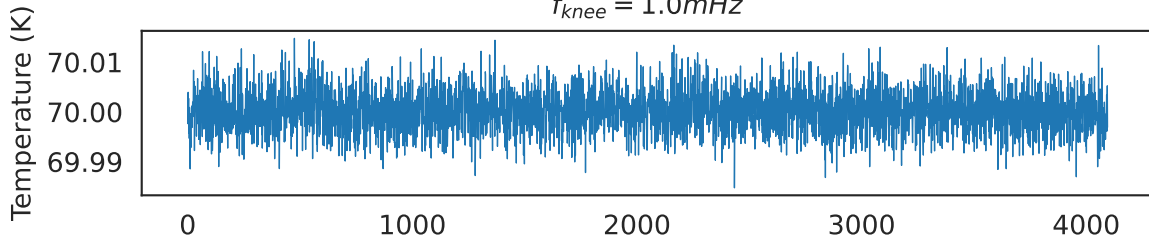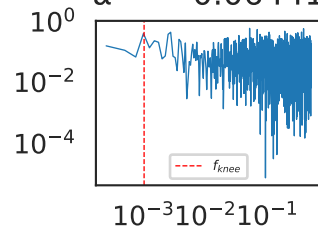With thermal nois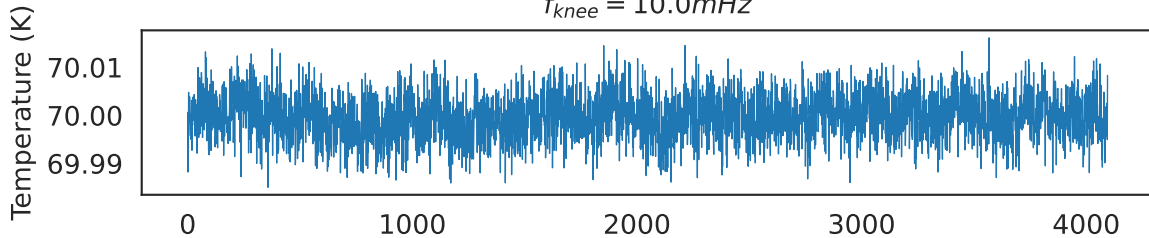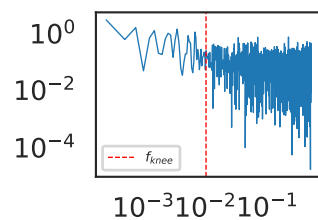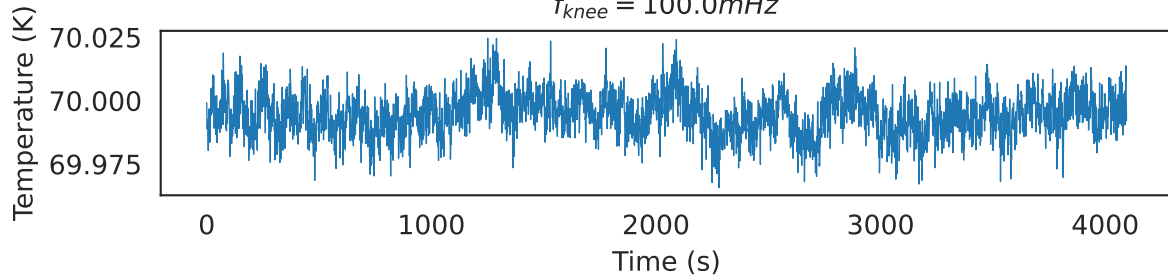e