Hall C User Howto

Experiment: HKS

How to operate HKS and Enge magnets

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Abstract

This Howto outlines how to operate the HKS-D, HKS-Q1, HKS-Q2 and Enge magnets.

1 Operation for HKS-D, q1 and q2

Login any PC of cdaql1 - cdaql6 with 'cvxwrks' and go to /home/cvxwrks/MEDM/HKS. Type **mag-control.tcl** and see the window of **MAGNET controller for E01-011**. This screen is to turn magnets ON, Off, reset and set current.

Items of Operation are

```
> 'Turn ON'  to turn ON,
> 'Turn OFF' to turn OFF,
> 'Reset'    to reset,
> 'Set current (A)'  to set a current, type the current and push the button of 'se
> 'Initialization' to initialize.
```

After the power down or trip, you have to do an initialization for magnets. The initialization procedure is as follows;

1. HKS-D, q1 and q2 : Three times iteration of 0A - Max current - stay 1min. - 0A -stay 1min.
2. Wait 15 minutes after push the bottom of Initialization.

2 Monitor for HKS-D, q1 and q2

Login any PC of cdaql1 - cdaql6 with 'cvxwrks' and go to /home/cvxwrks/MEDM/HKS. Type **mag-monitor.tcl** and see the window of **Magnet monitor for E01-011**. This screen is to monitor the current status of magnets. Push the button of 'Show all' to check the current fault status.

Check the current status is as follows,

- Mode ; Remote
- Status; ON
- Polarity ; Positive
- B field (Tesla) ; measurements by Hall probe/NMR refer to Table 1.
- Fault ;All are 'OK'.

3 Enge controller and monitor

Login any PC of cdaql1 - cdaql6 with 'cvxwrks' and go to /home/cvxwrks/MEDM/HKS. Type **medm -x MAG_O_MEG3H00.adl** and see the window of 'ENGE power Supply'. To power on and set the current, use the skyblue button in the bottom-left corner.

- POWER ON to power on.
- Setpoint to set the current.
- Check the Readback value.

Initialization method is as follows;

- Set the current to 500A(Max.).
- Stay for 4 minutes.
- Set the current to 0A(Max.).
- Stay for 4 minutes.
- Set the current to 500A(Max.).

- Stay for 4 minutes.
- Set the nominal current 323.5A (Check the small paper on the display).

4 Splitter

Splitter is controlled by MCC. Call MCC when we need to change the setup of Splitter. When we need the ramping in case of power down etc.., call MCC and ask for them to do as follows,

- Set the current to 900A(Max.).
- Stay for 4 minutes.
- Set the current to 0A(Max.).
- Stay for 4 minutes.
- Set the current to 900A(Max.).
- Stay for 4 minutes.
- Set the nominal current 844(?)A (Check the small paper on the display).

5 Troubleshooting

If the magnet control screen is hung or doesn't respond, close the screen and restart it. (`cd  /MEDM/HKS; ./mag-control.tcl`).

If this doesn't help, the EPICS front end computer, `hcpc10401` should be rebooted. To reboot, do the following.

```
ssh root@hcpc10401    (Use the cvxwrks password)
reboot
```

After about a minute, the control screen should function. If the screen appears to work, but one of the magnets does not respond to commands, try pushing the "Initalize", "Reset", "Off" and "On" buttons in that order. If that does not restore operation of the magnet, it may be necessary to toggle the Local/Remote setting on the power supply in the hall. This is often necessary after the power supply has been turned off.

5.1 Splitter Magnet Troubleshooting

The splitter magnet is controlled by MCC. (MCC calls it "MSP3H00".) However, if MCC has a problem operating it, they will call the counting house to try to get it fixed.

To see the screen that MCC uses, from the cvxwrks account type

```
cd ~/MEDM/HKS
medm -x MAG_O_3C_MSP3H00_inver.adl
```

If this screen has many white fields, then `hcpc10401` should be rebooted as described above. If most of the fields contain data, but reset and power on do not restore operation of the magnet, it may be necessary to toggle the Local/Remote setting on the power supply in the hall.

6 Power supplies and Hall probes/NMR

Table 1 is a list of power supplies and Hall probes/NMR.

Table 1: List of power supplies, monitors, operation parameters.

name	Supply	Monitor	Field (T)	Current (A)	Spec.(V/A)
HKS-D	HKS	NMR	1.44030±0.00001	1056	165/1254
HKS-Q1	001	Hall probe	-0.86445±0.00010	597	160/1000
HKS-Q2	003	Hall probe	-0.16593±0.00010	401	250/1000
Enge	-	Hall probe	1.4490 ±0.0005	323.5	150/1000
Splitter	004	Hall probe	-1.54620±0.00015	844	150/1500

All controllers for power supplies and Hall probes/NMR are connected with hcpc10401 (pc104 board PC) through RS232C and are operated remotely. Some values (current, voltage..) and status are read out every one second, and stored in EPICS and data.