Computer system for Fridge4

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Hardware overview

Ultra Low Temperature

Lancaster University

Femto Lock-ins 1..15

bath resistors

level meter

demag magnet persistant switch

output

voltage and current readings

power supply Cryogenics PS120A

He level meter Cryogenics HLG200

Keysight 34972A
mult1
→ ethernet

Agilent E3631A power supply for Femto lock-ins

Tenma 75-2540 30V 5A power supply
pst1   pst2   pst3   pst4
→ USB

PicoScope
osc1 (4262)
osc2 (4224)
→ USB

PicoLog ADC24
adc1
adc2
→ USB

Lakeshore 370AC
res_br
→ GPIB bus

→ USB

EasyTester ET1091
lcr_meter
or
AH2500 cap.bridge
cap_br
→ GPIB bus

Keysight 33521A
gen1
gen2
gen3
gen4

Agilent 33220A
gen5
gen6
gen7
gen8

Agilent 33220A
gen9
gen10

Agilent 34410A
mult1

Leak detectors
leak_asm340
or
leak_l300

serial to USB → USB

GPIB to USB → USB

GPIB bus

network switch

ethernet

uplink

computer
f4b
→ USB

UPS

GPIB bus

SR830 lock-in amplifiers
lockin1
lockin2

Linux system overview

Ultra Low Temperature

Lancaster University

standard parts
home-made parts

LXI devices

GPIB devices

USB devices (Keysight, etc.)

USB devices (serial to USB, adapters, etc.)

PICO oscilloscopes

PICO ADC boards

GPIB card or GPIB to USB adapter

network configuration (dhcp server, /etc/hosts)

udevd configuration (/etc/udev/rules.d)

rack computer (f4b)

network system

linux-gpib kernel driver

usbtmc kernel driver

serial, ftdi_sio, cdc_act, ... kernel drivers

pico_osc program

pico_osc program

tcp

SPP CLI

http text interface

http / simple_json interface

net driver | gpib driver | usbtmc driver | serial_* drivers | SPP driver

device_d server

graphene database

graphene_http server

Grafana web-interface

graphene over SSH interface

graphene CLI

http

device_c client program

Devece2 TCL library

DeviceRole TCL library

VNC server (tigervnc)

VNC viewers

VNC over SSH

TCL GUI programs

TCL scripts

SSH server

SSH

SPP CLI

SPP over SSH

remote device_d server