

# Ozone Spectrometer Software Installation Notes

**Please note that this document omits the following details:**

1. Configuring ozspec to start as a systemd service
2. Configuring a mechanism for data-upload / data retrieval
3. Configuring ntpd or chronyd to sync system time from a local timeserver

Please also review Alan Rogers' readme file, contained within the ozspec tarball, before proceeding.

## CentOS 7

Install and configure CentOS 7 as per your institutional standards.

### Install dependencies

```
[root@localhost ~]# yum update
[root@localhost ~]# yum install gtk2 gtk2-devel libusb* fftw* xorg-x11-fonts-* ghostscript
```

### Blacklist kernel modules

```
[root@localhost ~]# nano /etc/modprobe.d/blacklist.conf
```

Add the following:

```
#ozone blacklisting for the rtl-sdr
blacklist dvb_core
blacklist dvb_usb_rtl28xxu
blacklist rtl2832
blacklist rc_core
blacklist mei
blacklist mei_me
```

### Adjust udev rules

```
[root@localhost ~]# wget https://github.com/steve-m/librtlsdr/raw/master/rtl-sdr.rules
[root@localhost ~]# cp rtl-sdr.rules /etc/udev/rules.d/
[root@localhost ~]# udevadm control --reload
[root@localhost ~]# udevadm control --reload-rules
```

### Create user account from which to run ozspec

We tend to create an ozone user and install the ozspec software under ozone's home directory.

```
[root@localhost ~]# useradd -m -u 2075 -c "Ozone" -s /bin/bash ozone
[root@localhost ~]# usermod -a -G dialout ozone # <-- this is necessary for access to the serial port
[root@localhost ~]# passwd ozone
```

(suggest disabling password-based SSH logins in favor of key-based)

## Build ozspec and ozoneplot

Please reboot your system and then log in as ozone before proceeding to this step!

Extract the tarball to the directory where you want to install ozspec.

Build the software:

```
[ozone@localhost ~]$ cd ozspec_ver1/
[ozone@localhost ozspec_ver1]$ ./ozspecmake
[ozone@localhost ozspec_ver1]$ ./ozoneplotmake
```

### Set configuration options in catalog file

Edit `ozspec.cat` to set configuration options.

**IMPORTANT: You must ensure that the spectrometer name and spectrometer number fields are set to unique values.**

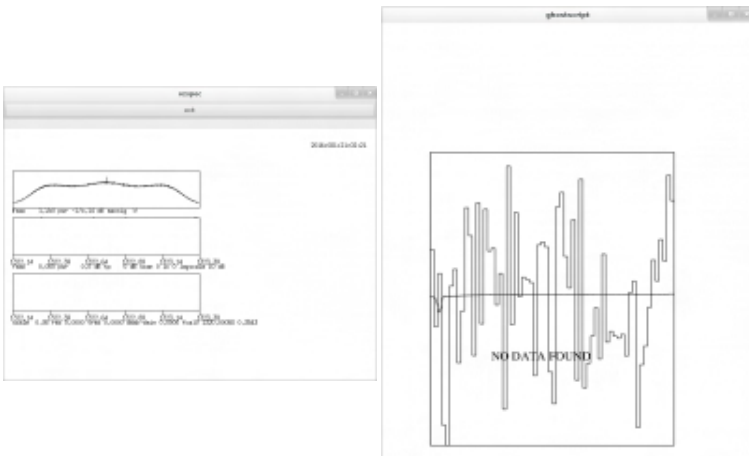
### Plot data

```
# Run ozspec (for some length of time)
[ozone@localhost ozspec_ver1]$ ./ozspec

# If you wish to suppress display and run in the background
[ozone@localhost ozspec_ver1]$ ./ozspec -nodisplay &

# Plot the data
[ozone@localhost ozspec_ver1]$ ./ozoneplot 1608120.s098
file 1608120.s098
peak -30.30 rmsresid 130.159 theory 999.99 mK fit_high \
-22.29 fith_err 81.84 fit_low 0.00 fitl_err 0.00 ppm \
avtpwr 0.00 dB 0000 00 to 0000 00

# View the plot
[ozone@localhost ozspec_ver1]$ ghostview spe.eps
```



## Ubuntu 16.04 LTS

Install and configure Ubuntu 16.04 LTS as per your institutional standards.

## Install dependencies

```
[root@localhost ~]# apt-get update
[root@localhost ~]# apt-get install libgtk2* libusb-1* libfftw3* xfonts-*dpi* ghostscript packagekit-gtk3-module gv
```

## Blacklist kernel modules

```
[root@localhost ~]# nano /etc/modprobe.d/blacklist.conf
```

Add the following:

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#ozone blacklisting for the rtl-sdr
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blacklist dvb_usb_rtl28xxu
blacklist rtl2832
blacklist rc_core
blacklist mei
blacklist mei_me
```

## Adjust udev rules

```
[root@localhost ~]# wget https://github.com/steve-m/librtlsdr/raw/master/rtl-sdr.rules
[root@localhost ~]# cp rtl-sdr.rules /etc/udev/rules.d/
[root@localhost ~]# udevadm control --reload
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[root@localhost ~]# passwd ozone
```

(suggest disabling password-based SSH logins in favor of key-based)

## Disable guest account

```
[root@localhost ~]# nano /usr/share/lightdm/lightdm.conf.d/50-unity-greeter.conf
```

Add the following.

```
allow-guest=false
```

Reboot is required.

## Build ozspec and ozoneplot

**Please reboot your system and then log in as ozone before proceeding to this step!**

Extract the tarball to the directory where you want to install ozspec.

We tend to create an ozone user and install the ozspec software under ozone's home directory.

Build the software:

```
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[ozone@localhost ozspec_ver1]$ ./ozspecmake
[ozone@localhost ozspec_ver1]$ ./ozoneplotmake
```

## Set configuration options in catalog file

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**IMPORTANT: You must ensure that the spectrometer name and spectrometer number fields are set to unique values.**

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file 1608120.s098
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-22.29 fith_err 81.84 fit_low 0.00 fitl_err 0.00 ppm \
avtpwr 0.00 dB 0000 00 to 0000 00

# View the plot
[ozone@localhost ozspec_ver1]$ ghostview spe.eps
```

