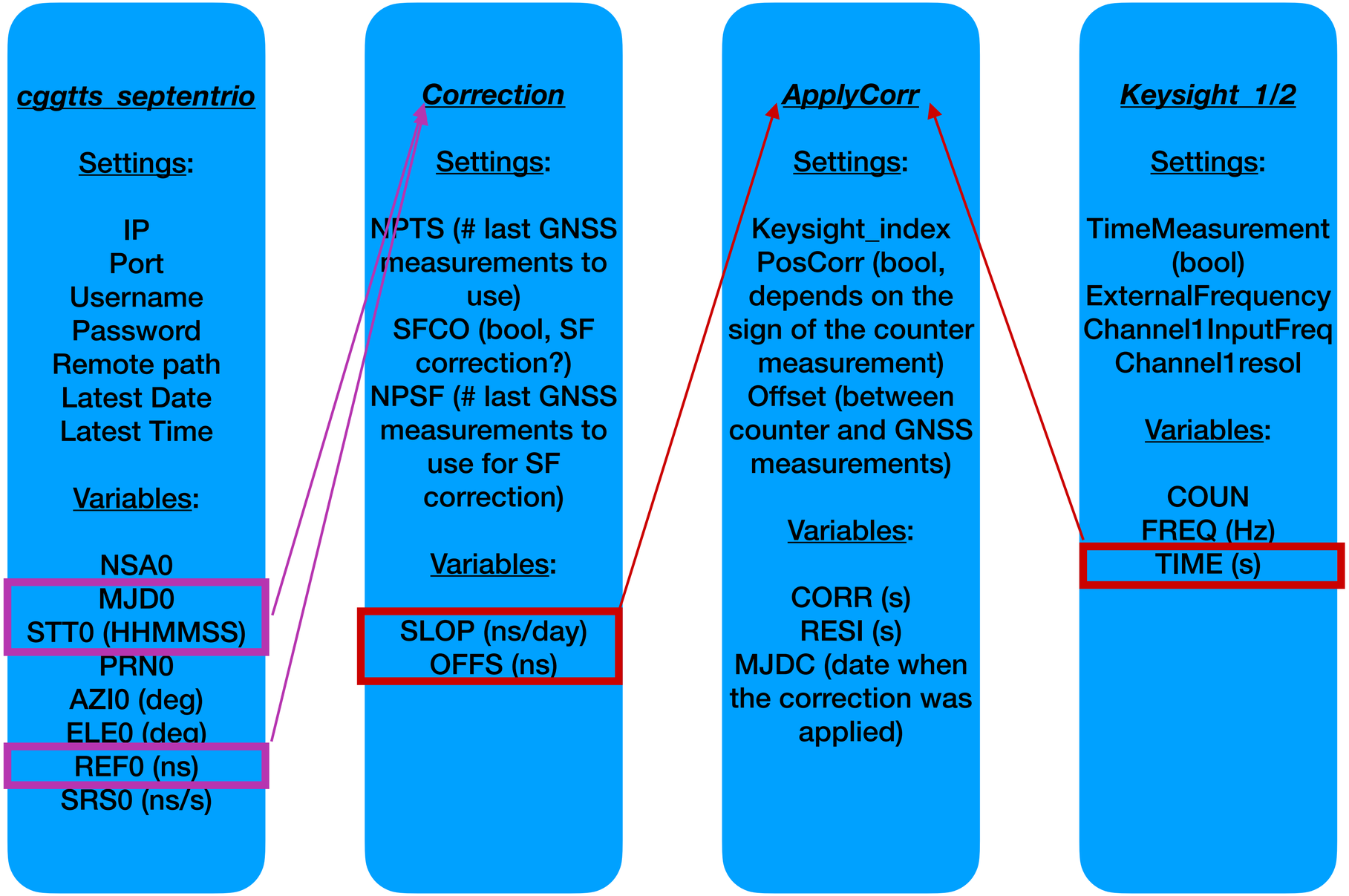
Claire Dalmazzone, LPNHE clock meeting, 23rd July 2025

Contents

- MIDAS environment for correction

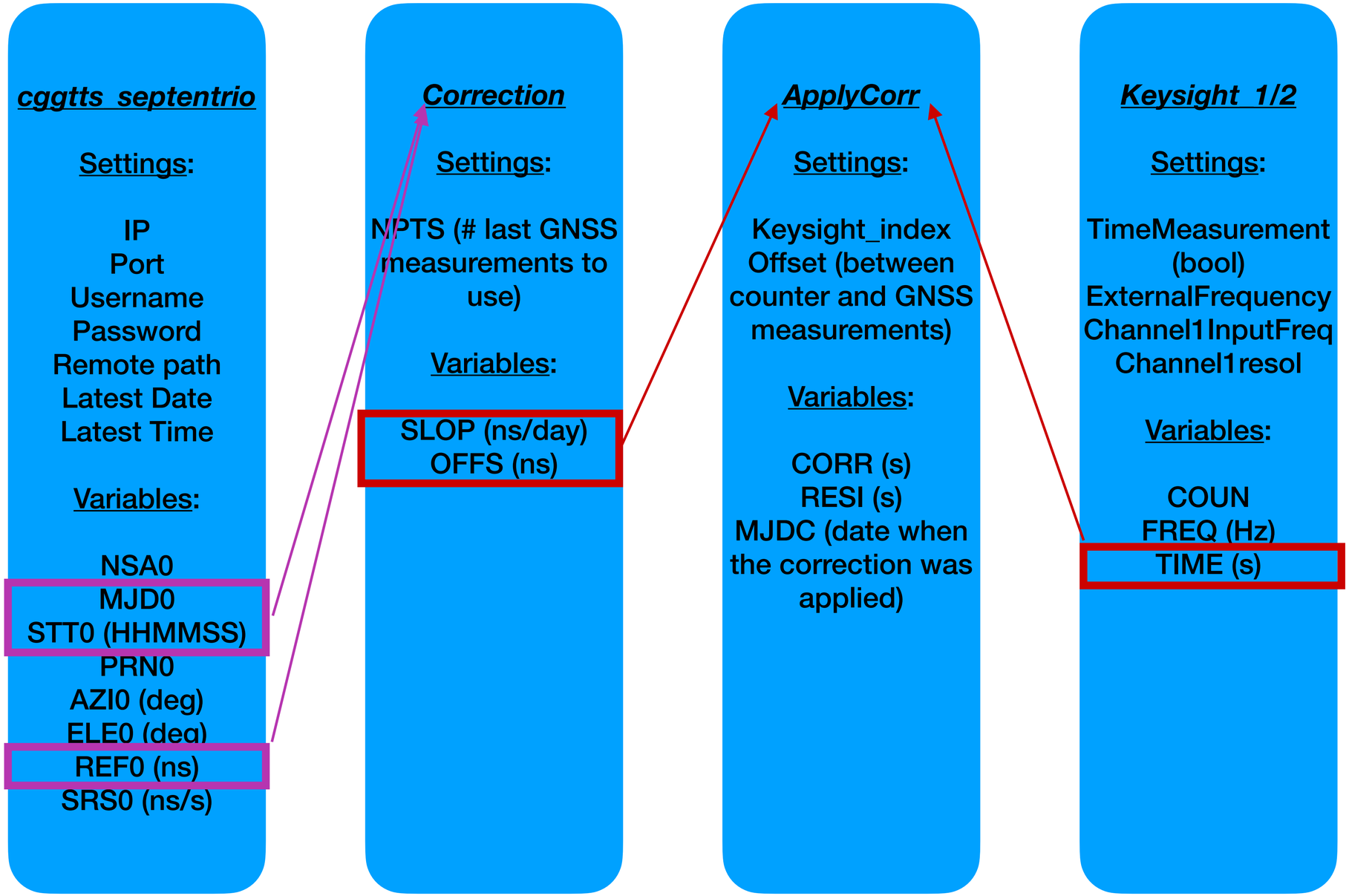
MIDAS env

Before



MIDAS env

After



MIDAS env

Modifications in Correction:

- The old version is now called Correction_SF: this should only be used for testing of monitoring and correction of the SRS_FS725 frequency drift. It is very “dirty” and could be greatly improved!

- In the new version of Correction I removed everything related to correction of SF of the Rubidium clock. Better to use this version unless we decide to use a SRS_FS725 and to correct its frequency in real-time.

MIDAS env

Modifications in ApplyCorr:

- Removed the possibility to apply a negative correction (no more PosCorr boolean in the Settings)
- Added info at initialisation to remind user to branch the clock PPS on channel 1 of the counter

```
logger.info("Please make sure that the PPS of clock to test is on channel 1")
```

- Added error message if the residuals are above 100ns

```
if np.abs(res)>1e-7:
    logger.error("Residuals are above 100 ns at "+str(res)+" s. Check setup or setting Offset.")
```

Conclusion

- Still some cleanup to do in the MIDAS Correction environment
- Remaining questions:
  - Do we fix or not the counter measurement settings (which signal on which channel, sign of the measurement)?
  - Do we keep the possibility of Rb SF correction (if yes, preferable to put it in another frontend but it cannot be tested right now)?